

Establishment : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit



# Rani Laxmibai Mahavidyalaya Parola

Dist.Jalgaon 425111 Tel:-02597-292665,292666

U.G.C-2F&12B(8-211/2005CPP-1D:2011)

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3rd Cycle

## Assesment and Accreditation

Criterion – 1

Curricular Aspects

Key Indicator: 1.3: Curriculum Enrichment

1.3.1: Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum



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Outward No.


Date : / /20

**DECLARATION**

This is to declare that the information, Reports, true copies of the supporting documents, numerical data etc. submitted / presented in this file is verified by Internal Quality Assurance Cell (IQAC) and is correct as per the records. This declaration is for the purpose of NAAC Accreditation of HEI for 3<sup>rd</sup> Cycle period 2018-2019 to 2022-2023.

Date: 20/07/2023

Place: Parola

  
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**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





## Criterion No. 1

### Curricular Aspects

### 1.3. Curricular Enrichment

**1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

#### Content

Sr. No.	Particulars
1	List of courses address crosscutting issues relevant to professional ethics, gender, human values, environmental and sustainability in transacting the curriculum.
2	Representative Examples
	2.1 : - Crosscutting issues : Professional ethics
	2.2 : - Crosscutting issues : Gender
	2.3 : - Crosscutting issues : Human values
3	2.4 : - Crosscutting issues : Environmental and Sustainability
	Vocational education and training degree program (Addressed issues: - In certificate courses.)
4	Credits courses for U. C. Programs
5	List of certificates courses initiated to address various crosscutting issues
6	Projects
7	Field Visits and survey reports
8	Curriculum and extra-curricular activity
9	Institutional Infrastructure

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# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**





**Criterion - 1**  
**Curriculum Aspects**

**1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

**1. List of courses address crosscutting issues relevant to professional ethics, gender, human values, environmental and sustainability in transacting the curriculum.**



## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 1: Subject: - Marathi

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
1	Marathi	F. Y. B. A.	DSC- MAR-I	Adhunik Gaddya va Pddya Wangmay Prakar	Professional ethics & Human Value
			DSC- MAR-II	Adhunik Gaddya va Pddya Wangmay Prakar	Professional ethics, Human Value & Gender
		S. Y. B. A.	MAR-213-A	Shetkryacha Aasud	Professional ethics & Human Value
			MAR-241-A	Jivan Rang	Professional ethics & Human Value
			MAR-232-A	Avkali Pavsachya Darmyanchi Goshta	Professional ethics & Human Value
			MAR-242-B	Maze vidyapith	Professional ethics & Human Value
	T. Y. B. A.	DSC Marathi-F	Lalit Gaddya	Professional ethics & Human Value	
		MAR-351-B	Vyavsayabhimukha Lekhanasathi Marathi	Professional ethics & Human Value	
		MAR-352	Maddyugin Marathi Wangmayacha Itihas	Professional ethics	
		GE Marathi - A	Marathi Lokrangbhumi	Professional ethics & Human Value	

  
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## 1.3. :List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 2: Subject: - English

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., Gender., H.V. & E. S.
2	F.Y.B.A.	CENG -101 & 201 Compulsory English	Where the mind is without fear	Human Value
			A quality of mercy	Human Value
			The Bangle Sellers	Gender
			The Lake Isle of Innis free	Human Value
	S.Y.B. A	CENG -301 & 401 Compulsory English	A Red Red Rose	Environmental Sustainability
			All the Worlds a Stage	Professional ethics
			Values in Life	Human Value
	T.Y.B.A.	DSE-3-A	Stopping by Woods on Snowy Evening	Environmental Sustainability
			Twentieth Century English Literature	Environmental Sustainability & Professional ethics
			DSE-3-B	Twentieth Century English Literature

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 3: Subject: -Hindi

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
3	Hindi	F. Y. B. A.	HIN -111-A	Hindi Samanya -1 (G-1)	Human Value
			HIN-121-A (G-2)	Hindi Samanya -2 (G-2)	Human Value
			DSCHIN A-1	Hindi Kahani	Human Value
			DSCHIN A-2	Hindi Kavita	Human Value
			HIN -231-A	Hindi Samanya -3 (G-3)	Human Value
			HIN -241-A	Hindi Samanya -4 (G-4)	Human Value
			DSC-1(C)A	Kathetter Gaddy Vidhaye	Professional ethics, Human Value & Gender
			DSC-1(D)A	Shreshath Hindi Ekankika	Professional ethics & Human Value
			HIN -351-A	Hindi Samanya -3 (G-3) - I	Human Value
			HIN -351-A	Hindi Samanya -3 (G-3) - II	Human Value
			T. Y. B. A.	DSC-E(A)	Vishesh Vidha - Yatra Sahitya

  
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## 1.3. :List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 4: Subject - History

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
4	F.Y.B.A.	HIS-G-101-A	History of India Freedom Movement	Professional ethics & Human Value
		HIS - G -201-1	History of India Freedom Movement	Professional ethics & Human Value
	S.Y.B.A.	DSC-HIS-231	History of Marathas	Professional ethics & Human Value
	T.Y.B.A.	SEC - 4 HIS - 364	An Introduction Museums in India	Professional ethics & Human Value
		GE-1 - B HIS - 365	Making of Contemporary India	Professional ethics & Human Value

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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 5: Subject: - Geography

Sr. No.	Programme Name	Course Code	Name Of Course	Addressed Issue P. E., G., H.V. & E. S.	
5	Geography	F.Y.B.Sc.	Gg. -101 Dsc	Introduction To Lithosphere	P. E., H.V. & E. S.
			Gg. -102 Dsc	Morphology of Landscape	P. E., H.V. & E. S.
			Gg. -201 Dsc	Atmosphere	P. E., H.V. & E. S.
			Gg-202	Hydrosphere	P. E., H.V. & E. S.
		S.Y. B.A.	Gg: 301 (Dsc)	Environmental Geography	P. E., H.V. & E. S. Gender
			Gg: 302 (Dsc)	Physical Geography of Maharashtra	P. E., H.V. & E. S. Gender
			Gg: 304 Sec I	Regional Planning And Development	P. E., H.V. & E. S. Gender
			Gg: 401 (Dsc)	Human Geography	P. E., H.V. & E. S. Gender
			Gg: 402 (Dsc)	Socio - Economic Geography Of Maharashtra	P. E., H.V. & E. S. Gender
			Gg-211- A - G2	Human Geography	P. E., H.V. & E. S. Gender
			Gg-211- B - G2	Geography Of Resources	P. E., H.V. & E. S. Gender
			Gg-212 - A - S1	Geography Of Tourism	P. E., H.V. & E. S. Gender

  
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## 1.3. :List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 6: Subject - Political Science

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
6	Political Science	F. Y. B. A.	C.C.POL - G-101 -I	Indian Constitution	Professional ethics & Human Value
			C.C.POL - G-201 -II	Indian Government	Professional ethics & Human Value
		S. Y. B. A.	DSC-1-B	Local Self Government	Professional ethics & Human Value
			DSC-1-C	Introduction to Administration of Maharashtra	Professional ethics & Human Value
		T. Y. B. A.	DSC-1-E	Indian Political Thinkers	Professional ethics & Human Value
			DSC-1-F	Indian Political Thinkers	Professional ethics & Human Value
			G.E.1A	Indian Civil Services	Professional ethics & Human Value
			G.E.1B	Indian Civil Services and Good Governance	Professional ethics & Human Value
			SEC3	Journalism and Mass communication	Professional ethics & Human Value
			SEC4	Political Journalism	Professional ethics & Human Value

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 7: Subject - Psychology

Sr. No.	Programme Name		Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
7	Psychology	F. Y. B. A.	Psy.101	Basic Principals in Psychology	Professional Ethics
			Psy.201	Fundamental Concepts of Psychology	Human Value
	S. Y. B. A.	Psy.231-C	Human Developmental Psychology- early Life	Human Value & Gender	
		Psy.232	Psychoneurotic Disorders	Human Value	
		Psy. 233	Psychopathology	Human Value	
		Psy. 241-D	Human Developmental Psychology- Later Life	Human Value & Gender	
		Psy.242	Psychotic disorder	Human Value	
		Psy.243	Psychological Practical	Human Value & Gender	

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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 8: Subject: - Economics

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
8	F.Y.B.A.	ECO-G-101-A	Introductory Economics	Professional ethics & Human Value
		ECO-G-201-A	Introductory Economics	Professional ethics & Human Value
	S.Y.B.A.	DSC-ECO - 231-C	Indian Economics Since 1980-I	Professional ethics & Human Value
		DSC-ECO - 241-D	Indian Economics Since 1980-II	Professional ethics & Human Value
	T.Y.B.A.	DSC-1 -E-351	Indian Economics Since 1980-III	Professional ethics & Human Value
		DSC-1 -F-361	Indian Economics Since 1980-IV	Professional ethics & Human Value

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 9: Subject - Chemistry

Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
Chemistry	F. Y. B. Sc.	CH-202	Basic Analytical Chemistry	Professional ethics & Human Value
	S. Y. B. Sc.	CH-304	Basic Analytical Chemistry	Professional ethics & Human Value
		CH -404	Advance Analytical Chemistry	Professional ethics, Human Value & Environmental Sustainability
	T. Y. B. Sc.	CH-504	Industrial Chemistry	Professional ethics & Human Value
		CH-506-A	Biochemistry	Professional ethics & Human Value
		CH-506-B	Green Chemistry	Professional ethics, Human Value & Environmental Sustainability
		CH-604	Chemistry of Industrially Important Products	Professional ethics & Human Value
		CH-606-A	Polymer Chemistry	Professional ethics, Human Value & Environmental Sustainability
	CH-606- B	Research Methodology for Chemistry	Professional ethics, Human Value & Environmental Sustainability	

  
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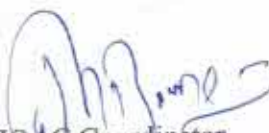




## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 10: Subject - Physics

Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
Physics	F. Y. B. Sc.	PHY101	Basic Mechanics	Professional ethics & Human Value
		PHY102	Dynamics And Properties of Matter	Professional ethics & Human Value
		PHY201	Electricity and Electrostatics	Professional ethics & Human Value
		PHY201	Dialectrics and Electromagnetism	Professional ethics & Human Value
	S. Y. B. Sc.	PHY301	Thermodynamics and Kinetic theory of Gases	Professional ethics & Human Value
		PHY302	Electronics –I or Instrumentation	Professional ethics & Human Value
		PHY401	Waves, Oscillations and acoustics	Professional ethics & Human Value
		PHY402	Optics and Lasers	Professional ethics, Human Value
	T. Y. B. Sc.	PHY505	Solar energy and Applications	Professional ethics, Human Value & Environmental Sustainability
		PHY506-A or PHY506-B	Technical Electronics- I Refrigeration and air conditioning	Professional ethics, Human Value & Environmental Sustainability
		PHY506-C	Vacuum technology & Microprocessor	Professional ethics & Human Value
		PHY603	Nuclear Physics	Professional ethics & Human Value

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 11: Subject - Botany

Programme Name		Course Code	Name of Course	Addressed Issue P, E., G., H.V. & E. S.
Botany	F. Y. B. Sc.	BOT-101	Diversity of Lower Cryptogams	Professional ethics & Human Value
	S. Y. B. Sc.	BOT-304	Mushroom Culture technology	Professional ethics & Human Value
		BOT-404	Nursery And Gardening	Professional ethics, Human Value & Environmental Sustainability
	T. Y. B. Sc.	BOT-504	Plant Physiology and Biochemistry	Professional ethics & Human Value
		BOT-505	Biofertilizer	Professional ethics, Human Value & Environmental Sustainability
		BOT-506	Horticulture	Professional ethics, Human Value & Environmental Sustainability
		BOT-604	Economic Botany	Professional ethics, Human Value & Environmental Sustainability
		BOT- 606.A	Herbal technology	Professional ethics, Human Value & Environmental Sustainability
	BOT- 606	Grading	Professional ethics, Human Value & Environmental Sustainability	

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS - 2019)

### 12: Subject -: Zoology

Programme Name		Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
Zoology	F. Y. B. Sc.	CCA-I - ZOO-101	Animal Diversity- I	Professional ethics, Human Value & Environmental Sustainability
		CCA-I - ZOO-102	Animal Diversity- II	Professional ethics, Human Value & Environmental Sustainability
		CCA-II - ZOO-201	Comparative Anatomy	Professional ethics & Human Value
		CCA-II - ZOO-202	Development Biology	Professional ethics & Human Value
	S. Y. B. Sc.	ZOO-301	Physiology	Professional ethics & Human Value
		ZOO-302	Biochemistry	Professional ethics & Human Value
		SEC-I	Apiculture	Professional ethics, Human Value & Environmental Sustainability
	DSC-I-D-CCA-IV	ZOO-401	Genetics	Professional ethics & Human Value
		ZOO-402	Evolutionary Biology	Professional ethics & Human Value
		SEC-II	Medical Diagnostic	Professional ethics & Human Value

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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS -2019)

### 13 Subject: - Mathematics

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
13	Mathematics F. Y. B. Sc.	MTHCC-A	MTH 101	Matrix Algebra	P. E. & H. V.
			MTH 102	Calculus	P.E. & H.V.
			MTH103(B)	Graph Theory	P.E. & H.V.
		MTHCC-B	MTH202	Theory of Equation	P.E. & H.V.
			MTH203(A)	Laplace Transform	P.E. & H.V.
			MTH203(B)	Numerical Analysis	P.E. & H.V.
	MTHCC-D	MTH402	Differential Equation	P.E. & H.V.	
	S. Y. B. Sc.	MTHCC-C	MTH302-(B)	Group Theory and Codes	P.E. & H.V.
			MTH304	Set Theory and Logic	P.E. & H.V.
		MTHCC-D	MTH402(A)	Differential Equations	P.E. & H.V.
			MTH402(B)	Differential Equations and Numerical Methods	P.E. & H.V.
SEC-2		MTH404	Vector Calculus	P.E. & H.V.	

  
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## 1.3.: List of Courses Addressing Cross Cutting Issues as Per New Syllabus (CBCS -2019)

### 14 Subject: - Environmental Studies

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
14	Environmental Studies	F.Y.B.A. & F. Y. B. Sc.	55555	Environmental Studies	Professional ethics, Environmental Sustainability & Human Value

  
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## 1.3. :List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 1: Subject: - Marathi

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
I	Marathi	F.Y.B.A.	DSC- MAR-I	Adhunik Gaddya va Pddya Wangmay Prakar	Professional ethics & Human Value
			DSC- MAR-II	Adhunik Gaddya va Pddya Wangmay Prakar	Professional ethics, Human Value & Gender
		S.Y.B.A.	MAR-213-A	Shetkryacha Aasud	Professional ethics & Human Value
			MAR-241-A	Jivan Rang	Professional ethics & Human Value
			MAR-232-A	Avkali Pavsachya Darmyanchi Goshta	Professional ethics & Human Value
			MAR-242-B	Maze vidyapith	Professional ethics & Human Value
	T.Y.B.A.	DSC Marathi-F	Lalit Gaddya	Professional ethics & Human Value	
		MAR-351-B	Vyavsayabhimukha Lekhanasathi Marathi	Professional ethics & Human Value	
		MAR-352	Maddyugin Marathi Wangmayacha Itihas	Professional ethics	
		GE Marathi - A	Marathi Lokrangbhumi	Professional ethics & Human Value	

  
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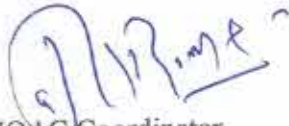




## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 2: Subject: - English

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., Gender., H.V. & E. S.	
2	English	F.Y.B.A. Compulsory English	Where the mind is without fear	Human Value	
			A quality of mercy	Human Value	
			The Bangle Sellers	Gender	
			The Lake Isle of Innis free	Human Value	
		S.Y.B. A	CENG -301 & 401 Compulsory English	A Red Red Rose	Environmental Sustainability
				All the Worlds a Stage	Professional ethics
				Values in Life	Human Value
		T.Y.B.A.	DSE-3-A	Stopping by Woods on Snowy Evening	Environmental Sustainability
				Twentieth Century English Literature	Environmental Sustainability & Professional ethics
				Twentieth Century English Literature	Environmental sustainability & Professional ethics
T.Y.B.A.	DSE-3-B	Twentieth Century English Literature	Environmental sustainability & Professional ethics		
		Twentieth Century English Literature	Environmental sustainability & Professional ethics		

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 5: Subject: - Geography

Sr. No.	Programme Name	Course Code	Name Of Course	Addressed Issue P. E., G., H.V. & E. S.	
5	Geography	F.Y.B.Sc.	Gg. -101 Dsc	Introduction To Lithosphere	P. E., H.V. & E. S.
			Gg. -102 Dsc	Morphology of Landscape	P. E., H.V. & E. S.
			Gg. -201 Dsc	Atmosphere	P. E., H.V. & E. S.
			Gg-202	Hydrosphere	P. E., H.V. & E. S.
		S.Y. B.A.	Gg: 301 (Dsc)	Environmental Geography	P. E., H.V. & E. S. Gender
			Gg: 302 (Dsc)	Physical Geography of Maharashtra	P. E., H.V. & E. S. Gender
			Gg: 304 Sec I	Regional Planning And Development	P. E., H.V. & E. S. Gender
			Gg: 401 (Dsc)	Human Geography	P. E., H.V. & E. S. Gender
			Gg: 402 (Dsc)	Socio - Economic Geography Of Maharashtra	P. E., H.V. & E. S. Gender
			Gg-211- A - G2	Human Geography	P. E., H.V. & E. S. Gender
			Gg-211- B - G2	Geography Of Resources	P. E., H.V. & E. S. Gender
			Gg-212 - A - S1	Geography Of Tourism	P. E., H.V. & E. S. Gender

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 4: Subject - History

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
4	History	F.Y.B.A.	HIS-G-101-A History of India Freedom Movement	Professional ethics & Human Value
			HIS - G -201-1 History of India Freedom Movement	Professional ethics & Human Value
		S.Y.B.A.	DSC-HIS-231 History of Marathas	Professional ethics & Human Value
		T.Y.B.A.	SEC - 4 HIS - 364 An Introduction Museums in India	Professional ethics & Human Value
			GE-1 - B HIS - 365 Making of Contemporary India	Professional ethics & Human Value

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 3: Subject: -Hindi

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
3	Hindi	F. Y. B. A.	HIN -111-A	Hindi Samanya -1 (G-1)	Human Value
			HIN-121-A (G-2)	Hindi Samanya -2 (G-2)	Human Value
			DSCHIN A-1	Hindi Kahani	Human Value
			DSCHIN A-2	Hindi Kavita	Human Value
			HIN -231-A	Hindi Samanya -3 (G-3)	Human Value
			HIN -241-A	Hindi Samanya -4 (G-4)	Human Value
		S. Y. B. A.	DSC-1(C)A	Kathetter Gaddy Vidhaye	Professional ethics, Human Value & Gender
			DSC-1(D)A	Shreshath Hindi Ekankika	Professional ethics & Human Value
		T. Y. B. A.	HIN -351-A	Hindi Samanya -3 (G-3) - I	Human Value
			HIN -351-A	Hindi Samanya -3 (G-3) - II	Human Value
		T. Y. B. A.	DSC-E(A)	Vishesh Vidha - Yatra Sahittyta	Environmental Sustainability

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 6: Subject - Political Science

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
6	Political Science	F. Y. B. A.	C.C.POL - G-101 -I	Indian Constitution	Professional ethics & Human Value
			C.C.POL - G-201 -II	Indian Government	Professional ethics & Human Value
		S. Y. B. A.	DSC-1-B	Local Self Government	Professional ethics & Human Value
			DSC-1-C	Introduction to Administration of Maharashtra	Professional ethics & Human Value
		T. Y. B. A.	DSC-1-E	Indian Political Thinkers	Professional ethics & Human Value
			DSC-1-F	Indian Political Thinkers	Professional ethics & Human Value
			G.E.1A	Indian Civil Services	Professional ethics & Human Value
			G.E.1B	Indian Civil Services and Good Governance	Professional ethics & Human Value
			SEC3	Journalism and Mass communication	Professional ethics & Human Value
			SEC4	Political Journalism	Professional ethics & Human Value

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 7: Subject - Psychology

Sr. No.	Programme Name		Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
7	Psychology	F. Y. B. A.	Psy.101	Basic Principals in Psychology	Professional Ethics
			Psy.201	Fundamental Concepts of Psychology	Human Value
	S. Y. B. A.	Psy.231-C	Human Developmental Psychology- early Life	Human Value & Gender	
		Psy.232	Psychoneurotic Disorders	Human Value	
		Psy. 233	Psychopathology	Human Value	
		Psy. 241-D	Human Developmental Psychology- Later Life	Human Value & Gender	
		Psy.242	Psychotic disorder	Human Value	
		Psy.243	Psychological Practical	Human Value & Gender	

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 8: Subject - Economics

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
8	F.Y.B.A.	ECO-G-101-A	Introductory Economics	Professional ethics & Human Value
		ECO-G-201-A	Introductory Economics	Professional ethics & Human Value
	S.Y.B.A.	DSC-ECO - 231-C	Indian Economics Since 1980-I	Professional ethics & Human Value
		DSC-ECO - 241-D	Indian Economics Since 1980-II	Professional ethics & Human Value
	T.Y.B.A.	DSC-1 -E-351	Indian Economics Since 1980-III	Professional ethics & Human Value
		DSC-1 -F-361	Indian Economics Since 1980-IV	Professional ethics & Human Value

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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 9: Subject - Chemistry

Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
Chemistry	F. Y. B. Sc.	CH-202	Basic Analytical Chemistry	Professional ethics & Human Value
	S. Y. B. Sc.	CH-304	Basic Analytical Chemistry	Professional ethics & Human Value
		CH -404	Advance Analytical Chemistry	Professional ethics, Human Value & Environmental Sustainability
	T. Y. B. Sc.	CH-504	Industrial Chemistry	Professional ethics & Human Value
		CH-506-A	Biochemistry	Professional ethics & Human Value
		CH-506-B	Green Chemistry	Professional ethics, Human Value & Environmental Sustainability
		CH-604	Chemistry of Industrially Important Products	Professional ethics & Human Value
		CH-606-A	Polymer Chemistry	Professional ethics, Human Value & Environmental Sustainability
	CH-606- B	Research Methodology for Chemistry	Professional ethics, Human Value & Environmental Sustainability	

  
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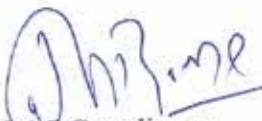




## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 10: Subject - Physics

Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
Physics	F. Y. B. Sc.	PHY101	Basic Mechanics	Professional ethics & Human Value
		PHY102	Dynamics And Properties of Matter	Professional ethics & Human Value
		PHY201	Electricity and Electrostatics	Professional ethics & Human Value
		PHY201	Dialectrics and Electromagnetism	Professional ethics & Human Value
	S. Y. B. Sc.	PHY301	Thermodynamics and Kinetic theory of Gases	Professional ethics & Human Value
		PHY302	Electronics –I or Instrumentation	Professional ethics & Human Value
		PHY401	Waves, Oscillations and acoustics	Professional ethics & Human Value
		PHY402	Optics and Lasers	Professional ethics, Human Value
	T. Y. B. Sc.	PHY505	Solar energy and Applications	Professional ethics, Human Value & Environmental Sustainability
		PHY506-A or PHY506-B	Technical Electronics- I Refrigeration and air conditioning	Professional ethics, Human Value & Environmental Sustainability
		PHY506-C	Vacuum technology & Microprocessor	Professional ethics & Human Value
		PHY603	Nuclear Physics	Professional ethics & Human Value

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 11: Subject - Botany

Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
Botany	F. Y. B. Sc.	BOT-101	Diversity of Lower Cryptogams	Professional ethics & Human Value
	S. Y. B. Sc.	BOT-304	Mushroom Culture technology	Professional ethics & Human Value
		BOT-404	Nursery And Gardening	Professional ethics, Human Value & Environmental Sustainability
	T. Y. B. Sc.	BOT-504	Plant Physiology and Biochemistry	Professional ethics & Human Value
		BOT-505	Biofertilizer	Professional ethics, Human Value & Environmental Sustainability
		BOT-506	Horticulture	Professional ethics, Human Value & Environmental Sustainability
		BOT-604	Economic Botany	Professional ethics, Human Value & Environmental Sustainability
		BOT- 606.A	Herbal technology	Professional ethics, Human Value & Environmental Sustainability
	BOT- 606	Grading	Professional ethics, Human Value & Environmental Sustainability	

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 12: Subject -: Zoology

Programme Name		Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
Zoology	F. Y. B. Sc.	CCA-I - ZOO-101	Animal Diversity- I	Professional ethics, Human Value & Environmental Sustainability
		CCA-I - ZOO-102	Animal Diversity- II	Professional ethics, Human Value & Environmental Sustainability
		CCA-II - ZOO-201	Comparative Anatomy	Professional ethics & Human Value
		CCA-II - ZOO-202	Development Biology	Professional ethics & Human Value
	S. Y. B. Sc.	ZOO-301	Physiology	Professional ethics & Human Value
		ZOO-302	Biochemistry	Professional ethics & Human Value
	DSC-I-C-CCA-III	SEC-I	Apiculture	Professional ethics, Human Value & Environmental Sustainability
		ZOO-401	Genetics	Professional ethics & Human Value
	DSC-I-D-CCA-IV	ZOO-402	Evolutionary Biology	Professional ethics & Human Value
		SEC-II	Medical Diagnostic	Professional ethics & Human Value

  
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## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 13 Subject: - Mathematics

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.	
13	Mathematics F. Y. B. Sc.	MTHCC-A	MTH 101	Matrix Algebra	P. E. & H. V.
			MTH 102	Calculus	P.E. & H.V.
			MTH103(B)	Graph Theory	P.E. & H.V.
		MTHCC-B	MTH202	Theory of Equation	P.E. & H.V.
			MTH203(A)	Laplace Transform	P.E. & H.V.
			MTH203(B)	Numerical Analysis	P.E. & H.V.
	MTHCC-D	MTH402	Differential Equation	P.E. & H.V.	
	S. Y. B. Sc.	MTHCC-C	MTH302-(B)	Group Theory and Codes	P.E. & H.V.
			MTH304	Set Theory and Logic	P.E. & H.V.
		MTHCC-D	MTH402(A)	Differential Equations	P.E. & H.V.
			MTH402(B)	Differential Equations and Numerical Methods	P.E. & H.V.
		SEC-2	MTH404	Vector Calculus	P.E. & H.V.

  
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Outward No.

Date : / / 20

## 1.3. List of Courses Addressing Cross Cutting Issues as Per Syllabus

### 14 Subject: - Environmental Studies

Sr. No.	Programme Name		Course Code	Name of Course	Addressed Issue P. E., G., H.V. & E. S.
14	Environmental Studies	F.Y.B.A. & F. Y. B. Sc.	55555	Environmental Studies	Professional ethics, Environmental Sustainability & Human Value

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Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchallit



**Rani Laxmibai Mahavidyalaya Parola**

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Email : [principalrparola@gmail.com](mailto:principalrparola@gmail.com)

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Date : / / 20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in Transacting the Curriculum.



सत्र दुसरे

आधुनिक गद्य व पद्य वाङ्मयप्रकार: स्वरूपविचार  
(श्रेयांक - तीन)



नेमलेली साहित्यकृती:

'खान्देश रत्नावली' - संपादन: मराठी अभ्यासमंडळ, कबचौ उमवि, जळगाव.  
प्रकाशक - प्रशांत पब्लिकेशन्स, जळगाव.

## • अभ्यासक्रमाची उद्दिष्टे -

1. प्रमुख गद्य व पद्य वाङ्मयप्रकारांच्या स्वरूपाचा परिचय करून घेणे.
2. खान्देशातील निवडक लेखकांच्या निवडक गद्य वाङ्मयप्रकारांतील वाङ्मयनिर्मितीचे स्वरूपविशेष अभ्यासणे.
3. खान्देशातील निवडक लेखकांच्या निवडक पद्य वाङ्मयप्रकारांतील वाङ्मयनिर्मितीचे स्वरूपविशेष अभ्यासणे.

## • घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	वाङ्मय आणि वाङ्मयप्रकार	01	15
	1.1 प्रमुख वाङ्मयप्रकार: गद्य आणि पद्य		
	1.1.1 चरित्र, प्रवासवर्णन, पत्रलेखन, सदरलेखन आणि ललित निबंध या आधुनिक गद्य वाङ्मयप्रकारांच्या स्वरूपाचा परिचय		
	1.1.2 छंदोबद्ध रचना (अष्टाक्षरी छंद), खंडकाव्य, मुक्तछंद, गझल आणि हायकु या आधुनिक पद्य वाङ्मयप्रकारांच्या स्वरूपाचा परिचय		
2.	'खान्देश रत्नावली' या पुस्तकातील खालील गद्यलेखनाचा अभ्यास	01	15
	गद्य वाङ्मयप्रकार	लेखन	लेखक
✓ 2.1	चरित्र	'चले जात-९ ऑगस्ट १९४२'	मंदाकिनी टोणगावकर (संपादन)
2.2	प्रवासवर्णन	'प्रवास दक्षिण भारताचा'	गो. तु. पाटील
2.3	पत्रलेखन	'काचेचं मन'	गणेश चौधरी
2.4	सदरलेखन	'चुना लगाके !'	जे. जी. खैरनार



• घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	वाङ्मय आणि वाङ्मयप्रकार	01	15
1.1	वाङ्मय म्हणजे काय ? वाङ्मयप्रकाराची संकल्पना		
1.2	प्रमुख वाङ्मयप्रकार: गद्य आणि पद्य		
1.2.1	व्यक्तिचित्र, वैचारिक लेख, एकांकिका, आत्मचरित्र आणि कथा या आधुनिक गद्य वाङ्मयप्रकारांच्या स्वरूपाचा परिचय		
1.2.2	वृत्तबद्ध रचना (पादाकुलक वृत्त), रुबाई, मुक्तछंद, अभंग आणि दीर्घ कविता या आधुनिक पद्य वाङ्मयप्रकारांच्या स्वरूपाचा परिचय		
2.	'खान्देश रत्नावली' या पुस्तकातील खालील गद्यलेखनाचा अभ्यास	01	15
	गद्य वाङ्मयप्रकार	लेखन	लेखक
2.1	व्यक्तिचित्र	परिनिवृत्त 'विद्याभारकर' गणेशकर उपाध्याय	शरद पाटील
2.2	वैचारिक लेख	'शिक्षण जगातील नाही !'	पुरुषोत्तम पाटील
2.3	एकांकिका	'बे दाही शुभ'	अनिल सोनार
2.4	आत्मचरित्र	'जर का तू नापास झाला...!'	राजेश पाटील
2.5	कथा	'दफ्तर'	राहुल निकम
3.	'खान्देश रत्नावली' या पुस्तकातील खालील पद्यलेखनाचा अभ्यास	01	15
	पद्य वाङ्मयप्रकार	लेखन	लेखक
3.1	वृत्तबद्ध रचना	'फुलराणी' (पादाकुलक वृत्त)	बालकवी
3.2	रुबाई	'मी जीवन शोधित फिरलो'	राजा महाजन
3.3	मुक्तछंद	'पांभरी सज्ज ठेवू या'	उत्तम कोळगावकर
3.4	अभंग	'सावळा'	बी. एन्. चौधरी
3.5	दीर्घ कविता	'बायकांवरील पुस्तकांच्या जाहिराती वाचताना'	मीनाक्षी पाटील
	एकूण श्रेयांक व घड्याळी तासिका		03 45





कवयित्री वहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव

मानव्यविज्ञान विद्याशाखा

Choice Based Credit System

द्वितीय वर्ष कला

मराठी

सत्र तिसरे व चौथे

(जून २०१९ पासून लागू)

DSC मराठी : वाङ्मयीन मराठी  
विशिष्ट वाङ्मयप्रकारांचा अभ्यास  
(श्रेयांक: दोन)

सत्र तिसरे

MAR २३१ A

DSC मराठी C: वैचारिक गद्यलेखनाचा अभ्यास

नेमलेली साहित्यकृती: 'शेतकऱ्याचा असूड' - महात्मा जोतीराव फुले  
संपादन व प्रस्तावना: नागनाथ कोत्तापल्ले, मेहता पब्लिशिंग हाऊस, पुणे.

● अभ्यासक्रमाची उद्दिष्टे -

१. मराठीतील वैचारिक गद्यलेखनाच्या परंपरेचा परिचय करून घेणे.
२. महात्मा जोतीराव फुले यांचे जीवन, कार्य व त्यांची वैचारिक जडणघडण यांबाबत जाणून घेणे.
३. महात्मा जोतीराव फुले यांच्या लेखनसंपदेबाबत माहिती घेणे.
४. 'शेतकऱ्याचा असूड'मधील वैचारिक आशयाची स्वरूपवैशिष्ट्ये समजावून घेणे.
५. 'शेतकऱ्याचा असूड' या वैचारिक गद्यलेखनाच्या वाङ्मयीन गुणवैशिष्ट्यांचा शोध घेणे.
६. 'शेतकऱ्याचा असूड'मधून आलेल्या वैचारिक मांडणीची समकालीन अर्थपूर्णता प्रात्यक्षिकांच्या माध्यमातून जाणून घेणे.

● घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
१.	'शेतकऱ्याचा असूड' या वैचारिक गद्यलेखनाचा अभ्यास	०१	१५
	१.१ वैचारिक गद्य: स्वरूप व वैशिष्ट्ये		
	१.२ मराठीतील वैचारिक गद्यलेखनाचा परामर्श		
	१.३ महात्मा जोतीराव फुले: व्यक्तित्व, कार्य आणि लेखन		



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S.Y. B.A. वाड्मयीनि मराठी

अभ्यासक्रम - ५ वे सत्र



६. 'जीवनरंग' या पुस्तकातील निवडक चरित्रपर लेखांची वाड्मयीन गुणवैशिष्ट्ये लक्षात घेणे.
७. 'जीवनरंग' या पुस्तकातील निवडक आत्मचरित्रपर लेखांची वाड्मयीन गुणवैशिष्ट्ये लक्षात घेणे.
८. चरित्र-आत्मचरित्रपर लेखनाची सामाजिक वैशिष्ट्यपूर्णता आणि लेखनपध्दती यांबाबत प्रात्यक्षिकांच्या माध्यमातून जाणून घेणे.

● घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
१.	✓ 'जीवनरंग' मधील चरित्र-आत्मचरित्रपर लेखांचा अभ्यास	०१	१५
	१.१ चरित्र व आत्मचरित्र: स्वरूप व वैशिष्ट्ये		
	१.२ मराठीतील चरित्र व आत्मचरित्र लेखनाचा परामर्श		
	१.३ 'जीवनरंग' मधील चरित्र-आत्मचरित्रपर लेख: स्वरूप व वैशिष्ट्ये १. चरित्र व आत्मचरित्रपर लेखांच्या आशयाचे स्वरूप, वैशिष्ट्ये (चरित्रनायक / मीचे घडणारे दर्शन, व्यक्तिचित्रण, प्रसंगवर्णन) २. चरित्र व आत्मचरित्रपर लेखांची वाड्मयीन गुणवैशिष्ट्ये (वस्तुनिष्ठा, सत्यदर्शन, अनुभवाची मांडणी, लेखनशैली, भाषिक वैशिष्ट्ये)		
२.	प्रात्यक्षिके (कोणतीही चार)	०१	१५
	१. स्वतःच्या आयुष्यातील एखाद्या प्रसंगाबाबत लेखन करा.	०१ Credit of Practical = ०२ Credits	३०
	२. आवडलेल्या एखाद्या चरित्रग्रंथाचे परीक्षण करा.		
	३. आवडलेल्या एखाद्या आत्मचरित्राचे परीक्षण करा.		
	४. तुमच्या कुटुंबातील व्यक्तींची स्वभाववैशिष्ट्ये लिहा.		
	५. एका आठवड्याची वैयक्तिक रोजनिशी लिहा.		
	६. तुमच्या परिसरातील सामाजिक कार्य करणाऱ्या एखाद्या हयात वा मृत व्यक्तीच्या चरित्राविषयी माहिती संकलित करून लिहा.		
	७. शिक्षणक्षेत्रात मौलिक कामगिरी करणाऱ्या		

कवित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
मानव्यविज्ञान विद्याशाखा  
Choice Based Credit System  
द्वितीय वर्ष कला  
मराठी  
सत्र तिसरे व चौथे  
(जून २०१९ पासून लागू)



DSE मराठी १: आधुनिक वाङ्मयप्रकारांचा अभ्यास  
(श्रेयांक: तीन)

सत्र तिसरे

MAR २३२

✓ DSE मराठी १ A: आधुनिक वाङ्मयप्रकार: कादंबरी

- कादंबरी: 'अवकाळी पावसाच्या दरम्यानची गोष्ट' - आनंद विंगकर, लोकवाङ्मय गृह, मुंबई.
- अभ्यासक्रमाची उद्दिष्टे -
  १. कादंबरी या वाङ्मयप्रकाराचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे.
  २. आधुनिक मराठी कादंबरीच्या वाटचालीचा परामर्श घेणे.
  ३. 'अवकाळी पावसाच्या दरम्यानची गोष्ट' या कादंबरीतील ग्रामीण जीवनवास्तवाचे स्वरूप लक्षात घेणे.
  ४. 'अवकाळी पावसाच्या दरम्यानची गोष्ट' या कादंबरीचे वाङ्मयीन मूल्यमापन करणे.
  ५. कादंबरीचे वाङ्मयीन आकलन व मूल्यमापन करून घेण्याची दृष्टी विकसित करणे.

• घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
१.	पार्श्वभूमी	०१	१५
	१.१ कादंबरी: स्वरूप व वैशिष्ट्ये		
	१.२ आधुनिक मराठी कादंबरीची वाटचाल (स्वातंत्र्यपूर्व काळातील कादंबरी आणि स्वातंत्र्योत्तर काळातील कादंबरी - ठळक टप्प्यांच्या अनुषंगाने परामर्श)		



१९. जागतिकीकरण आणि शेतीचे प्रश्न, रघुनाथदादा पाटील, समाविष्ट - जागतिकीकरण आणि वर्तमान आव्हाने, संपा. एकनाथ पाटील, नाग-नालंदा प्रकाशन, इस्लामपूर, पृ. ४६-४८.
२०. भारतीय शेतीतलं अरिष्ट, अच्युत गोडबोले, समाविष्ट - जागतिकीकरण आणि वर्तमान आव्हाने, संपा. एकनाथ पाटील, नाग-नालंदा प्रकाशन, इस्लामपूर, पृ. ४९-५७.



सत्र चौथे

MAR २४२ - ४

DSE मराठी १ B: आधुनिक वाङ्मयप्रकार: कविता

• कवितासंग्रह :

'माझे विद्यापीठ' - नारायण सुर्वे, पॉप्युलर प्रकाशन प्रा. लि., मुंबई

• अभ्यासक्रमाची उद्दिष्टे -

१. कविता या वाङ्मयप्रकाराचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे.
२. आधुनिक मराठी कवितेच्या वाटचालीचा परामर्श घेणे.
३. 'माझे विद्यापीठ' या कवितासंग्रहातील विविध जीवनजाणिवांचा शोध घेणे.
४. 'माझे विद्यापीठ' या कवितासंग्रहाचे वाङ्मयीन मूल्यमापन करणे.
५. कवितेचे वाङ्मयीन आकलन व मूल्यमापन करण्याची दृष्टी विकसित करणे.

• घटक विश्लेषण -

घटक	श्रेयांक	घड्याळी तासिका
<b>पार्श्वभूमी</b>	०१	१५
१.१ कविता: स्वरूप व वैशिष्ट्ये •		
१.२ आधुनिक मराठी कवितेची वाटचाल (स्वातंत्र्यपूर्व काळातील कविता आणि स्वातंत्र्योत्तर काळातील कविता यांचा परामर्श)		
<b>'माझे विद्यापीठ': स्वरूप व वैशिष्ट्ये</b>	०१	१५
२.१ 'माझे विद्यापीठ' या संग्रहातील कवितेतून घडणारे कामगारविश्वाचे दर्शन		
२.२ 'माझे विद्यापीठ' या संग्रहातील कवितेतून व्यक्त झालेली मार्क्सवादी जाणीव		
२.३ 'माझे विद्यापीठ' या संग्रहातील कवितेतून व्यक्त झालेली महानगरीय जाणीव		
<b>'माझे विद्यापीठ': स्वरूप व वैशिष्ट्ये</b>	०१	१५
३.१ 'माझे विद्यापीठ' या संग्रहातील कवितेतून घडणारे स्त्रीदर्शन		
३.२ 'माझे विद्यापीठ' या संग्रहातील कवितेची भाषा व काव्यरचनाविशेष		
<b>एकूण श्रेयांक व घड्याळी तासिका</b>	<b>०३</b>	<b>४५</b>



सत्र सहावे  
DSC Marathi F : ललित गद्य लेखनाचा अभ्यास  
(श्रेयांक - तीन)



ललित गद्य लेखनाचा अभ्यास  
'ललितरंग' (स्त्रीविषयक निवडक ललित गद्य)

सांगणन: मराठी अभ्यासमंडळ, कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव.  
(सदर पुस्तकात सहा ललित गद्य लेखांचा समावेश असेल.)

• अभ्यासक्रमाची उद्दिष्टे-

1. ललित गद्य या वाङ्मयप्रकाराची संकल्पना, त्याचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे.
2. मराठीतील ललित गद्य लेखनाच्या वाटचालीचा परामर्श घेणे.
3. ललित गद्य लेखनातील विविध प्रकारांची, त्यांच्या बदलत्या रूपांची माहिती करून घेणे.
4. स्त्रीविषयक निवडक ललित गद्य लेखनाचा अभ्यास करणे.

• घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	1.1 ललित गद्य: संकल्पना, स्वरूप व वैशिष्ट्ये	01	15
	1.2 मराठी ललित गद्य लेखनाचा परामर्श		
	1.2.1 सन 1950 पूर्वीचे मराठी ललित गद्य (लघुनिबंध)		
	1.2.2 सन 1950 नंतरचे मराठी ललित गद्य (ललित निबंध)		
	1.2.3 सन 1975 नंतरचे ललित गद्य (लेखनाचे विविधांगी स्वरूप)		
2.	'ललितरंग' या पुस्तकातील (क्र. एक ते तीन) ललित गद्य लेखांचा अभ्यास (लेखनातील 'मी', अनुभवाचे स्वरूप - भावनात्मकता व चिंतनशीलता, स्त्रीजीवनाचे दर्शन, निवेदन, भाषिक व शैली विशेष, मांडणी या मुद्द्यांच्या अनुषंगाने)	01	15
3.	'ललितरंग' या पुस्तकातील (क्र. चार ते सहा) ललित गद्य लेखांचा अभ्यास (लेखनातील 'मी', अनुभवाचे स्वरूप - भावनात्मकता व चिंतनशीलता, स्त्रीजीवनाचे दर्शन, निवेदन, भाषिक व शैली विशेष, मांडणी या मुद्द्यांच्या अनुषंगाने)	01	15
	एकूण श्रेयांक व घड्याळी तासिका	03	45



## पर्यायी अभ्यासपत्रिका

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
मानव्यविज्ञान विद्याशाखा

Choice Based Credit System

तृतीय वर्ष कला - मराठी

सत्र पाचवे व सहावे

(शैक्षणिक वर्ष 2020 - 2021 पासून लागू)



DSC Marathi

उपयोजित मराठी

व्यवसायाभिमुख लेखनासाठी मराठी

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सत्र पाचवे

✓ DSC Marathi E : व्यवसायाभिमुख लेखनासाठी मराठी  
(श्रेयांक - तीन)

• अभ्यासक्रमाची उद्दिष्टे-

1. व्यावसायिक लेखनासाठी मराठी भाषेचे उपयोजन करण्यास शिकणे.
2. अहवाल लेखनाचे स्वरूप जाणून असे लेखन करणे.
3. संपादन प्रक्रियेची माहिती घेऊन त्या प्रक्रियेचा अनुभव घेणे.
4. प्रकाशन व्यवसायाबाबत जाणून घेऊन त्याच्याशी संबंधित विविध कामांची माहिती घेणे.

• घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	अहवाल लेखन	01	15
	1.1 अहवाल लेखन: स्वरूप, घटक व वैशिष्ट्ये		
	1.2 अहवाल लेखकाच्या अंगी आवश्यक गुण		
	1.3 अहवालांचे स्वरूप: वाङ्मयमंडळ, मराठी विभाग कार्यक्रम, शैक्षणिक सहल, राष्ट्रीय सेवा योजना शिबीर, युवती सभा कार्यक्रम		
1.4 उपयोजन - वर नमूद केलेल्यांपैकी कोणत्याही एका प्रकारच्या अहवालाचे लेखन करा.			
2.	संपादन: स्वरूप व प्रक्रिया	01	15
	2.1 संपादन: प्रयोजन व भूमिका		
	2.2 संपादन: नियोजन, पूर्वतयारी व संपादकाच्या अंगी आवश्यक गुण		



कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
मानव्यविज्ञान विद्याशाखा  
Choice Based Credit System  
तृतीय वर्ष कला - मराठी  
सत्र पाचवे व सहावे



(शैक्षणिक वर्ष 2020 - 2021 पासून लागू)

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DSE 3 Marathi

✓ मध्ययुगीन मराठी वाङ्मयाचा इतिहास

सत्र पाचवे

DSE Marathi 3 A: मध्ययुगीन मराठी वाङ्मयाचा इतिहास  
(श्रेयांक - तीन)

• अभ्यासक्रमाची उद्दिष्टे-

1. मध्ययुगीन मराठी वाङ्मयाच्या इतिहासाचा परिचय करून घेणे.
2. मध्ययुगीन मराठी वाङ्मयाच्या निर्मितीमागील प्रेरणा जाणून घेणे.
3. महानुभाव संप्रदायाच्या वाङ्मयनिर्मितीचे स्वरूप लक्षात घेऊन त्याची वैशिष्ट्ये जाणून घेणे.
4. शाहिरी काव्याचे स्वरूप लक्षात घेऊन त्याची ठळक वैशिष्ट्ये जाणून घेणे.
5. निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय करून घेणे.

• घटक विश्लेषण -

क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	महानुभाव संप्रदायाची वाङ्मयनिर्मिती	01	15
	1.1 महानुभाव संप्रदाय: तत्त्वज्ञान व आचारधर्म		
	1.2 महानुभाव संप्रदायाच्या पद्य व गद्य वाङ्मयाचा परिचय		
	1.3 महानुभाव संप्रदायाच्या वाङ्मयाची ठळक वैशिष्ट्ये		
2.	शाहिरींची वाङ्मयनिर्मिती	01	15
	2.1 शाहिरी काव्य: प्रेरणा व भूमिका		
	2.2 शाहिरींच्या पोवाडा व लावणी वाङ्मयाचा परिचय		
	2.3 शाहिरी काव्याची ठळक वैशिष्ट्ये		
3.	निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय	01	15
	3.1 म्हाईभट		
	3.2 'दृष्टांतपाठ'		
	3.3 अनंत फंदी		
	3.4 'सुंदरा मनामध्ये भरली...'		
	एकूण श्रेयांक व घड्याळी तासिका	03	45



कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
मानव्यविज्ञान विद्याशाखा  
Choice Based Credit System  
तृतीय वर्ष कला - मराठी  
सत्र पाचवे व सहावे  
(शैक्षणिक वर्ष 2020 - 2021 पासून लागू)



GE Marathi  
मराठी लोकरंगभूमी

सत्र पाचवे

GE Marathi A : मराठी लोकरंगभूमी  
(श्रेयांक - तीन)

• अभ्यासक्रमाची उद्दिष्टे-

1. लोकरंगभूमीची संकल्पना जाणून घेणे.
2. लोकरंगभूमीचे स्वरूप जाणून घेऊन वैशिष्ट्यांचा परिचय करून घेणे.
3. लोकसाहित्य आणि लोकरंगभूमी यांचे परस्परसंबंध समजून घेणे.
4. कीर्तन आणि भारुड या लोकरंगभूमीच्या पारंपरिक रूपांची स्वरूपवैशिष्ट्ये जाणून घेणे.
5. खान्देशी वही आणि कोकणी दशावतार या लोकरंगभूमीच्या प्रादेशिक प्रकारांची स्वरूपवैशिष्ट्ये जाणून घेणे.

• घटक विश्लेषण -

घटक क्र.	घटक	श्रेयांक	घड्याळी तासिका
1.	लोकरंगभूमी: संकल्पना व स्वरूप 1.1 लोकरंगभूमी: संकल्पना 1.2 लोकरंगभूमी: स्वरूप व वैशिष्ट्ये 1.3 लोकसाहित्य व लोकरंगभूमी: परस्परसंबंध	01	15
2.	लोकरंगभूमी: पारंपरिक रूपे 2.1 कीर्तन: भूमिका, स्वरूप, प्रकार व वैशिष्ट्ये 2.2 भारुड: भूमिका, स्वरूप, प्रकार व वैशिष्ट्ये	01	15
3.	लोकरंगभूमी: प्रादेशिक रूपे 3.1 वही (खान्देशी): स्वरूप व वैशिष्ट्ये 3.2 दशावतार (कोकणी): स्वरूप व वैशिष्ट्ये	01	15
एकूण श्रेयांक व घड्याळी तासिका		03	



**FYBA Compulsory English**  
**CENG-101 & 201**  
**Syllabus (w.e.f. 2022-23)**

**Course Credits:** 3 per Semester  
**Lectures Required:** 45 hrs

**Examination Marks:** External (60) + Internal (40)

**Course Objectives:**

- To introduce students with prose and poetic forms in English literature
- To enable students learn and appreciate literature and its genres like prose, short story, and poetry.
- To provide students opportunity to learn English language Communication skills in and outside classroom situation
- To help the students practice English grammar and make correct use in everyday English communication

**Semester-I**

**Unit:1 Prose**

- a. The Mark of Vishnu- Khushwant Singh
- b. A Cup of Tea- Katherine Mansfield
- c. India's Message to the World- Swami Vivekanand

**Unit:2 Poetry**

- a. Where the Mind is Without Fear- Rabindranath Tagore
- b. A Quality of Mercy- William Shakespeare
- c. The Bangle Sellers- Sarojini Naidu
- d. The Lake Isle of Innisfree- W.B. Yeats

Grander

**Unit:3 Communication Skills**

- a. Comprehension
- b. Introduce Yourself
- c. Information Transfer- Verbal to Non-verbal

**Unit:4 Grammar**

- a. Parts of Speech:
  - i) Noun
  - ii) Pronoun
  - iii) Verb
  - iv) Adverb
- d. Articles



S.Y.B.A. Compulsory English

Text- English for Humanities



External – 60 marks

Internal- 40 marks

Semester-III-

Credits -03 (45 clock hours)

Unit 1 – Literature

I) Short Stories:

1. The Lady or a Tiger?: Frank R. Stockton
2. Kabuliwala: Rabindranath Tagore

II) Essays:

1. Spoken English, Broken English: G. B. Shaw
2. Modern Improvements: John Ruskin

III) Poems:

1. A Red Red Rose: Robert Burns
2. All the world's a Stage: William Shakespeare

Unit 2 - Word Formation

1. Affixation
2. Compound Words

Unit 3 - Skills in writing

1. SMS
2. E-Mail
3. Net Lingo



## Sem. IV- Compulsory English

Credits – 03 (45 clock hours)

### Unit 1 - Literature

#### I) Short Stories:

1. Salt Inspector: Premchand
2. All About a Dog: A. G. Gardiner

#### II) Essays:

1. The Power of Prayer: A. P. J. Abdul Kalam

✓ 2. Values in Life: Rudyard Kipling

#### III) Poems:

✓ 1. Stopping by Woods On a Snowy Evening: Robert Frost ✓

✓ 2. Ozymandias: P. B. Shelley



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### Unit 2 - Grammar

1. Sentences: Kinds and Functions
2. Clauses (Noun Clause, Adverbial Clause)

### Unit 3 - Communication Skills

1. Situational Dialogues
2. Small News Writing
3. Information Transfer: Non-verbal, Verbal

*Discipline Specific Elective 3 A (DSE 3 A)*

**DSE 3 ENG A : Twentieth Century English Literature**

SEM -V



External- 60 marks

Internal- 40 marks

Credits - 03 (45 clock hrs)

**Objectives-**

1. To explain the students development of poetry in English
2. To acquaint the students with features and types of modern poetry, drama and novel
3. To introduce the students with major poets, novelists and dramatists in modern English literature.

Credits-03

Unit 1. Background: i) Literary Trends and Tendencies in British Poetry, Drama and Novel

ii) Contribution of the major poets, dramatists and novelists to English Literature.

Unit 2. Poetry Section :

I) W. B. Yeats- i. *A Prayer for My Daughter*.

ii. *Sailing to Byzantium*.

II) T.S. Eliot - i. *Journey of Magi*.

ii. *Morning at the Window*.

✓ III) W.H. Davies- i. *The Kingfisher*

ii. *Money*.

Unit 3. Drama: *Waiting for Godot*- Samuel Beckett.



*Discipline Specific Elective 3 B (DSE 3 B)*

**DSE 3 ENG B: Twentieth Century English Literature**

**SEM-VI**

Internal- 40 marks



External- 60 marks

Credits – 03 (45 clock hrs)

**Unit 1. Background:** i) Literary Trends, Tendencies in twentieth century British Poetry, Drama and Novel.

ii) Contributions of the major poets, dramatists and novelists to British Literature.

**Unit 2. Poetry Section:**

i) Dylan Thomas - i. *A Fern Hill*

ii. *The Hunchback in the Park.*

ii) Wilfred Owen – i. *Dulce et Decorum Est.* ii. *Futility.*

iii) W.H. Auden - i. *The Shield of Achilles* ii. *Now the leaves are Falling Fast.*

**Unit 3. Novel:** *Lord of the Flies*- William Golding

**Recommended Books:**

1. Abrams, M. H. *A Glossary of Literary Terms*, 3<sup>rd</sup> edn. Macmillan Company of India Ltd. 1978.
2. Blamires, Harry. *Twentieth Century English Literature*. Macmillan, 1982.
3. Boris Ford, ed. *The Pelican Guide to English Literature*, Vol. VII 3<sup>rd</sup> Edn. Penguin Books Ltd. New York, 1973.
4. C.B. Cox and A. E. Dyson, ed. *Poems of This Century*. 1970.
5. Cronin, A. *Samuel Beckett: The Last Modernist*. London : Flamingo, 1997
6. Esslin, Martin. *The Theatre of the Absurd*, revised and enlarged edition, Penguin Books, 1976.
7. John Hayward, edit. *The Penguin Book of English Verse*, 1987.
8. Laura Marcus and Peter Nicholls. Ed. *The Cambridge History of Twentieth Century English Literature*, Cambridge University Press, 2004.
9. Margaret Drabble. edit. *The Oxford Companion to English Literature*. O.U.P. 1996
10. Press. John. *A Map of Modern English Verse*. London: Oxford University Press, 1969.
11. Philip Larkin, edit. *The Oxford Book of Twentieth Century English Verse*. O.U.P. U.K. 1973
12. Scully, James. *Modern Poets on Modern Poetry: A Critical Introduction*. New York: Oxford University Press, 1960.
13. Sheppard, C.A. ed. *A Pageant of Poems*. Orient Longman Ltd. New Delhi, 1977.
14. Tuma Keith, ed. *Anthology of Twentieth Century British and Irish Poetry*. O.U.P. 2001.



॥ अंतरी पेटवू ज्ञानज्योत ॥



KAVYITRI BAHINABAI CHAUDHARI  
NORTH MAHARASHTRA UNIVERSITY

JALGAON

मानविकी विद्याशाखा

**Choice Based Credit System (CBCS)**

रुचि आधारित साख्र पद्धति पाठ्यक्रम

Syllabus For

S. Y. B. A.

**HINDI**

(III<sup>rd</sup> & IV<sup>th</sup> Semester)

w.e.f. June 2019

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
मानविकी विद्याशाखा

Choice Based Credit System (CBCS)

रुचि आधारित साख्र पद्धति पाठ्यक्रम

बी.ए. द्वितीय वर्ष - तृतीय सत्र

DSC-1 (C) A HINDI : कथेत्तर गद्य विधाएँ



★ पाठ्यक्रम के उद्देश्य :-

- 1) कथेत्तर गद्य विधा का विकासात्मक परिचय प्रस्तुत करना।
- 2) कथेत्तर गद्य विधा की कालजयी रचनाओं से छात्रों को परिचित कराना।
- 3) कथेत्तर गद्य विधा की रचनाओं के माध्यम से छात्रों में मूल्य संवर्धन करना।
- 4) कथेत्तर गद्य विधा की रचनाओं के माध्यम से छात्रों में सामाजिक संवेदनशीलता को बढ़ावा देना।

पाठ्यक्रम का स्वरूप

हिंदी अध्ययन मंडल, कबचौउमवि, जलगाँव द्वारा संपादित पाठ्यपुस्तक -

कथेत्तर गद्य विधाएँ (प्रतिनिधि रचना) - वाणी प्रकाशन, नई दिल्ली।

संपादित पुस्तक में से निम्न प्रतिनिधिक रचनाएँ अध्ययनार्थ रखी गई हैं :-

इकाई - I

- निबंध : राष्ट्र का स्वरूप - डॉ. वासुदेव शरण अग्रवाल
- संस्मरण : तीस बरस का साथी : रामविलास शर्मा - अमृतलाल नागर
- रेखाचित्र : रजिया - रामवृक्ष बेनीपुरी
- जीवनी अंश : घरती और धान - पांडेय बेचन शर्मा 'उग्र'
- आत्मकथा अंश : चोरी और प्रायश्चित - महात्मा गांधी
- रिपोर्ताज : अदम्य जीवन - डॉ. रांगेय राघव
- यात्रा वर्णन : पतझर के पात - अज्ञेय
- व्यंग्य : एक गोप कक्ष - डॉ. शंकर पुणतांबेकर
- डायरी : प्रवास की डायरी - डॉ. हरिवंशराय बच्चन
- संबोधन : युवाओ से - स्वामी विवेकानंद

इकाई - II प्रात्यक्षिक लेखन (कोई चार)

- शरीर के भिन्न-भिन्न अवयवों पर केन्द्रित निबंध लेखन।
- सामाजिक जीवन यापन करते समय जिस किसी ने भी आपको प्रभावित किया हो उससे जुड़ी हुई संस्मरणीय यादों का वर्णन।
- गाँव, गली और मुहल्ले के किसी व्यक्ति का रेखाचित्र।
- व्यक्तिगत जीवन से जुड़ी किसी यात्रा का वर्णन।





- जीवन यापन करते समय बोली गई, सुनी गई या पढ़ी हुई व्यंग्योक्तियों का संकलन एवं अर्थ विवेचन।
- जीवन यापन करते समय आए किसी एखाद् सुखद या दुःखद या अन्य प्रसंग का वर्णन।
- आत्मकथात्मक लेखन।
- गाँव, गली और मुहल्ले में स्थित किसी विशेष व्यक्ति से साक्षात्कार कर उसका लेखन।
- वर्तमान दशक की हिंदी पत्र-पत्रिकाओं में प्रकाशित निबंध, संस्मरण, रेखाचित्र, यात्रा वर्णन, रिपोर्टाज, व्यंग्य, जीवनी और आत्मकथा की आलोचना।

● **संदर्भ पुस्तकें :-**

1. हिंदी आत्मकथाएँ संदर्भ और प्रकृति - डॉ. श्यामसुंदर पाण्डेय, विनय प्रकाशन, कानपुर
2. काव्यशास्त्र : विविध आयाम - संपा. मधु खराटे, विद्या प्रकाशन, कानपुर
3. सुबोध काव्यशास्त्र - डॉ. जालिंदर इंगळे, चंद्रलोक प्रकाशन, कानपुर
4. हिंदी आत्मकथा - डॉ. नारायण शर्मा, पुस्तक संस्थान, कानपुर
5. श्रेष्ठ हिंदी निबंधकार - सुरेश गुप्त, अशोक प्रकाशन, दिल्ली
6. हिंदी व्यंग्य परंपरा में शंकर पुणतांबेकर का योगदान - अनुपमा प्रभुणे, अन्नपूर्णा प्रकाशन, कानपुर
7. अमृतलाल नागर का जीवनपरक उपन्यास - डॉ. सुरेखा झाडे, अमन प्रकाशन, कानपुर
8. रामवृक्ष बेनीपुरी - रामबचन राय, साहित्य अकादमी, नई दिल्ली
9. रामवृक्ष बेनीपुरी रचना संचयनी - मस्तराम कपूर, साहित्य अकादमी, नई दिल्ली
10. रांगेय राघव - मधुरेश, साहित्य अकादमी, नई दिल्ली

बी. ए. द्वितीय वर्ष - चतुर्थ सत्र  
DSC-I (D) A- HINDI : श्रेष्ठ हिंदी एकांकी



✦ पाठ्यक्रम के उद्देश्य :-

- 1) एकांकी विधा का विकासात्मक परिचय कराना।
- 2) प्रमुख एकांकीकारों का सामान्य परिचय प्रस्तुत करना।
- 3) एकांकियों के माध्यम से रंगमंचीय प्रभाव को विशद कराना।

पाठ्यक्रम का स्वरूप

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव के हिंदी अध्ययन मंडल द्वारा संपादित पुस्तक :

श्रेष्ठ हिंदी एकांकी

संपादन : हिंदी अध्ययन मंडल, कवयित्री बहिणाबाई चौधरी  
उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
प्रकाशक : लोकभारती प्रकाशन, नई दिल्ली।

इकाई I - निर्धारित एकांकियाँ :-

- दीपदान - रामकुमार वर्मा
- माँ - विष्णु प्रभाकर
- भोर का तारा - जगदीशचंद्र माथुर
- नये मेहमान - उदयशंकर भट्ट
- बहुत बड़ा सवाल - मोहन राकेश
- जान से प्यारे - ममता कालिया
- तौलिया - उपेन्द्रनाथ अशक
- छोटी मछली बड़ी मछली - तेजपाल चौधरी

इकाई - II प्रात्यक्षिक लेखन (कोई चार)

- हिंदी की कालजयी एकांकी का सामान्य परिचय।
- वर्तमान दशक में प्रकाशित एकांकी की कथावस्तु का विवेचन।
- वर्तमान दशक के प्रमुख एकांकीकारों का स्थूल परिचय।
- ऐतिहासिक एकांकी के मंचन में आने वाली समस्याएँ।
- राज्यस्तरीय एवं राष्ट्रीय स्तर पर मंचित होनेवाली एकांकी प्रतियोगिता की रिपोर्ट तैयार करना।

- युवारंग, पुरूषोत्तम करंडक में प्रदर्शित होने वाली हिंदी एकांकी का विवेचन एवं विश्लेषण।
- पाठ्यपुस्तक में समावेशित एकांकी का मंचन कर उसमें रंगमंचीय दृष्टि से आने वाली समस्याओं का विवेचन।
- रेडियो, दूरदर्शन तथा विविध चैनलों पर प्रदर्शित होनेवाली हिंदी एकांकियों का महत्त्व।
- रेडियो, दूरदर्शन तथा विविध चैनलों पर प्रदर्शित होनेवाली हिंदी एकांकियों का जनमानस पर प्रभाव।



● **संदर्भ पुस्तकें :-**

- 1) रामकुमार वर्मा के एकांकी नाटक - डॉ. सर्जेराव जाधव, विनय प्रकाशन, कानपुर
- 2) हिंदी एकांकी - सिद्धार्थ कुमार, राधाकृष्ण प्रकाशन, नई दिल्ली
- 3) एकांकी और एकांकी - डॉ. सुरेन्द्र यादव, तक्षशिला प्रकाशन, नई दिल्ली
- 4) इक्कीस श्रेष्ठ एकांकी - राजपाल गोस्वामी
- 5) हिंदी नाटक आज कल - डॉ. जयदेव तनेजा, तक्षशिला प्रकाशन, नई दिल्ली

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**प्रश्नपत्र का स्वरूप एवं अंक विभाजन**

समय : 2 घंटे	कुल अंक 60
प्र. क्र. 1) इकाई I पर आधारित वस्तुनिष्ठ प्रश्न	
अ) बहुपर्यायी प्रश्न (8 में से 6)	06
आ) एकवाक्यीय उत्तरवाले प्रश्न (8 में से 6)	06
प्र. क्र. 2) इकाई I पर आधारित दीर्घोत्तरी प्रश्न (2 में से 1)	12
प्र. क्र. 3) इकाई I पर आधारित लघुत्तरी प्रश्न (3 में से 2)	12
प्र. क्र. 4) इकाई I पर आधारित टिप्पणियाँ (3 में से 2)	12
प्र. क्र. 5) इकाई I पर आधारित ससंदर्भ व्याख्या (3 में से 2)	12

(इकाई II यह प्रात्यक्षिक लेखन के लिए है।)



॥ अंतरी पेटवू ज्ञानज्योत ॥



कवयित्री बहिणाबाई चौधरी  
उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव

मानविकी विद्याशाखा

**Choice Based Credit System**  
रूचि आधारित साख पध्दति पाठ्यक्रम

बी. ए. तृतीय वर्ष कला - हिंदी

पंचम एवं षष्ठ सत्र  
(V & VI Semester)

(w. e. f. June 2020)

बी. ए. तृतीय वर्ष कला हिंदी - पंचम सत्र (V Semester)

रूचि आधारित (CBCS) पाठ्यक्रम

**DSC - E (A) HINDI विशेष विधा - यात्रा साहित्य**

(इस पाठ्यक्रम के विकल्प में छात्र DSC E Hindi (B) इस पाठ्यक्रम का चयन कर सकते हैं।)



✦ पाठ्यक्रम का उद्देश्य :-

- यात्रा साहित्य विधा के सैद्धांतिक विवेचन से छात्रों को अवगत कराना।
- यात्रा साहित्य विधा के विकासात्मक परिचय से छात्रों को परिचित कराना।
- यात्रा साहित्य विधा के प्रमुख साहित्यकार तथा उनके यात्रा वर्णन का ज्ञान छात्रों को प्रदान करना।
- 'मेरी जापान यात्रा' इस साहित्य कृति के माध्यम से छात्रों में यात्रा साहित्य लेखन की कला से परिचित कराना।

पाठ्यक्रम का स्वरूप

इकाई 1 : यात्रा साहित्य विधा : सैद्धांतिक विवेचन

- 1) शाब्दिक अर्थ, परिभाषा, तत्त्व, प्रकार।
- 2) यात्रा साहित्य का प्रयोजन, महत्त्व एवं प्रमुख विशेषताएँ।
- 3) यात्रा साहित्य विधा का अन्य विधाओं से परस्पर संबंध।

इकाई 2 : यात्रा साहित्य विधा का विकासात्मक अध्ययन

- 1) भारतेन्दु पूर्व युग तथा भारतेन्दु युग।
- 2) द्विवेदी युग तथा छायावादी युग।
- 3) छायावादोत्तर युग / स्वातंत्र्योत्तर युग तथा समकालीन यात्रा साहित्य।
- 4) यात्रा साहित्य के प्रमुख साहित्यकारों तथा उनके यात्रा वर्णनों का सामान्य परिचय।

इकाई 3 : साहित्य कृति :

'मेरी जापान यात्रा' - राष्ट्रसंत तुकडोजी महाराज, श्री गुरुदेव प्रकाशन, गुरुकुंज आश्रम,

तहसील-तिवसा, जिला - अमरावती



- i) राष्ट्रसंत तुकडोजी महाराज : जीवन एवं रचना परिचय
- ii) 'मेरी जापान यात्रा' इस साहित्य कृति का तात्त्विक विवेचन एवं विश्लेषण।
- iii) 'मेरी जापान यात्रा' इस साहित्यिक कृति का आशय, विषय एवं प्रमुख उद्देश्य।
- iv) 'मेरी जापान यात्रा' में चित्रित यथार्थता तथा प्रत्यक्ष अनुभव कथन।
- v) 'मेरी जापान यात्रा' इस साहित्य कृति की कलात्मकता तथा पात्र एवं चरित्रांकन।
- vi) 'मेरी जापान यात्रा' में चित्रित परिवेशगत चित्रण तथा सांस्कृतिक आदान-प्रदान।
- vii) 'मेरी जापान यात्रा' इस साहित्य कृति की प्रासंगिकता एवं महत्त्व।
- viii) 'मेरी जापान यात्रा' इस साहित्य कृति की प्रमुख विशेषताएँ।
- ix) 'मेरी जापान यात्रा' इस साहित्य कृति का शिल्पगत अध्ययन एवं विश्लेषण।

#### ♦ पाठ्यक्रम की उपलब्धियाँ :-

- इस पाठ्यक्रम को पढ़ने के उपरांत छात्रों को यात्रा साहित्य विधा का सैद्धांतिक ज्ञान प्राप्त हो जाएगा।
- पाठ्यक्रम को पढ़ने के उपरांत छात्र को यात्रा साहित्य विधा का विकासात्मक परिचय प्राप्त हो जाएगा।
- पठित साहित्य कृति के माध्यम से छात्र यात्रा साहित्य लेखन की कला को आत्मसात करेंगे।

#### ♦ संदर्भ ग्रंथ -

- 1) हिंदी यात्रा साहित्य और स्त्री यात्रा साहित्यकार - डॉ. बळीराम धापसे, कीर्ति प्रकाशन, 17, रचनाकार कॉलनी, देवगिरी कॉलेज के पास, औरंगाबाद - 431005
- 2) हिंदी का यात्रा साहित्य - रेखा उप्रेती, हिंदी बुक सेंटर, आसफ अली रोड, नई दिल्ली- 02
- 3) यात्रा साहित्य : परिवेश एवं परिप्रेक्ष्य - प्रकाश मोकाशी, युनिवर्सिटी बुक हाऊस (प्रा.) लि., जयपूर - 03
- 4) राहुल सांकृत्यायन : घुमक्कड शास्त्र और यात्रावृत्त - जानकी पांडेय, ज्ञानभारती, रूपनगर, दिल्ली-02
- 5) हिंदी का आधुनिक यात्रा साहित्य - प्रतापलाल शर्मा, अमर प्रकाशन, सदर बाजार, मथुरा-01
- 6) हिंदी का स्वातंत्र्यप्राप्त्युत्तर यात्रा साहित्य - हरेश स्वामी, अन्नपूर्णा प्रकाशन, साकेत नगर, कानपुर-04





बी. ए. तृतीय वर्ष कला हिंदी - षष्ठ सत्र (VI Semester)

रूचि आधारित (CBCS) पाठ्यक्रम

**DSC - F HINDI (A) विशेष विधा : भारतीय संत काव्य**

(इस पाठ्यक्रम के विकल्प में छात्र DSC F Hindi (B) इस पाठ्यक्रम का चयन कर सकते हैं।)

✦ पाठ्यक्रम का उद्देश्य :-

- भारतीय संत काव्य का परिचय कराना।
- भारतीय संत काव्य परंपरा का विकासात्मक परिचय करवाना।
- भारतीय संतों के काव्य का अध्ययन कराना।
- भारतीय संत काव्य की विशेषताओं तथा उपलब्धियों का परिचय देना।

पाठ्यक्रम का स्वरूप

इकाई I : भारतीय संत काव्य : सैद्धांतिक विवेचन :-

- 1) भारतीय संत काव्य की परंपरा।
- 2) महिला संत काव्य की परंपरा।
- 3) संत साहित्य की विशेषताएँ।
- 4) समाज के निर्माण में संतों का योगदान।
- 5) संत काव्य की प्रासंगिकता।

इकाई II : हिंदी अध्ययन मंडल द्वारा संपादित पाठ्यग्रंथ 'भारतीय संत काव्य' में संकलित निम्न संत कवियों का जीवन एवं रचना परिचय, सामाजिक कार्य तथा प्रथम और द्वितीय क्रम पर प्रकाशित दो पद अध्ययनार्थ रखे गए हैं।

- |                    |   |              |
|--------------------|---|--------------|
| 1) संत तिरुवल्लुवर | - | तमिलनाडु     |
| 2) संत बसवेश्वर    | - | कर्नाटक      |
| 3) संत नामदेव      | - | महाराष्ट्र   |
| 4) संत कबीरदास     | - | उत्तर प्रदेश |
| 5) संत नरसी मेहता  | - | गुजरात       |
| 6) संत रैदास       | - | राजस्थान     |

इकाई III : हिंदी अध्ययन मंडल द्वारा संपादित पाठ्यग्रंथ 'भारतीय संत काव्य' में संकलित निम्न महिला संत कवयित्रियों का जीवन एवं रचना परिचय तथा प्रथम और द्वितीय क्रम पर प्रकाशित दो पद अध्ययनार्थ रखे गए हैं।



- 1) संत कवयित्री अण्डाल - तमिलनाडु
- 2) संत कवयित्री अक्कमहादेवी- कर्नाटक
- 3) संत मीराबाई - राजस्थान
- 4) संत लल्लेश्वरी - कश्मीर
- 5) संत मुक्ताबाई - महाराष्ट्र
- 6) संत ताजबीवी - उत्तर भारत

✦ पाठ्यक्रम की उपलब्धियाँ :-

- भारतीय संत काव्य से छात्र परिचित होंगे।
- भारत के विभिन्न राज्यों की संस्कृति, परिवेश तथा परंपराओं का ज्ञान छात्रों को प्राप्त होगा।
- भारत वर्ष के विभिन्न राज्यों के संतों का जीवन परिचय, रचना परिचय तथा संतों द्वारा किए गए सामाजिक कार्यों का ज्ञान छात्रों को प्राप्त होगा।
- पाठ्यग्रंथ में संकलित संतों तथा संत कवयित्रियों के पद पढ़कर छात्रों के मन में मूल्य संवर्धन तथा संरक्षण की प्रेरणा जगेगी।
- संतों द्वारा किए गए सामाजिक कार्य तथा लिखे गए पदों से छात्र प्रेरित एवं प्रोत्साहित होंगे।

संदर्भ :

- 1) हिंदी के जनपद संत - जगजीवन राम
- 2) भारत की महिला संत - वासंती साळवेकर
- 3) भारतीय नारी संत परंपरा - बलदेव वंशी
- 4) भक्ति के आयाम - डॉ. पी. जयरामन

॥ अंतरी पेटवू ज्ञानज्योत ॥



**NORTH MAHARASHTRA UNIVERSITY**  
**JALGAON**

Syllabus for **T. Y. B. A. – HINDI**

Semister V & VI

(w. e. f. June 2015)



उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
तृतीय वर्ष कला पाठ्यक्रम  
(जून 2015 से प्रारंभ)



+ सूचनाएँ :-

- 1) तृतीय वर्ष कला के पाठ्यक्रम हेतु सत्र पध्दति को अपनाया गया है।
- 2) प्रत्येक पेपर के अध्यापन हेतु 45 तासिकाएँ अपेक्षित है।
- 3) हिंदी सामान्य (G-3) के लिए वैकल्पिक पेपर प्रयोजनमूलक हिंदी होगा।

**तृतीय वर्ष (Semister V) : HIN - 351 A हिंदी सामान्य (G-3) - I**

पाठ्यक्रम में निम्नलिखित एकांकी अध्ययन हेतु निर्धारित हैं -

- |                      |   |                    |
|----------------------|---|--------------------|
| 1) प्रतिशोध          | - | डॉ. रामकुमार वर्मा |
| 2) पिकनिक            | - | विष्णु प्रभाकर     |
| 3) साया              | - | सत्येंद्र शरत्     |
| 4) महाभारत की सौंझ   | - | भारतभूषण अग्रवाल   |
| 5) स्ट्राइक          | - | भुवनेश्वर          |
| 6) लक्ष्मी का स्वागत | - | उपेंद्रनाथ अशक     |
| 7) मम्मी ठकुराइन     | - | लक्ष्मीनारायण लाल  |
| 8) नये मेहमान        | - | उदयशंकर भट्ट       |

+ लेखन व्याकरण -

- 1) पारिभाषिक शब्दावली (नमूना सूची संलग्न)
- 2) अनेक शब्दों के लिए एक शब्द।

+ संदर्भ ग्रंथ :-

- 1) एकांक परिमल - प्र. सं. डॉ. मधुकर खराटे, विद्या प्रकाशन, कानपुर
- 2) आधुनिक हिंदी व्याकरण और रचना - डॉ. वासुदेवनन्दन प्रसाद, भारती प्रकाशन, इलाहाबाद
- 3) मानक हिंदी व्याकरण - डॉ. लक्ष्मीकांत पाण्डेय, विद्या प्रकाशन, कानपुर

**निर्देश (Semister VI): HIN - 361 A हिंदी सामान्य (G-3) - II**

पाठ्यक्रम में निम्नलिखित निबंध अध्ययन हेतु निर्धारित हैं -

- |                          |   |                       |
|--------------------------|---|-----------------------|
| 1) ज़बान                 | - | बालकृष्ण भट्ट         |
| 2) धोखा                  | - | प्रतापनारायण मिश्र    |
| 3) आशा का अंत            | - | बालमुकुन्द गुप्त      |
| 4) भाव या मनोविकार       | - | रामचंद्र शुक्ल        |
| 5) देत सिख सिखियो न मानत | - | हजारीप्रसाद द्विवेदी  |
| 6) सेवा                  | - | शिवपूजन सहाय          |
| 7) शिक्षा का उद्देश्य    | - | महादेवी वर्मा         |
| 8) अम्मा                 | - | नर्मदाप्रसाद उपाध्याय |

+ लेखन व्याकरण -

- 1) निबंध लेखन।

+ संदर्भ ग्रंथ -

- 1) निबंध मंत्रालय - डॉ. आ. आ. शर्मा, विद्या प्रकाशन, कानपुर
- 2) आधुनिक हिंदी व्याकरण और रचना - डॉ. वासुदेवनंदन प्रसाद, भारती प्रकाशन, इलाहाबाद
- 3) मानक हिंदी व्याकरण - डॉ. लक्ष्मीकांत पाण्डेय, विद्या प्रकाशन, कानपुर
- 4) सामाजिक निबंध - डॉ. रमेशचंद्र शर्मा, विद्या प्रकाशन, कानपुर
- 5) हिंदी निबंध और रचना - रामसकल शर्मा, एस. चाँद अण्ड कंपनी, नई दिल्ली



॥ अंतरी पेटवू ज्ञानज्योत ॥



**NORTH MAHARASHTRA UNIVERSITY**  
**JALGAON**

Syllabus For  
S. Y. B. A.

**HINDI**  
(III<sup>rd</sup> & IV<sup>th</sup> Semester)

( w.e.f. June 2014 )





उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
( पाठ्यक्रम आरंभ जून 2014 )

**सूचनाएँ**

- 1) इस पाठ्यक्रम हेतु सत्र पध्दति को अपनाया गया है।
- 2) प्रत्येक सत्र में 10 अंक अंतर्गत (Internal) मूल्यांकन के लिए तथा 40 अंक बाह्य परीक्षा (External) के लिए होंगे।
- 3) हिंदी सामान्य (G-3/G-4) के लिए वैकल्पिक पेपर प्रयोजनमूलक हिंदी (G-3/G-4) होगा।
- 4) प्रत्येक सत्र के पाठ्यक्रम हेतु अध्यापनार्थ 45 तासिकाएँ अपेक्षित हैं।

**\* तृतीय सत्र (III Semester) \***

**HIN-231- A) हिंदी सामान्य 3 (G-3)**

**उद्देश्य :**

- 1) छात्रों को कहानी विधा से परिचित कराना।
- 2) छात्रों को कहानियों के माध्यम से जीवन-मूल्यों से परिचित कराना।
- 3) छात्रों को समानार्थी एवं विलोमार्थी शब्दों से परिचित कराना।
- 4) छात्रों में पल्लवन की क्षमता विकसित करना।

**पाठ्यक्रम**

**पाठ्यपुस्तक :**

- 1) **कथासेतु** - संपादक, डॉ. उमाशंकर तिवारी, श्रीमती माथुरी सिंह

प्रकाशक - वाणी प्रकाशन, 21-ए, दरियागंज,

नई दिल्ली -110002

इस संकलन की निम्नलिखित कहानियाँ अध्ययन हेतु निर्धारित की गयी हैं -

- |             |   |               |
|-------------|---|---------------|
| 1) आकाशदीप  | - | जयशंकर प्रसाद |
| 2) कफन      | - | प्रेमचंद      |
| 3) गैंग्रीन | - | अज्ञेय        |

- |     |                           |   |                 |
|-----|---------------------------|---|-----------------|
| 4)  | गदल                       | - | रंगेय राघव      |
| 5)  | हत्या और आत्महत्या के बीच | - | शिवप्रसाद सिंह  |
| 6)  | टिप्टी कलकटरी             | - | अमरकांत         |
| 7)  | रसप्रिया                  | - | फणीश्वरनाथ रेणु |
| 8)  | चीफ की दावत               | - | भीष्म साहनी     |
| 9)  | दिल्ली में एक मौत         | - | कमलेश्वर        |
| 10) | सुख                       | - | काशीनाथ सिंह    |



अपठित अंश :

- क) समानार्थी एवं विलोमार्थी शब्द ।  
ख) पल्लवन ।

संदर्भ ग्रंथ :

- 1) आधुनिक हिंदी व्याकरण और रचना -डॉ वासुदेवनंदन प्रसाद  
प्रकाशक - भारती भवन, इलाहाबाद

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### HIN-231- B) हिंदी प्रयोजनमूलक 3 (G-3)

(हिंदी सामान्य G-3 के लिए वैकल्पिक पेपर )

उद्देश्य :

- 1) मानक हिंदी और सांवेधानिक हिंदी का परिचय कराना ।
- 2) कार्यालयीन कार्यव्यवहार एवं पत्रव्यवहार की जानकारी देना ।
- 3) फाइलिंग प्रणाली की जानकारी देना ।
- 4) शब्द संसाधन की जानकारी देना ।

### पाठ्यक्रम

- 1) मानक हिंदी : हिंदी मानकीकरण के प्रयत्न, मानक हिंदी का स्वरूप और नियमावली का परिचय ।

हिंदी का संवेधानिक स्वरूप : अनुच्छेद क्रमांक 343 से 351 का सामान्य ज्ञान। कार्यालयीन हिंदी प्रयोग की समस्याएँ एवं समाधान ।

## चतुर्थ सत्र (IV Semester)

HIN-241- A) हिंदी सामान्य 4 (G-4)

उद्देश्य :

- 1) छात्रों को खंडकाव्य विधा से परिचित कराना ।
- 2) छात्रों में पत्र-लेखन की क्षमता विकसित करना ।
- 3) छात्रों में शुद्धलेखन की क्षमता विकसित करना ।



### पाठ्यक्रम

पाठ्यपुस्तक :

- 1) कुरूक्षेत्र (खंडकाव्य) - रामधारीसिंह दिनकर  
प्रकाशक - राजपाल एण्ड सन्स, दिल्ली

अपठित अंश :

- क) पत्रलेखन :  
आवेदन - पत्र : नौकरी , छुट्टी, शुल्क में रियायत हेतु ।
- ख) केन्द्रीय हिंदी निदेशालय की वर्तनी संबंधी नियमावली का ज्ञान ।

संदर्भ ग्रंथ :

- 1) आधुनिक हिंदी व्याकरण और रचना -डॉ. वासुदेवनंदन प्रसाद  
प्रकाशक - भारती भवन, इलाहाबाद
- 2) हिंदी आलेखन एवं टिप्पण - ओमप्रकाश शर्मा  
प्रकाशक - सन्मार्ग प्रकाशन , दिल्ली -1
- 3) देवनागरी लिपि तथा हिंदी वर्तनी का मानकीकरण  
प्रकाशक - केन्द्रीय हिंदी निदेशालय , दिल्ली
- 4) सुबोध हिंदी व्याकरण एवं रचना - वीरेन्द्रकुमार गुप्ता  
प्रकाशक - एस. चौद अँन्ड कंपनी , दिल्ली
- 5) मानक हिंदी व्याकरण - डॉ. लक्ष्मीकांत पाण्डेय  
प्रकाशक - विद्या प्रकाशन , कानपुर
- 6) प्रयोजनमूलक हिंदी - डॉ. उर्मिला पाटील  
प्रकाशक - अतुल प्रकाशन ,कानपुर

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॥ अंतरी पेटवू ज्ञानज्योत ॥



**NORTH MAHARASHTRA UNIVERSITY**  
**JALGAON**

Syllabus For F. Y. B. A. - HINDI  
I<sup>st</sup> & II<sup>nd</sup> Semester

- \* HINDI GEN (G-1/ G-2)
- \* PRAYOJANMULAK HINDI (G-1/ G-2)

(w. e. f. June 2017)

उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
प्रथम वर्ष कला पाठ्यक्रम  
(प्रारंभ जून 2017)  
हिंदी सामान्य (G-1/ G-2)



✦ सूचनाएँ :-

- जून 2017 से इस पाठ्यक्रम का स्वीकार किया गया है।
- प्रत्येक सत्र में 40 अंक अंतर्गत (Internal) मूल्यांकन के लिए तथा 60 अंक बाह्य (External) परीक्षा के लिए होंगे।
- प्रत्येक सत्र के पाठ्यक्रम हेतु अध्यापनार्थ 45 तासिकाएँ अपेक्षित हैं।
- हिंदी सामान्य के लिए प्रयोजनमूलक हिंदी का पाठ्यक्रम वैकल्पिक होगा।

✦ उद्देश्य :-

- छात्रों को साहित्य की विभिन्न विधाओं से परिचित कराना।
- छात्रों में जीवन-मूल्यों के प्रति आस्था निर्माण करना।
- छात्रों में वार्तालेखन की क्षमता को विकसित करना।
- छात्रों में पत्रलेखन की क्षमता को विकसित करना।
- छात्रों में अनुवाद लेखन की क्षमता को विकसित करना।
- छात्रों में सारलेखन की क्षमता को विकसित करना।

पाठ्यपुस्तकें (दोनों सत्रों के लिए) :-

- 1) गद्य धारा - सं. डॉ. सुरेश कुमार जैन  
वाणी प्रकाशन, नई दिल्ली - 2
- 2) काव्य कल्पद्रुम - सं. डॉ. सुरेश जैन  
वाणी प्रकाशन, नई दिल्ली - 2

प्रथम सत्र (I<sup>st</sup> Semester)

**HIN-111 A) हिंदी सामान्य 1 (G-1)**

✦ पाठ्यक्रम -

✦ गद्यपाठ -

- 1) उसने कहा था - चंद्रधर शर्मा 'गुलेरी' 2) घर जमाई - प्रेमचंद 3) पुरस्कार - जयशंकर प्रसाद
- 4) मलबे का मालिक - मोहन राकेश 5) पहला सफेद बाल - हरिशंकर परसाई
- 6) घीसा - महादेवी वर्मा 7) रंग में भंग - शंकर पुणतांबेकर
- 8) जहाँ आकाश नहीं दिखाई देता - विष्णु प्रभाकर



✦ पद्यपाठ -

- 1) सखि, वे मुझसे कहकर जाते ! - मैथिलीशरण गुप्त
- 2) बीती विभावरी - जयशंकर प्रसाद
- 3) मोह - सुमित्रानंदन पंत
- 4) मौन करूणा - रामकुमार वर्मा
- 5) मैं नीर-भरी दुख की बदली - महादेवी वर्मा
- 6) बीते दिन कब आनेवाले - हरिवंशराय 'बच्चन'
- 7) तोड़ती पत्थर - सूर्यकांत त्रिपाठी 'निराला'
- 8) जनतंत्र का जन्म - रामधारी सिंह 'दिनकर'

✦ व्याकरण-लेखन -

- 1) वार्तालेखन (सभा-सम्मेलन, संगोष्ठी, उत्सव, समारोह आदि से संबंधित)
- 2) सारलेखन

द्वितीय सत्र (II<sup>nd</sup> Semester)

HIN-121 A) हिंदी सामान्य 2 (G-2)

✦ पाठ्यक्रम -

+ गद्यपाठ -

- 1) ठेंस - फणीश्वरनाथ 'रेणु'
- 2) मुरदा सराय - शिवप्रसाद सिंह
- 3) दो कलाकार - मन्नू भंडारी
- 4) वापसी - उषा प्रियंवदा
- 5) गेहूँ बनाम गुलाब - रामवृक्ष बेनीपुरी
- 6) नया साल - अमृतराय
- 7) हरिया काका - दीप्ति गुप्ता
- 8) समांतर रेखाएँ - सत्येंद्र शर्मा

+ पद्यपाठ -

- 1) कालिदास से - नागार्जुन
- 2) वरदान माँगूंगा नहीं - शिवमंगल सिंह 'सुमन'
- 3) प्रतिभा का मूल बिंदु - प्रभाकर माचवे
- 4) माटी और मेघ - गिरिजाकुमार माथूर
- 5) धानों का गीत - केदारनाथ सिंह
- 6) दुख नहीं कोई - दुष्यंतकुमार
- 7) श्रद्धांजलि - यशोदा राजा
- 8) दिनकर के आगम पर - दयानंद शर्मा 'मधुर'

+ व्याकरण-लेखन -

- 1) शुभकामना-पत्र (जन्म दिन, दशहरा, दीपावली, नववर्ष, होली आदि अवसरों पर आधारित)
- 2) अनुवाद (अंग्रेजी/मराठी परिच्छेद का सरल हिंदी में अनुवाद)

✦ संदर्भ ग्रंथ -

- 1) आधुनिक हिंदी व्याकरण और रचना - डॉ. वासुदेवनंदन प्रसाद, भारती प्रकाशन, इलाहाबाद
- 2) मानक हिंदी व्याकरण - डॉ. लक्ष्मीकांत पाण्डेय, विद्या प्रकाशन, कानपुर
- 3) हिंदी निबंध और रचना - रामसकल शर्मा, एस. चौद अण्ड कंपनी, नई दिल्ली
- 4) सुबोध हिंदी व्याकरण एवं रचना - वीरेन्द्रकुमार गुप्ता

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॥ अंतरी पेटवू ज्ञानज्योत ॥



उत्तर महाराष्ट्र विश्वविद्यालय, जलगाँव  
NORTH MAHARASHTRA UNIVERSITY, JALGAON

रूचि आधारित साख पद्धति  
Choice Based Credit System (CBCS)  
प्रथम वर्ष कला (हिंदी) मुख्यांश पाठ्यक्रम  
(Core Course -DSC- HIN)  
प्रथम एवं द्वितीय सत्र  
(I<sup>st</sup> & II<sup>nd</sup> Semester)

(w. e. f. June 2018)

**रूचि आधारित साख पद्धति**  
**Choice Based Credit System (CBCS)**  
**प्रथम वर्ष कला हिन्दी**  
**मुख्यांश पाठ्यक्रम (Core Course)**  
**DSC HIN A-1 : हिंदी कहानी (03 क्रेडिट)**



**प्रथम सत्र पाठ्यक्रम**

**+ पाठ्यक्रम का उद्देश्य :-**

- i) छात्रों को हिंदी कहानी विधा से परिचित करना।
- ii) छात्रों में मानवीय मूल्यों के प्रति आस्था निर्माण करना।
- iii) विभिन्न कहानियों के माध्यम से छात्रों की भाषिक क्षमता को विकसित करना।
- vi) छात्रों में विभिन्न कहानियों के माध्यम से सामाजिक संवेदना को जागृत करना।

**पाठ्यपुस्तक : कथा संचयन - संपा : डॉ. शिवचरण कौशिक**

प्रकाशक - नेशनल पब्लिशिंग हाऊस,  
337, चौडा रास्ता, जयपुर-302003  
संस्करण 2007

**+ निर्धारित पाठ्यपुस्तक की निम्न लिखित कहानियाँ अध्ययन-अध्यापनार्थ रखी गई हैं :-**

- |                           |                                  |
|---------------------------|----------------------------------|
| 1) सद्गति - प्रेमचंद      | 2) पाजेब - जैनेन्द्र कुमार       |
| 3) तस्वीर - भीष्म साहनी   | 4) नौकरी-पेशा - कमलेश्वर         |
| 5) सौदा - मोहन राकेश      | 6) गदल - रांगेय राघव             |
| 7) जिनावर - चित्रा मुद्गल | 8) सरहद के इस पार - नासिरा शर्मा |

**+ संदर्भ ग्रंथ -**

- 1) कथा संचयन - नेशनल पब्लिशिंग हाऊस, जयपुर
- 2) प्रेमचंद की कहानियों का कालक्रमानुसार अध्ययन - कमल किशोर गोयनका
- 3) बीसवीं सदी का हिंदी साहित्य - डॉ. विश्वनाथ प्रसाद तिवारी
- 4) हिंदी कहानी में गांधीवाद - निशा गहलौत
- 5) कहानी वस्तु और अंतर्वस्तु - शंभु गुप्त
- 6) अंतिम दशक की हिंदी लेखिकाओं की कहानी में अभिव्यंजित नारी मनोविज्ञान - डॉ. आशा बी. हिरेमठ
- 7) उत्तरशती की हिंदी कहानियों में नारी - डॉ. भीमराव पाटील

**रूचि आधारित साख पद्धति**  
**Choice Based Credit System (CBCS)**

बी.ए.प्रथम वर्ष कला हिन्दी  
द्वितीय सत्र पाठ्यक्रम



✦ **मुख्यांश प्रतिष्ठा (Core Course) DSC HIN A-2 : हिंदी कविता**

**पाठ्यपुस्तक : आधुनिक हिंदी काव्य प्रवाह - संपा- डॉ. ब्रह्मनेश्वर नाथ राय**  
प्रकाशक - शैलजा प्रकाशन,  
57-पी, कुंज बिहार - II, यशोदा नगर  
कानपुर-11, संस्करण 2014

➤ निर्धारित पाठ्यपुस्तक में से निम्नलिखित कवियों की कविताएँ अध्ययनार्थ रखी गई है :-

- |  |  |
|--|--|
| 1) सखि, वे मुझसे कहकर जाते - मैथिलीशरण गुप्त | 2) तोड़ती पत्थर - सूर्यकान्त त्रिपाठी 'निराला' |
| 3) सुख-दुःख - सुमित्रानन्दन पन्त             | 4) गीतकार मर गया - रामधारी सिंह 'दिनकर'        |
| 5) जो बीत गई - हरिवंशराय बच्चन               | 6) प्रेत का बयान - नागार्जुन                   |
| 7) सूनी-सी सौंझ तक - अज्ञेय                  | 8) गीत-फरोश - भवानी प्रसाद मिश्र               |
| 9) गाँधी जी के जन्मदिन पर - दुष्यन्तकुमार    | 10) प्रौढ़ शिक्षा - धूमिल                      |
| 11) पिता - उदय प्रकाश                        | 12) सात भाइयों के बीच चम्पा - कात्यायनी        |
| 13) स्त्रियाँ - अनामिका                      | 14) खोज की बुनियाद - सुशीला टाकभोरे            |
| 15) अपने घर की तलाश - निर्मला पुतुल          |  |

✦ **संदर्भ ग्रंथ -**

- 1) आधुनिक हिंदी काव्य प्रवाह - संपा. डॉ. ब्रह्मनेश्वर नाथ राय
- 2) नई कविता के नए कवि - विश्वंभर मानव
- 3) समकालीन कविता - विश्वनाथ प्रसाद तिवारी
- 4) समकालीन कविता - डॉ. सरजू प्रसाद मिश्र
- 5) आधुनिक हिंदी काव्यधारा - डॉ. सरजू प्रसाद मिश्र
- 6) कविता के नए प्रतिमान - डॉ. नामवर सिंह
- 7) समकालीन कविता का बीजगणित - कुमार मिश्र
- 8) समकालीन हिंदी कविता - परमानंद श्रीवास्तव
- 9) आधुनिक कविता का पुर्नपाठ - डॉ. करुणा शंकर उपाध्याय
- 10) छायावादोत्तर हिंदी कविता में ग्राम्यबोध - डॉ. सरोज वर्मा





# Rani Laxmibai Mahavidyalaya Parola

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Email : principalricparola@gmail.com

NAAC Accredited "B" Grade

Outward No.

Date : / / 20

## Department of Hindi



Program	Title of Course	Issue relevant to
B. A. F. Y. B. A. Hindi	A. Kafan-Premchand.	H.V.
	B. Ridh ki Haddi.	H.V.
	C. Rahim ke Dohe.	P.E.
	D. Dharti Kitana Deti Hai.	H.V.
	E. Jivan Aur Shikshan.	H.V.
	F. Akeli (Kahani).	H.V.
	G. Bolo Maa (Kavita)	H.V.
S.Y.B.A.	A. Ek Tokari Dhar Mitti.	H.V.
	B. Vishawas.	H.V.
	C. Aam Adami.	H.V.
	D. Shouchalay.	H.V.
	E. Safai Abhiyan.	H.V.
	F. Bahut Gahare Hai Pita.	H.V.
	G. Jivan Nahi Mara Karata Hai.	H.V.
T.Y.B.A	A. Meri Japan Yatra.	P.E. and H.V.
	B. Bhartiy Sant Kavya.	H.V.
	C. Rashtriya Kavyadhara.	H.V.

  
**Coordinator, IQAC**  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
**PRINCIPAL**  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

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**Kavayitri Bahinabai Chaudhari**  
**North Maharashtra University, Jalgaon**  
**Syllabus of F.Y.B.A. History**  
**Semester: I**  
**C.B.C.S. Semester System**



**F.Y.B.A. HIS-G-101-A**

**History of Indian Freedom Movement (AD.1857-AD.1905)**

**Marks 60**

**Period 60**

**Credits 03**

**Chapter No. 1) Rise and Growth of British Power in India.**

**(Credits :01, Marks:20)**

**A) Rise OF British Power in India – Brief Survey**

**B) Revolt of 1857**

**i) Causes**

**ii) Consequences**

**Chapter No. 2) Social & Religious Reformer**

**(Credits :01, Marks:20)**

**i) Raja Ram Mohan Roy**

**ii) Swami Dayanand Saraswati**

**iii) Swami Vivekanand**

**iv) Mahatma Jotiba Phule & Savitribai Phule**

**v) Rajashree Chhatrapati Shahu Maharaj**

**vi) Dr. Babasaheb Ambedkar**

**Chapter No. 3) Indian National Congress.**

**(Credits :01, Marks:20)**

**i) Foundation of Indian National Congress : Its origin and objectives**

**ii) Achievements of the Indian National Congress (1885-1905)**

**iii) Moderate Group**

**a) Surendranath Banerjee b) Firojshah Mehata c) Dadabhai Nauroji**

**d) Mahadev Govind Ranade e) Gopal Krishna Gokhale.**

**iv) Partition of Bengal.**

Kavayitri Bahinabai Chaudhari  
North Maharashtra University, Jalgaon

**Syllabus of S.Y.B.A. History**

**Semester III**

**Choice Based Credit System**

**DSC-HIS-231 History of the Marathas (A.D.1605-1750 A.D.)**



Uni. Exam. Marks : 60

Internal/Practical : 40

Clock Hours :45

Credits : 02

**Chapter 1 Rise of Maratha Power**

15

- a) Causes
- b) Role of Shahaji Raje Bhosle and Jijabai

**Chapter 2 Shivaji Maharaja's Relation with Various dynasty**

15

**a) Shivaji's Relation with the Adilshahi**

- i. Javali Incident
- ii. Afzalkhan Episode
- iii. Siddi Jauhar and expedition to Panhala

**b) Shivaji's Relation with the Mughals**

- i. Invasion of Shaistekhan
- ii. First Invasion of Surat
- iii. Expedition of Mirza Raje Jaysing & Treaty of Purandar
- iv. Visit to Agra and Escape

**c) Karnataka Expedition**

**Chapter 3 Shivaji's Administration**

15

- i. Coronations
- ii. Civil Administration
- iii. Military Administration
- iv. Judicial Administration
- v. Religious Policy



Kavayitri Bahinabai Chaudhari  
North Maharashtra University, Jalgaon  
Choice Based Credit System  
T.Y.B.A. (History) Sem. VI



GE 1 B HIS 365 Making of Contemporary India – 2  
Periods: 45 Credits: 03

✓ Unit 1. Social Justice

- Tribal Movements
- Dalit Movements
- Women Movements

15

Unit 2. Major Challenges

- Communalism
- Regional Tensions
- Naxalism

15

Unit 3. Education and Science

- Progress in the field of Education
- Nuclear Policy
- Development Space Science

15

# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – III

## PAPER II: PHYSICAL GEOGRAPHY OF INDIA

(With effect from June, 2016)



### Objectives:

1. To acquaint the students with basic knowledge of our country.
2. To aware the students about physiography, drainage, climate, soils and natural vegetation of India.
3. To aware the students with natural resources available in the country and need of conservation and protection of them.
4. To make the students ready for NET, SET and competitive examinations.

Unit No.	Topic	Sub-topics	Periods
I	Geographical Personality of India	A) India: Natural, Historical and Political Personality B) Location (Site and Situation), Extent and Geographical Area C) Adjacent Countries: Economic and Political Relationship. D) State- wise Geographical Area	10
II	Physiography and Drainage	A) Physiographic Divisions of India (Salient features of following divisions) a) Himalayan Mountainous Region b) Northern Plain Region c) Peninsular Plateau d) Coastal Plains e) Islands B) Drainage a) Himalayan Rivers b) Peninsular Rivers c) Ponds and Lakes	20
III	Climate	A) Factors Affecting on Climate of India B) Monsoon : a) Characteristics of Monsoon b) South West, Retreating and North East Monsoon C) Seasons – Summer, Rainy and Winter D) Distribution of Rainfall and Temperature E) Climatic Regions of India	15
IV	Soils and Natural Vegetation	A) Soils in India a) Major Soil Types – Distribution and Characteristics b) Problems of Soil Erosion and Soil Degradation c) Methods of Soil Conservation in India	15

# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – IV

**PAPER I: ENVIRONMENTAL GEOGRAPHY – II**

(With effect from June, 2016)



**Objectives:**

1. To acquaint the students with environmental problems.
2. To aware the students about the causes and effects of environmental pollution, global warming, ozone depletion, deforestation, etc.
3. To acquaint the students with environmental hazards and disaster management.
4. To acquire the knowledge of Conservation of Resources.
5. To aware the students about various Environmental Acts.

Unit No.	Topic	Sub-topics	Periods
I	Environmental Pollution	A) Definition of Pollution and Pollutants B) Types of Pollution (Causes, Effects and Remedial measures) a) Air Pollution b) Water Pollution c) Noise Pollution d) Solid Waste Pollution	22
II	Environmental Hazards and Disaster Management	A) Meaning, Concept and Types of Disasters B) Definition, Causes and Management (pre, during and post) of following Disasters a) Atmospheric: Cyclones b) Hydrological: Droughts and Floods c) Terrestrial: Earthquakes d) Biological: Weeds and Pests	10
III	Global Environmental Issues	A) Green House Effect B) Global Warming and Climate Change C) Depletion of Ozone Layer D) Deforestation E) Adverse Effects of Pesticides and Insecticides	12
IV	Conservation of Resources and Environmental Acts	A) Conservation of Resources (Meaning, Need and Methods) a) Soil Conservation b) Water Conservation c) Forest Conservation d) Wild Life Conservation B) Environmental Acts a) Air Pollution Act b) Wildlife Protection Act c) Water Pollution Act d) Forest Conservation Act	16
<b>Total Periods</b>			<b>60</b>



# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – IV

## PAPER II: ECONOMIC GEOGRAPHY OF INDIA

(With effect from June, 2016)



### Objectives:

1. To acquaint the students with basic knowledge of our country.
2. To acquaint the students with prospects and problems of agriculture, industries, trade and transport in India.
3. To aware the students with natural resources available in the country and need of conservation and protection.
4. To make the students ready for NET, SET and competitive examinations.

Unit No.	Topic	Sub-topics	Periods
I	Population	A) Population Distribution in India (As Per Census 2011) B) Factors Affecting on Distribution of Population in India (Physical & Cultural) C) Growth of Population in India D) Problems of Population in India E) Remedial Measures to solve Population Problems	12
II	Agriculture	A) Role of Agriculture in Indian Economy B) Types of Agriculture a) Shifting Agriculture b) Intensive Subsistence Agriculture c) Plantation Agriculture d) Horticulture C) Problems of Indian Agriculture D) Crops - Distribution in India a) Food Crops - Rice and Wheat b) Cash Crops - Cotton and Sugar cane	12
III	Resources	A) Distribution and Production of following Resources a) Mineral Resources i) Iron Ore ii) Bauxite b) Energy Resources i) Coal ii) Hydel Power iii) Wind Energy	12
IV	Industries	A) Iron and Steel Industries B) Cotton Textile Industries C) Sugar Industries D) Major Industrial Belts in India	12

# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – III

## PAPER III: PRACTICAL GEOGRAPHY

### Topographical Maps, Weather Instruments, Maps and Images

(Per Batch 12 Students and 4 periods per week)

(With effect from June, 2016)

#### Objectives:

1. To acquaint the students with basic knowledge and interpretation of Topographical Maps.
2. To acquire the knowledge of weather instruments.
3. To provide basic information about weather maps and weather images.
4. To acquaint the students about how to interpret weather maps and satellite images.

Unit No.	Topic	Sub-topics	Periods
I	Topographical Maps	A) Introduction to S.O.I. Toposheets B) Indexing of Toposheets C) Signs and Symbols D) Grid reference (Four & Six Figure) E) Methods of Representation of Relief and Elevations F) Representation of Relief features by Contours a) Slopes b) Landforms of Elevation c) Landforms of Depression G) Interpretation of Topographical Maps (any two) a) Plain Region b) Plateau Region c) Mountain Region	28
II	Weather Instruments	A) Mechanism, Function and Uses of following Instruments a) Minimum and Maximum Thermometer b) Thermograph c) Barograph d) Rain gauge e) Wind Vane f) Cup Anemometer	12
III	Daily Weather Maps and Satellite Images	A) Introduction to I.M.D. Weather Maps B) I.M.D. Weather Signs C) Isobaric Patterns a) Cyclone, b) Anticyclone, c) Trough/ V- Shaped Depression d) Secondary Depression, e) Wedge and f) Col	20



# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – IV

## PAPER III: PRACTICAL GEOGRAPHY

### Surveying, Leveling and Excursion/Village Survey Report

(Per Batch 12 Students and 4 periods per week)

(With effect from June, 2016)

#### Objectives:

1. To acquaint the students with surveying.
2. To acquire the knowledge of leveling by different instruments.
3. To give informal education to students through excursions.
4. To aware the students about socio-economic conditions of villages.

Unit No.	Topic	Sub-topics	Periods
I	Surveying	A) Meaning and Definition of Surveying B) Types of Survey – Plane and Geodetic C) Plane Table Survey a. Open Traverse Method b. Close Traverse Method D) Measurement of Plots, Play Ground, Agricultural Land with the help of Plane Table Survey E) Preparation of Layout as per Govt. Record	30
II	Leveling	A) Definition of Leveling B) Introduction to Dumpy Level, Indian Clinometer and Abney Level C) Determination of height / Slope with the help of a) Dumpy Level with examples i) Collimation Method ii) Rise and Fall Method b) Indian Clinometer with examples c) Abney Level with examples	20
III	Excursion or Village Survey	A) Excursion Report on Places of Geographical Interests OR Village Survey Report (Socio-economic Survey)	10
		<b>Total Periods</b>	<b>60</b>





# North Maharashtra University, Jalgaon

S. Y. B. Sc. Semester – III

## PAPER I: ENVIRONMENTAL GEOGRAPHY – I

(With effect from June, 2016)



### Objectives:

1. To create the environmental awareness amongst the students.
2. To acquaint the students with fundamental concepts of Environmental Geography.
3. To aware the students about the processes and patterns in the natural environment.
4. To acquaint the students with past, present and future utility and potentials of Environmental Geography at regional, national and global levels.
5. To make aware the students about the judicious use of resources.

Unit No.	Topic	Sub-topics	Periods
I	Introduction to Environmental Geography	A) Introduction to Environment a) Meaning and Concept b) Types of Environment: Natural(Physical) and Cultural B) Introduction to Environmental Geography a) Meaning and Concept b) Definitions c) Nature and Scope	10
II	Ecosystem	A) Meaning and Concept of Ecosystem B) Cardinal Principles of an Ecosystem a) Structure – Components i) Abiotic ii) Biotic b) Nutrient Cycling i) Carbon Cycle ii) Nitrogen Cycle c) Energy Flow i) Food Chain ii) Food Web C) Ecological Pyramids a) Population Pyramid b) Bio-mass Pyramid c) Energy Pyramid D) Types of Ecosystems a) Forest Ecosystem b) Desert Ecosystem c) Marine Ecosystem	20
III	Biodiversity	A) Definition B) Types of Biodiversity a) Genetic Diversity b) Species Diversity c) Ecosystem Diversity	15

		C) Biodiversity at Global, National and Local Levels D) Value of Biodiversity E) India as a Mega-diversity Nation F) Hot Spots of Biodiversity G) Threats to Biodiversity	
IV	Energy Resources	A) Concept and Definition B) Types of Energy Resources a) Conventional Energy Resources i) Coal – Types, Uses, Environmental Problems ii) Mineral Oil - Uses, Environmental Problems b) Non-conventional Energy Resources (with merits and demerits) i) Hydel ii) Wind iii) Solar	15
		<b>Total Periods</b>	<b>60</b>



#### Weightage of Marks

Unit No.	Marks
I	15
II	20
III	15
IV	10
Total Marks (University Level)	60
Internal Marks (College Level)	40

#### Reference Books:

- Ahirrao and Alizad (1999): *Environmental Science*, Nirali Publishing House, Pune
- Benny Josheph (2005): *Environmental Studies*, Tata McGraw-Hill Publishing Company, New Delhi.
- Cunningham W.P. and Cunningham M.A. (2003): *Principles of Environmental Science: Inquiry and Applications*, Tata McGraw Hill Publications, New Delhi.
- Miller, G.T. (2002): *Living in the Environment*, Books Cole Thomas Learning Inc. U.S.A.
- Misra S.P and Pandey S.N. (2014): *Essential Environmental Studies*, Ane Books Pvt. Ltd., New Delhi.
- Nagor, A.P. (1996): *Biological Diversity and International Environmental Law*, A.P.H Publication, New Delhi.
- Saxena, H.M.(2004): *Environmental Studies*, Rawat Publications, Jaipur.
- Sharma, P.D. (2004): *Ecology and Environment*, Rastogi Publications, Shivaji Road, Meerut.
- Singh, Savindra (2001): *Environmental Geography*, Prayag Pustak Bhavan, Alahabad-110002.

# NORTH MAHARASHTRA UNIVERSITY, JALGAON

## S.Y.B.A. SEMESTER- I

### New Syllabus

(with effect from: June 2017)

### Gg. 211(A): G2 – HUMAN GEOGRAPHY



Unit No.	Unit	Sub Unit	Periods
1.	Introduction to Human Geography	1.1 Definitions, Nature and Scope of Human Geography. 1.2 Branches of Human Geography a) Population Geography b) Social Geography c) Cultural Geography d) Economic Geography e) Political Geography f) Historical Geography 1.3 Relation between Man and Environment 1.4 Determinism and Possibilism 1.5 Stop and Go Determinism	18
2.	The Race of Mankind	2.1 Meaning and definition of race 2.2 Physical basis of racial groups 2.3 Classification of World Races a) Caucasoid b) Mongoloid c) Negroid d) Australoid 2.4 Ethnic groups in India. 2.5 Griffith Taylor's classification of Human Race	17
3.	Forms of Adaptation of the Environment	3.1 Human life in Cold region-Eskimo 3.2 Human life in Tropics: a) Equatorial region- Pigmy b) Desert region –Bushmen 3.3 Human life in Mountainous region	15
4.	Study of Human Tribes in India	Tribes in India a) Gonds b) Bhill c) Naga d) Santhal	10
<b>Total Periods</b>			<b>60</b>



### Weightage of Marks:

Sr. No.	Unit No.	Weightage
1	1	12
2	2	15
3	3	18
4	4	15
University Assessment (U. A.)		60
College Assessment (C. A.)		40



### References: -

- 1) Human Geography Dr. S. K. Shelar
- 2) Human Geography H. R. Robinson.
- 3) Human Geography A. V. Perpillow
- 4) Human Geography Emry Jones
- 5) Text book of Principal of Human Geography Ahirrao and Alizad
- 6) मानवी भूगोल : प्रा. ढाके, प्रा. पाटील व प्रा. भारंबे, प्रशांत प्रकाशन, जळगाव.
- 7) मानवी भूगोल : प्रा. करमरकर, प्रा. कार्लेकर
- 8) मानवी भूगोल : प्रा. खतीब, मेहता प्रकाशन, पुणे.
- 9) मानवी भूगोल : प्रा. क्षीरसागर, प्रा. भागवत, प्रा. सप्तर्षी
- 10) मानवी भूगोल : प्रा. सी.टी. पवार, सप्रेम प्रकाशन, कोल्हापूर
- 11) मानवी भूगोल : प्रा. प्रकाश सावंत फडके प्रकाशन, कोल्हापूर
- 12) मानवी भूगोल : डॉ. व्ही.टी. घारपुरे, नागपूर प्रकाशन.
- 13) मानवी भूगोल : डॉ. उत्तमराव जगदाळे, डायमंड प्रकाशन, पुणे.

North Maharashtra University, Jalgaon- New Syllabi of S.Y.B.A. Geography- w.e.f.-June 2017

## NORTH MAHARASHTRA UNIVERSITY, JALGAON

### S.Y.B.A. SEMESTER- I

#### New Syllabus

(with effect from: June 2017)

#### Gg. 211(B): G2 – Geography of Resources

Unit No.	Unit	Sub Unit	Periods
1	Introduction to Geography of Resources	1.1 Meaning and Concept of Resources. 1.2 Meaning and Concept of Resource of Geography. 1.3 Nature of Resource of Geography. 1.4 Scope of Resource of Geography. 1.5 Importance of Resources.	10
2	Classification of Resources	2.1 Basic Classification. a) Renewable Resources	10



		<p>b) Non- Renewable Resources</p> <p><b>2.2</b> Importance of Biotic &amp; Abiotic Renewable Resources</p> <p><b>2.3</b> Importance of Biotic &amp; Abiotic Non-Renewable Resources</p>	
3	<b>Land, Forest and Water Resources</b>	<p><b>3.1</b> Land Resources:</p> <p>a) Land as a Resources</p> <p>b) Importance of Land Resources</p> <p>c) Land Degradation due to Agriculture, Mining, Deforestation, Industrial and Solid Waste</p> <p><b>3.2</b> Forest Resources</p> <p>a) Importance and Uses of Forest Resources</p> <p>b) Causes and Effects of Deforestation.</p> <p>c) Remedial Measures to conservation of Forest Resources.</p> <p><b>3.3</b> Food Resources :</p> <p>a) Definition and Sources of food Resources</p> <p>b) Changes Caused by Agriculture and Overgrazing</p> <p>c) Effects of Modern Agriculture.</p> <p>d) Fertilizers, Insecticide and Pesticide Problems.</p> <p>e) World Food Problems</p>	18
4	<b>Mineral &amp; Energy Resources</b>	<p><b>4.1</b> Mineral Resources</p> <p>a) Importance of Mineral resources</p> <p>b) World Distribution and utilization of (Iron ore, Manganese, Bauxite)</p> <p><b>4.2</b> Energy resources (Coal, Mineral Oil, Hydel Power)</p> <p><b>1.3</b> Economic and environmental significance and conservation of Energy Resources.</p>	14
5	<b>Planning and Population Resources Relationship</b>	<p><b>5.1</b> Concept of Resources Planning.</p> <p><b>5.2</b> Need of Resources Planning.</p> <p><b>5.3</b> Resources Planning with References of India.</p>	08

### Weightage of Marks:

Sr. No.	Unit No.	Weightage
1	1	10
2	2	12
3	3	14
4	4	14
5	5	10
University Assessment (U.A.)		<b>60</b>
College Assessment (C.A.)		<b>40</b>



**References: -**

- 1) Alexander J. : Economic Geography
- 2) Dasgupta : Economic and Commercial Geography
- 3) Hartshone : Economic Geography
- 4) Agarwal, A.et.al. : The Citizen's Fifth Report, Center for Science and Environment, New Delhi, 1999.
- 5) Chandna, R.C. : A Geography of Population, Kalyani Publishers, Ludhiana, 1996.
- 6) Chandna, R.C. : Environmental Geography , Kalyani Publishers, Ludhiana, 1996.
- 7) Chawla, I.N.. : Geography of Resources, Bhart Prakashan, Jalandhar, latest edition.
- 8) Kates, R.W. & Burton, I (Eds.): Geography of Resources and Environment, Vol.I & II, University of Chicago Press, Chicago, 1986.
- 9) Misra, A. : Environmental Studies, Selective and Scientific Books, New Delhi, 2004.
- 10) Saxena, H.M. : Environmental Geography, Rawat Publications, Jaipur and New Delhi.
- 11) डॉ. विठ्ठल चारपुरे : संसाधन भूगोल

North Maharashtra University, Jalgaon- New Syllabi of S.Y.B.A. Geography- w.e.f.-June 2017

**NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**S.Y.B.A. SEMESTER- I**

**New Syllabus**

**(with effect from: June 2017)**

**Gg. 212(A): S1 – GEOGRAPHY OF TOURISM - I**

**Objectives of the Course:**

- 1) To develop and communicate basic conceptual framework of Geo -Tourism.
- 2) To understand the various elements of Geo-Tourism.
- 3) To realize its potentials, as against the achieved in the Indian context.
- 4) To motivate for Geo -tourism practices and processes of decision-making.
- 5) To evaluate the role of various organizations of Geo- tourism.

Unit No.	Unit	Sub Unit	Periods
1	Introduction to Geography of Tourism	1.1 Concept of Tourism 1.2 Definitions, Nature and Scope of Geography of Tourism 1.3 Elements of Tourism a) Mode of Travel b) Accommodation c) Recreation d) Time and Money e) Other 1.4 Factors affecting Tourism: - Historical, Geographical, Economical, Social & Cultural, Epidemics and Disasters.	14





2	<b>Classification of Tourism</b>	<p>2.1 According to Purpose: - Religious, Vacational, Study Tours, Professional.</p> <p>2.2 According to Nationality: - International, National, Regional, Local.</p> <p>2.3 According to Travel Time: - Long haul, Short Haul Travel.</p> <p>2.4 According to Distance: - Short distance, Long Distance.</p>	14
3	<b>Impacts of Tourism</b>	<p>Positive and Negative Impacts of Tourism:</p> <p>3.1 Environmental Impacts: Land, Water,</p> <p>3.2 Air, Noise, Vegetation/Forest &amp; Wildlife</p> <p>3.3 Economic Impacts: Foreign exchange,</p> <p>3.4 Employment, Land Values, Trade,</p> <p>3.5 Govt. Revenue, Infrastructure.</p> <p>3.6 Social &amp; Cultural Impacts: Religion,</p> <p>3.7 Crime, Terrorism, Health, Neo-colonism</p> <p>3.8 Linguistics.</p>	14
4	<b>Tourism Development</b>	<p>4.1 Development of Tourism in India &amp; Maharashtra</p> <p>4.2 Role of Tourist Organizations- MTDC, ITDC, WTO</p> <p>4.3 Role of Internet in Tourism Development</p> <p>4.4 Case Studies of Tourism Centers in India (Geographical and Tourism aspects) – Toranmal, Shirdi, Ajanta, Goa and Agra</p>	18

#### Weightage of Marks

Sr. No.	Unit No.	Weightage
1	1	15
2	2	15
3	3	15
4	4	15
University Assessment (U.A.)		60
College level Assessment (C.A.)		40

#### References: -

- 1) Bhatia, A.K. (1991) : International Tourism Fundamentals and Practices, Sterling Publishers Pvt. Ltd., New Delhi-110016
- 2) Bhatia, A.K. : Tourism Development, Sterling Publishers Pvt. Ltd., New Delhi-110016
- 3) Boniface B. and Cooper C. -the Geography of Travel and Tourism, Heinemann Professional Publishing. London, England 1987
- 4) Burkart and Medlik -Tourism, Past, Present and Future Heinemann, ELBS. (1981)
- 5) Cooper, Fletcher, Tourism, Principles and practices, Pitman. Publishing ,1993



**NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**S.Y.B.A. SEMESTER- II**

**New Syllabus**

**(with effect from: June 2017)**

**Gg. 221(A): G2 – ECONOMIC GEOGRAPHY**

**Objectives of the Course:**

- 1) To acquaint with the knowledge of economic realm in the world as well as in India.
- 2) To study the economic geography as a major branch of human geography.
- 3) To highlight the different economic activities observed in the world.
- 4) To study mineral and power resources in the specific regions of the world.
- 5) To study theory and modals in economic geography.
- 6) To explain the trade and transport activities in the world.

Unit No.	Unit	Sub Unit	Periods
1	<b>Introduction to Economic Geography</b>	1.1 Definitions. 1.2 Nature of Economic Geography. a) Interdisciplinary b) Dynamic 1.3 Scope of Economic Geography. 1.4 Approaches of Economic Geography. a) Regional approach b) Commodity approach c) Principle approach	12
2	<b>Economic Activities</b>	2.1 Meaning of economic activities. 2.2 Types of economic activities with characteristics and examples. a) Primary activities. b) Secondary activities. c) Tertiary activities. d) Quaternary activities.	12
3	<b>Mineral and Power Resources</b>	3.1 Distribution and production of a) Iron ore (USA & India) b) Coal (USA & India) 3.2 Distribution and importance of following Power resources in India a) Thermal power (State wise Distribution) b) Hydel power (10 Major Hydel Power Projects in India)	12



**NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**S.Y.B.A. SEMESTER- II**

**New Syllabus**

**(with effect from: June 2017)**

**Gg. 221(A): G2 – ECONOMIC GEOGRAPHY**

**Objectives of the Course:**

- 1) To acquaint with the knowledge of economic realm in the world as well as in India.
- 2) To study the economic geography as a major branch of human geography.
- 3) To highlight the different economic activities observed in the world.
- 4) To study mineral and power resources in the specific regions of the world.
- 5) To study theory and modals in economic geography.
- 6) To explain the trade and transport activities in the world.

Unit No.	Unit	Sub Unit	Periods
1	<b>Introduction to Economic Geography</b>	1.1 Definitions. 1.2 Nature of Economic Geography. a) Interdisciplinary b) Dynamic 1.3 Scope of Economic Geography. 1.4 Approaches of Economic Geography. a) Regional approach b) Commodity approach c) Principle approach	12
2	<b>Economic Activities</b>	2.1 Meaning of economic activities. 2.2 Types of economic activities with characteristics and examples. a) Primary activities. b) Secondary activities. c) Tertiary activities. d) Quaternary activities.	12
3	<b>Mineral and Power Resources</b>	3.1 Distribution and production of a) Iron ore (USA & India) b) Coal (USA & India) 3.2 Distribution and importance of following Power resources in India a) Thermal power (State wise Distribution) b) Hydel power (10 Major Hydel Power Projects in India)	12





**NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**S.Y.B.A. SEMESTER- II**

**New Syllabus**

**(with effect from: June 2017)**

**Gg. 221(B): G2 – GEOGRAPHY OF WATER RESOURCE**

**Objectives of the Course:**

1. To know the significance of newly developed branch – 'Geography of Water Resources'.
2. To Study the problems related to water resources.
3. To know the conservative measures of water resources.
4. To aware the students about various aspects of the scientific management of water resources.

Unit. No.	Unit	Sub Unit	Periods
1	Introduction	1.1 Water as a valuable natural resource 1.2 Definition and Concept of Geography of water resource 1.3 Nature and Scope of Geography of water resource 1.4 Distribution of world's water resource (Surface and subsurface) 1.5 Hydrological cycle	16
2	Water Resources Utilization and Related Problems	2.1 Agricultural use of water, water logging, salinity problems 2.2 Industrial use of water 2.3 Water resource pollution problems 2.4 Causes of ground water depletion 2.5 Causes of scarcity of water	16
3	Conservations of Water Resources	3.1 Rain water harvesting and its need 3.2 Watershed development and its need 3.3 Pollution control measures 3.4 Water literacy 3.5 Planning for the development of water resource	12
4	Management of Water Resources	4.1 Social and Institutional considerations in water management 4.2 Conjunctive use of surface and ground water 4.3 Role of Jalyukt Shivar Scheme in water resource management 4.4 Role of River linkage in water resource management 4.5 Applications of Remote Sensing &GIS in water resource management	16

III	<b>Movement of Ocean Water</b>	<p><b>(A) Oceanic Waves</b></p> <p>i) Definitions, Nature and Characteristics of Waves.</p> <p>ii) Breaking of waves</p> <p>iii) Tsunami waves: Definitions, characteristics and effects of Tsunami.</p> <p><b>(B) Ocean Currents</b></p> <p>i) Definition and types.</p> <p>ii) Characteristics.</p> <p>iii) Causes of origin.</p> <p>iv) Ocean currents in following oceans.</p> <p>a) Atlantic Ocean b) Indian Ocean</p> <p>v) Effects of ocean currents.</p>	12	16
IV	<b>Marine Deposits and Coral Reefs</b>	<p><b>(A) Marine Deposits.</b></p> <p>i) Meaning of marine deposit.</p> <p>ii) Classification based on the Sources of Origin.</p> <p>a) Terrigenous b) Biogenous c) Hydrogenous d) Cosmogenous (Only Meaning and examples)</p> <p>iii) Types of Ooze a) Calcareous Ooze b) Siliceous Ooze.</p> <p><b>B) Coral Reefs.</b></p> <p>i) Definition and formation of Coral Reefs.</p> <p>ii) Types of Coral Reef:</p> <p>a) Fringing Reef b) Barrier Reef c) Atolls d) Table Reef e) Patch Reef.</p>	11	16



**Reference Books**

- 1) Ahirao, Alizad and Dhapate (2002): Climatology and oceanography
- 2) Bharambe, Dhake and Patil, Physical Geography Part-II, Atmosphere and Hydrosphere.
- 3) Bhartwaj K, Physical Geography-Oceanography, Discovery publishing house New Delhi.
- 4) Davis Richard J.A., (1987): Oceanography- An introduction to the marine Environment, W.M.C.,Brooth Flow.
- 5) Garison T. (1998): Oceanography, Wards worth Company, USA
- 6) K. Siddhartha (2001): Oceanography A Brief Introduction, Kisalaya Publication Pvt. Ltd. Padma Apartment New Delhi.
- 7) Khan Nizamuddin (2001): An Introduction to Physical Geography, Concept Publication Company, New Delhi.
- 8) Majid Husain (2001): Fundamental of Physical Geography, Ravat Publication, Jaipur
- 9) Negi B.S., Climatology and oceanography, Kedarnath and RamnathPublishing , Meerut.
- 10) Padey, P.N. (2002): Physical Geography, NiraliPrakashan, Pune
- 11) Ross D.A.(1988): Introduction to Oceanography, Prentice Hall, New Jersey.
- 12) Savindar Sing, Physical Geography, Prayagpustakbhavan, Alahabad
- 13) Sharma R.C. and Vatal,(1970): Oceanography for Geographers, Chaitanya Delhi.
- 14) Tikha R.N., Physical Geography, kedarnath and ramnath and co. Merrut
- 15) Various websites of internet.



## North Maharashtra University, Jalgaon

### F. Y. B. Sc. Semester - II

#### Gg.202: PHYSICAL GEOGRAPHY (HYDROSPHERE)

(With effect from June, 2018)

**Silent features:**

- Basic concepts regarding Hydrosphere.
- Information regarding Marine Deposits and Coral reefs

**Utility:**

- To understand properties and movement of ocean water.

**Learning Objective:**

- To introduce the students to the basic concepts of Oceanography.
- To introduce the origin and effects of Tsunami.
- To make the student aware about the application of Oceanography in different areas.

**Pre-requisites:**

- Maps – Charts – Models – Audio – Visual aids etc.

UNIT	TOPIC	SUB TOPIC	Lectures	Marks
I	<b>Introduction to Hydrosphere and Submarine Relief</b>	(a) Meaning and concept of Hydrosphere (b) Importance of the study of Hydrosphere in modern time (c) Surface configuration of ocean floor. (d) Submarine relief of following oceans: i) Atlantic ii) Indian Ocean	10	12
II	<b>Properties of ocean water</b>	<b>(A) Salinity</b> i) Definitions ii) Composition of salinity of ocean water according to Ditmar's research. iii) Factors affecting the distribution of salinity of ocean water. iv) Distribution of salinity- open ocean, partially enclosed sea, inland sea & lakes <b>B) Temperature</b> i) Distribution of Ocean water temperature: a) Horizontal b) Vertical. <b>C) Density</b> i) Definitions and characteristics of density of ocean water. ii) Factors controlling the density of ocean water.	12	16



॥ अंतरी पेटवू ज्ञानज्योत ॥



(NAAC ACCREDITED)

**NORTH MAHARASHTRA UNIVERSITY,  
JALGAON**

**SYLLABUS FOR F.Y.B.A.  
SEMESTER PATTERN  
(CHOICE BASED CREDIT SYSTEM)**

**POLITICAL SCIENCE**

**&**

**PUBLIC ADMINISTRATION  
(WITH EFFECT FROM JUNE - 2018)**



N.M.U. JALGAON  
CHOICE BASED CREDIT SYSTEM  
F.Y.B.A. POLITICAL SCIENCE  
DISCIPLINE SPECIFIC CORE COURSE (4)  
With form June - 2018



C.C.POL - G - 101 A, Paper I - Indian Constitution

DSC - A - 1

Periods - 60

Credit : 03

Marks - 60

**Semester - I**

**Course Rational :** - This paper is a basic introduction to the process, concept and working of Indian constitution. India Constitution is a social document. This paper acquaints students with the constitution, design of state structure institutions and their actual working over time. The Indian constitution accommodates conflicting impulses of liberty and justice, territorial decentralization and a strong union for instance within itself. The paper traces the embodiment some of these conflicts in constitutional provisions and shows how thus have played out in political practices in further encourages study of state in situation in their mutual interaction with the larger extra constitutional environment & recent trends in Indian democracy.

Course Content	Periods	Marks
Chapter:1 <u>Indian Constitution &amp; Indian Federal System</u>	20	20
A. <u>Indian Constitution:Historical background,</u> Making Process, Preamble,Salient features of Indian Constitution		
B. <u>Indian Federal System : Structure,Nature , Features of Indian Federal System</u>		
Chapter : 2 <u>Fundamental Rights, Duties &amp; Directive Principals</u>	20	20
A. <u>Fundamental Rights &amp; Duties : Meaning, Scope, Nature &amp; Importance of fundamental Rights &amp; Duties,</u> Difference between Rights & Duties		
B. <u>Directive Principals : Meaning, Scope, Types, Nature and Importance of Directive Principles ,</u> Differences between Fundamental Rights and Directive Principles.		
Chapter :3 <u>Constitutional Bodies And Amendment Process</u>	20	20
A. Constitutional Bodies : National Minority Commission National Human Rights Commission National Institution for Transforming India		
B. Amendment Process: Meaning, Importance Provision in Indian Constitution Major Amendments – 73, 74, 86,101.		

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॥ अंतरी पेटवू ज्ञानज्योत ॥



★★★★  
(NAAC ACCREDITED)

**NORTH MAHARASHTRA UNIVERSITY,  
JALGAON**

**SYLLABUS FOR F.Y.B.A.  
SEMESTER PATTERN  
(CHOICE BASED CREDIT SYSTEM)**

**POLITICAL SCIENCE  
&  
PUBLIC ADMINISTRATION  
(WITH EFFECT FROM JUNE - 2018)**







**N.M.U. JALGAON**  
**CHOICE BASED CREDIT SYSTEM**  
**F.Y.B.A. POLITICAL SCIENCE**  
**DISCIPLINE SPECIFIC CORE COVESE (4)**  
**With form June - 2018**

**C.C.POL - G - 101 A, Paper I - Indian Constitution**

**DSC - A - 1**

**Periods -**

**Credit : 03**

**Marks - 60**

**Semester - I**

**Course Rational :** - This paper is a basic introduction to the process, concept and working of Indian constitution. India Constitution is a social document. This paper acquaints students with the constitution, design of state structure institutions and their actual working over time. The Indian constitution accommodates conflicting impulses of liberty and justice, territorial decentralization and a strong union for instance within itself. The paper traces the embodiment some of these conflicts in constitutional provisions and shows how thus have played out in political practices in further encourages study of state in situation in their mutual interaction with the larger extra constitutional environment & recent trends in Indian democracy.

Course Content	Periods	Marks
<b>Chapter:1 Indian Constitution &amp; Indian Federal System</b>	<b>20</b>	<b>20</b>
<b>A. Indian Constitution:</b> Historical background, Making Process, preamble, Salient features		2
<b>B. Indian Federal System :</b> Structure Nature , Features of Indian constitution		
<b>Chapter : 2 Fundamental Rights, Duties &amp; Directive Principals</b>	<b>20</b>	<b>20</b>
<b>A. Fundamental Rights &amp; Duties :</b> meaning scope nature & importance of fundamental Rights & Duties Difference between Rights & Duties		
<b>B. Directive Principales :</b> Meaning, Scope, Nature and Importance, Types, Differences between Fundamental Rights and Directive principles.		
<b>Chapter : 3 Constitutional Bodies And Amendment Process</b>	<b>20</b>	<b>20</b>
<b>A) Constitutional Bodies :</b> National Minority Commission National Human Right Commission National Institution for Transforming India		
<b>B) Amendment Process:</b> Meaning, Importance Provision in Indian Constitution Major Amendments – 73,74,86,101.		

**N.M.U. JALGAON**  
**CHOICE BASED CREDIT SYSTEM**  
**F.Y.B.A. POLITICAL SCIENCE**  
**DISCIPLINE SPECIFIC CORE COVESE (4)**

With form June - 2018

**C.C.POL - G - 201 A, Paper II - Indian Government**

DSC - A - 2  
 Credit : 03

Periods -  
 Marks - 60

Semester - II



Course Content	Periods	Marks
<b>Chapter : 1</b> <b><u>Government (Union and State)</u></b> A) Executive (Union) : 1. President 2. Vice President 3. Prime Minister 4. Council of Minister State Executive : 1. Governor 2. Chief Minister 3. Deputy Chief Minister 4. Council of Ministers (Composition, Powers and Functions, Law making process) B) <b>Legislature : (Union and State)</b> Union : <b>Lok Sabha, Rajya Sabha</b> Composition, Powers and Functions, Law making process  State : <b>Vidhan Sabha, Vidhan Parishad</b> Composition, Powers and Functions, Law making process		
<b>Chapter : 2</b> <b><u>Judiciary and Constitutional Commission</u></b> A) Judiciary : Supreme Court, High Court Composition Powers and Function Judicial Review, Judicial Activism Public Interest Litigation (PIL), Judicial Reforms  B) Constitutional Commission : Atterney General, Comptroller and Auditor General, Lokpa, Lokayukta, Election Commission of India	20	20
<b>Chapter : 3</b> <b><u>Centre-State Relation and Civil Services</u></b> A) Centre – State Relation – Legislative, Administrative, Finacial Relation, Centre-State Dilemma  B) Civil Service : Meaning, Historical background, Union Public Service Commission, State Public Service Commission (Power, functions and importance)	20	20

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**North Maharashtra University Jalgaon**  
**Syllabus for F.Y.B.A.**  
**With Effect form June 2018**  
**Semester Pattern**  
**Choice Based Credit System (CBCS)**

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**Political Science**

**General Paper**

**C.C. POL - G 101 - A - (Semester I)**

- **Indian Constitution**

**C.C. POL - G - 201 - A - (Semester II)**

- **Indian Government**
- 

**Optional Paper**

**C.C. POL - G - 101 - B, Semester I**

- **Political Theory and key concept**

**C.C. POL - G - 201 - B, Semester II**

- **Political Theory and key concept**
- 

**Public Administration**

**General Paper**

**C.C. PUB - G - 101 - A - Semester I**

- **Rural Administration in Maharashtra**

**C.C. PUB - G - 201 - A - Semester II**

- **Urban Administration in Maharashtra**





**North Maharashtra University Jalgaon**  
**Syllabus for F.Y.B.A.**  
**With Effect form June 2018**  
**Semester Pattern**  
**Choice Based Credit System (CBCS)**

<b>SEMESTER I - Political Science</b>				
Sr.No.	Paper	Old Course	Old Course June 2015	CBCS, New Course June 2018
1	Sem I Gen. Paper C.C. POL - A - G - 1 DSC - A I	<u>Indian Constitution</u>	<u>Introduction to Indian Constitution</u>	Indian Constitution
	Sem I Gen. Paper (optional) C.C. POL - A - G - 1 DSC - A I	<u>Local self Government in Maharashtra</u>	<u>Rural Local Government in Maharashtra</u>	Political Theory and Key concept
<b>SEMESTER II</b>				
2	Sem II Gen. Paper C.C. POL - A - G - 1 DSC - A II	<u>Local self Government in Maharashtra</u>	<u>Urban Local Government in Maharashtra</u>	Indian Government
	Sem II Gen. Paper (optional) C.C. POL - A - G - 1 DSC - A - I			Political Theory and Key concept
<b>SEMESTER I - Public Administration</b>				
1	Sem I Gen. Paper C.C. PUB - B - G - II DSC - B - I	<u>Indian Administration</u>	<u>Indian Administration System</u>	Rural Administration In Maharashtra
<b>SEMESTER II</b>				
2	Sem II Gen. Paper C.C. PUB - B - G - II DSC - B - II	<u>Indian Administration</u>	<u>Indian Administration System</u>	Urban Administration In Maharashtra

॥ अंतरी पेटवू ज्ञान ज्योत ॥



(NAAC ACCREDITED)

Kavayitri Bahinabai Chaudhari  
North Maharashtra University,  
Jalgaon

**Revised Syllabus**  
**For**  
**Political Science**  
**( S.Y.B.A)**

CBCS. Semester Pattern  
( Choice Based Credit System)  
Semester III & IV

**Academic Year 2019-2020**

**Under the Faculty of Humanities**

**Kavayitri Bahinabai Chaudhari North Maharashtra University ,Jalgaon**

**'A' Grade NAAC Re-Accredited (3<sup>rd</sup> Cycle)**

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क.व.चौ.उ.म. विद्यापीठ, जळगाव  
एस.वाय.वी.ए. (CBCS Pattern) अभ्यासक्रम  
राज्यशास्त्र - सत्र - 3



Paper Code : DSC - 1C Introduction to Administration of Maharashtra

'महाराष्ट्राच्या प्रशासनाची ओळख'  
(जून 2019 पासून)

Credits : 02  
तासिका : 60

एकूण गुण 100  
[ अंतर्गत गुण 40  
बहिःस्थ गुण 60 ]

Total Colck Hours - 45

प्रकरण पहिले - महाराष्ट्राची ओळख

Period 15

1. महाराष्ट्राची पार्श्वभूमी - ऐतिहासिक, भौगोलिक, सामाजिक, आर्थिक आणि राजकीय
2. महाराष्ट्र राज्य स्थापनेचा इतिहास
3. महाराष्ट्राचे प्रशासन : उच्चक वैशिष्ट्ये
4. महाराष्ट्राचे पुनर्रचित प्रशासकीय विभाग आणि जिल्हे

प्रकरण दुसरे - राज्य सचिवालय (मंत्रालय)

Period 15

1. परिचय आणि रचना
2. सचिवालयाची कार्ये आणि महत्त्व
3. राज्याच्या मुख्य सचिवांची भूमिका
4. संचालनालय - वैशिष्ट्ये आणि कार्ये

प्रकरण तिसरे - जिल्हा प्रशासन

Period 15

1. अर्थ, महत्त्व
2. उद्देश आणि कार्ये
3. जिल्हाधिकारी - अधिकार, कार्ये  
जिल्हाधिकार्याचे स्थान (दर्जा) आणि बदलती भूमिका
4. कायदा आणि सुव्यवस्था : अर्थ, तत्त्वे, पध्दती आणि अंमलबजावणी

**Reference Books:**

1. Indian Administration : Avasthi & Avasthi
2. Indian Administration : N. Jayapalan
3. Indian Administration : Ashok Chanda
4. Social Reformers of Maharashtra : Y.D. Phadake
5. Dalit Movement in India : Jogdand Pralhad
6. Farmers Movement in India : M.V. Nadkarni
7. Politics in Maharashtra : Thakkar Usha & Kulkarni Mangesh
8. Indian Administration : S.R. Maheshwari, Orient Longman
9. महाराष्ट्रातील सामाजिक- राजकीय चळवळी व प्रशासन : डॉ. सुभांगी राठी, अश्व प्रकाशन, जळगाव, आवृत्ती 2014



क.व.चौ.उ.म. विद्यापीठ, जळगाव  
एस.वाय.बी.ए. (CBCS Pattern) अभ्यासक्रम  
राज्यशास्त्र - सत्र - 4

Paper Code : DSE - 1B

Reading Dr. Ambedkar  
(डॉ. आंबेडकर यांचे अध्ययन)  
(जून 2019 पासून)



Credits : 03  
तासिका : 60

एकूण गुण 100  
अंतर्गत गुण 40  
बहिस्थ गुण 60

Total Clock Hours : 45

प्रकरण पहिले - डॉ. बाबासाहेब आंबेडकर यांच्या मुख्य संकल्पना

1. भारतीय समाजाची पार्श्वभूमी, जात, वर्ण आणि अस्पृश्यता
2. भारतीय राज्यघटना आणि राज्यघटनावाद
3. सामाजिक विचार- समता, मूलभूत हक्क
4. सामाजिक न्याय, आरक्षण (राखीव जागा)
5. महिलांचे स्वातंत्र्य, हिंदू कोड बिल
6. मूल्यमापन

प्रकरण दुसरे - राजकीय व धार्मिक विचार

1. उदारमतवाद, राष्ट्र, राष्ट्रवाद
2. लोकशाही, संसदीय लोकशाही
3. राज्य समाजवाद
4. धर्मनिरपेक्षता, हिंदू धर्मासंबंधी विचार
5. बौद्ध धर्म आणि धर्मांतर
6. मूल्यमापन

प्रकरण तिसरे - डॉ. बाबासाहेब आंबेडकरांचे विचार

1. शिक्षण विषयक विचार
2. कामगार संघटना विषयक विचार
3. राजकीय पक्ष आणि वृत्तपत्रांचे स्वातंत्र्य विषयक विचार
4. लोकसंख्या नियंत्रण आणि आर्थिक विचार
5. कृषीविषयक आणि जलनिती विषयक विचार
6. मूल्यमापन

क.ब.चौ.उ.म. विद्यापीठ, जळगाव  
एस.वाय.बी.ए. (CBCS Pattern) अभ्यासक्रम

राज्यशास्त्र - सत्र - 3

Paper Code : DSE - 1A Reading Mahatma Gandhi

(महात्मा गांधीचे अध्ययन)

(जून 2019 पासून)



Credits : 03

तासिका : 60

एकूण गुण 100

अंतर्गत गुण 40

बहिस्थ गुण 60

Total Clock Hours - 45

प्रकरण पहिले - म. गांधीच्या प्रमुख संकल्पना

Period 15

- 1) सत्य - अर्थ, प्रकार
- 2) अहिंसा - अर्थ, प्रकार, जागतिक शांततेतील अहिंसेची भूमिका
- 3) सत्याग्रह - अर्थ, प्रकार, सत्याग्रहाची साधने
- 4) विश्वस्त संकल्पना - अर्थ, उद्दिष्टे
- 5) हिंद स्वराज्य, राष्ट्रवाद
- 6) मूल्यमापन

प्रकरण दुसरे - राजकीय व 'धर्मा' बाबतचे विचार

Period 15

- 1) स्वातंत्र्य खेडे आणि ग्रामराज्य
- 2) सर्वोदय - अर्थ, तत्वे व महत्त्व
- 3) धर्म आणि राजकारण
- 4) हिंदु-मुस्लिम ऐक्य
- 5) नैतिकता
- 6) मूल्यमापन

प्रकरण तिसरे - म. गांधीचे सामाजिक कल्याणासंबंधीचे विचार

Period 15

- 1) अस्पृश्यता व जातिय ऐक्य
- 2) महिला व शिक्षणासंबंधीचे विचार
- 3) भांडवलवाद, नागरीकरण
- 4) आरोग्य व स्वच्छता
- 5) शेतकरी, कामगार, आदिवासी जमात, अल्पसंख्यांक संबंधी विचार
- 6) मूल्यमापन

॥ अंतरी पेटवू ज्ञानज्योत ॥

"A" Grade NAAC Re- Accredited  
(3<sup>rd</sup> Cycle)



K.B.C. North Maharashtra University, Jalgaon (M.S)

Faculty of Humanities Syllabus under Choice-Based Credit System

Third Year Arts : Political Science

Semester : Fifth and Six (5 & 6)

[Since June 2020-2021 Academic Year]

- DSC Political Science, Discipline Specific Core Course  
Semester : 5  
DSC 1 E Indian Political Thinker Part - I — P.E., H.V.  
Semester : 6  
DSC 1 F Indian Political Thinker Part - II P.E - H.V.
- DSE Pol. Sci, Discipline Specific Elective Course  
Semester : 5  
DSE 3A Western Political Thinker Part - I ✗  
Semester : 6  
DSE 3B Western Political Thinker Part - II  
Semester : 5  
DSE 4A Political Sociology Part - I  
Semester : 6  
DSE 4B Political Sociology Part - II
- G.E. Pol. Sci. Generic Elective (Interdisciplinary)  
Semester : 5  
G.E.1 A Indian Civil Services P.E., H.V.  
Semester : 6  
G.E.1 B Civil Services and Good Governance P.E., H.V.
- SEC Pol. Sci Skill Enhancement Course  
Semester : 5  
SEC 3 Journalism and Mass Communication P.E - H.V.  
Semester : 6  
SEC 4 Political Journalism P.E H.V.





Sr. No	Semester	Discipline Specific Core Course DSC	Ability Enhancement Compulsory Courses AEC	Skill Enhancement Course SEC	Discipline Specific Elective Courses DSE	Generic Elective GE
1.	V Credits : 28 10 Papers [5 <sup>th</sup> Sem]	MIL 3 (03) DSC 1 E (03) (Pol.Sci G3) DSC 2 E (03) DSC 3 E (03)	English Communication (02)	SEC3 (02) Political Sci	DSE 3 A (03) Pol. Sci S-3 DSE 4 A (03) Pol. Sci S-4	GE 1 A (03) -Pol Sci GE 2 A (03)
2.	VI Credits : 28 10 Papers [6 <sup>th</sup> Sem]	MIL 4 (03) DSC 1 F (03) (Pol.Sci G3) DSC 2 F (03) DSC 3 F (03)	English Communication (02)	SEC4 (02) Political Sci	DSE 3 B (03) Pol. Sci S-3 DSE 4 B (03) Pol. Sci S-4	GE 1 B (03) -Pol Sci GE 2 B (03)

- AEC – English Communication ही अनिवार्य अभ्यास पत्रिका आहे. तृतीय वर्षास प्रवेशित प्रत्येक विद्यार्थ्याने ही अभ्यासपत्रिका अभ्यासणे अनिवार्य आहे.
- MIL ही अनिवार्य अभ्यास पत्रिका आहे. तृतीय वर्षास प्रवेशित प्रत्येक विद्यार्थ्याने मराठी, हिंदी, संस्कृत, पाली, अर्धमागधी, उर्दू या पैकी महाविद्यालयात शिकवल्या जाणाऱ्या कोणत्याही एका भाषा विषयाच्या MIL मधील अभ्यास पत्रिकेची निवड करणे अनिवार्य आहे.
- DSE 3, 4 मध्ये राज्यशास्त्र विषयाची अभ्यासपत्रिकाची निवड केल्यास DSC मधील तीन अभ्यासपत्रिका पैकी एक अभ्यासपत्रिका राज्यशास्त्र विषयाची निवडणे अनिवार्य आहे.
- DSC मधील अन्य दोन अभ्यासपत्रिका अन्य कोणत्याही दोन विषयांच्या निवडता येतील.
- SEC मध्ये महाविद्यालयात उपलब्ध असलेल्या कोणत्याही विषयाच्या कौशल्याधारित अभ्यासपत्रिकांची निवड करणे अनिवार्य आहे.
- GE मध्ये महाविद्यालयात विशेष स्तरावर उपलब्ध कोणत्याही दोन विषयांच्या प्रत्येकी एक अशा एकूण दोन आंतरविद्याशाखीय अभ्यास पत्रिकांची निवड करणे अनिवार्य आहे. (उदा. GE राज्यशास्त्र आणि GE मराठी ).

**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester VI**

**Paper Code : GE 1B: Management and Good Governance [w.e.f. June 2020]**

Credit: 03  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60



**Course Objective:**

This paper provides the conceptual framework of the civil services and good governance. It delves deep in meaning, origin, forms of civil services and good governance in general. This course will be helpful and encourage students to acknowledge civil services and good governance process in India. An intention of this paper is to understand origin, development, and challenges before good governance in India.

**CHAPTER 1: Good Governance.**

- i) Meaning and Definition.
- ii) Silent Features of Good Governance.
- iii) Elements of Good Governance.
- iv) Obstacles in the way of Good Governance.
- v) Challenges before Good Governance.

**CHAPTER 2: Management.**

- i) Meaning, Definition and Types of Management.
- ii) Characteristic of Management.
- iii) Approaches of Management.
- iv) Functions of Management, POSDCORB.
- v) Test of Good Management and Importance.

**CHAPTER 3: Administrative Leadership.**

- i) Meaning and Approaches of Administrative Leadership.
- ii) Development of Administrative Leadership.
- iii) Essential Qualities of Administrative Leads.
- iv) Functions of Administrative Leadership.
- v) Relationship of Good Governance and Administration.

**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester VI**



**Paper Code : SEC- 4 Political Journalism [w.e.f. June 2020]**

Credit: 02  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60

**Course Objective:**

This paper deals with concepts and dimensions in journalism, mass communication and political journalism. It highlights various aspects of press, media and its type and methods. This course will help learners to understand dynamics within Journalism, Political journalism and communication means and ends and his process in society and nation. This course will give introduction to the students of journalism aims to provide voters with the information to formulate their own opinion and participate in community, Local to global matter that will effect then political journalism is provided through different mediums in print, broadcast, online reporting, instant coverage of campaign politics, event news, government status, elections updates etc.

**CHAPTER 1: Political Journalism.**

- i) Meaning, Definition, Nature, Scope & Significance in Political Journalism.
- ii) Sources of Political Journalism.
- iii) Code of conduct for Political Journalism.
- iv) Commercialization of Journalism.
- v) Fear of Political Journalism.

**CHAPTER 2: Methods of Political Journalism.**

- i) Commentary of Legislation.
- ii) Political Interview.
- iii) Press Conference.
- iv) Political Analysis.
- v) Reporting of Political Events.

**CHAPTER 3: Politics and Media.**

- i) Influence of Media on Decision Making Process.
- ii) Role of Media in Leadership Development.
- iii) Role of Media in Awareness.
- iv) Party Spirited Newspapers, Paid News.
- v) Challenges before Political Journalism and Media.



**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester VI**



**Paper Code : DSC-1 F Indian Political Thinker Part - II [w.e.f. June 2020]**

Credit: 03  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60

**Course Objective:**

This is an introductory paper to the concept ideas and theories developed in India. It deals with the main sources of the political traditions in modern India and focusses the development of social Institution and as various patterns of politics that emerged in modern India. This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in Pre- and Post-independence India. The main objective to study this paper is to understand key thinker's seminal contribution to the evolution of political theorizing in India.

**CHAPTER 1: Vinayak Damodar Savarkar.**

- i) Thought of Hindu Nationalism & Internationalism.
- ii) Thought on Indian Freedom, Revolution, Ahinsa and Militarism.
- iii) Thought of Social Reforms.
- iv) Saftshrunkalas.
- v) Views on Hindu Modernization.

**CHAPTER 2 : Dr. Babasaheb Ambedkar.**

- i) Indian Constitution and Constitutionalism.
- ii) Thought on Social and Political Democracy.
- iii) Critique of Caste System.
- iv) Views on Marxism.
- v) Views on State Socialism, Evaluation.

**CHAPTER 3 : Pandit Jawaharlal Nehru**

- i) Views on Democracy.
- ii) Views on Democratic Socialism.
- iii) Ideas on Planning and Development.
- iv) Thought on Non-Alignment, Panchsheel, World Peace.
- v) Architect of Modern India Evaluation.

**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester V**



**Paper Code : GE 1A: Indian Civil Services [w.e.f. June 2020]**

Credit: 03  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60

**Course Objective:**

This paper provides the conceptual framework of the civil services and good governance. It delves deep in meaning, origin, forms of civil services and good governance in general. This course will be helpful and encourage students to acknowledge civil services and good governance process in India. An intention of this paper is to understand origin, development, and challenges before good governance in India.

**CHAPTER 1: Civil Services.**

- i) Meaning, Definition and Significance.
- ii) Historical Background and Development of Civil services.
- iii) Characteristics of Civil Services.
- iv) Function and Role of civil Services.
- v) Demerits and Committed of Civil Services.

**CHAPTER 2: Recruitment, Training and Promotion.**

- A) Recruitment
  - i) Meaning, Definition and Significance.
  - ii) Methods, Types and Problem of Recruitment.
- B) Training
  - i) Meaning, Objects, and Importance of Training.
  - ii) Methods and Types of Training.
- C) Promotion.
  - i) Meaning and Importance of Promotion.
  - ii) Principles of Promotion.

**CHAPTER 3: Union and State Public Services.**

- i) System of Recruitment in India.
- ii) Methods of Determining Qualification ( Written test, Syllabus, Interview, Performance Test, Psychological and Physical Test)
- iii) Training and Appointment.
- iv) Reservation Policy.
- v) Retirement, Purpose, Kinds, Benefits.

**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester V**



**Paper Code : SEC- 3 Journalism and Mass Communication [w.e.f. June 2020]**

Credit: 02  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60

**Course Objective:**

This paper deals with concepts and dimensions in journalism, mass communication and political journalism. It highlights various aspects of press, media and its type and methods. This course will help learners to understand dynamics within Journalism, Political journalism and communication means and ends and his process in society and nation. This course will give introduction to the students of journalism aims to provide voters with the information to formulate their own opinion and participate in community, Local to global matter that will effect then political journalism is provided through different mediums in print, broadcast, online reporting, instant coverage of campaign politics, event news, government status, elections updates etc.

**CHAPTER 1: Introduction to Journalism**

- i) Nature, Scope, and significance of Journalism.
- ii) Press and Society.
- iii) Press and Government.
- iv) Freedom of Press and Constitutions.
- v) Awareness and Socialization of Press.

**CHAPTER 2: Introduction to Mass Communication**

- i) Nature and Process of Mass Communication.
- ii) Media of Mass Communication.
- iii) Types and typology of Audiences.
- iv) Characteristics of Audiences.
- v) Awareness and Socialization of Communication.

**CHAPTER 3: Criticism of Journalism and Mass Communication.**

- i) Roles and Responsibilities of Journalism and Mass Communication.
- ii) Changing Role of Press and Press Group.
- iii) Model Code of ethics in Press.
- iv) Use of New media.
- v) Challenges before Journalism and Mass Communication.



**K.B.C.N.M. University, Jalgaon**  
**Syllabus for T.Y.B.A. (C.B.C.S. Pattern)**  
**Political Science, Semester V**



**Paper Code : DSC-1 E Indian Political Thinker Part - I [w.e.f. June 2020]**

Credit: 03  
Lectures: 52

Total Marks: 100  
Internal: 40  
External: 60

**Course Objective:**

This is an introductory paper to the concept ideas and theories developed in India. It deals with the main sources of the political traditions in modern India and focusses the development of social Institution and as various patterns of politics that emerged in modern India. This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in Pre- and Post-independence India. The main objective to study this paper is to understand key thinker's seminal contribution to the evolution of political theorizing in India.

**CHAPTER 1: Dadabhai Naoroji**

- i) Political Thought – Liberalism.
- ii) British Government Criticism and Loyalty or faith.
- iii) Thought of Economic, Eco- drain and Moral Exploitation Theory.
- iv) Views on Indian Swarajya.
- v) Architect of Indian Nationalism Evaluation.

**CHAPTER 2: Lokmanya Tilak**

- i) Political Thought.
- ii) Chatusutri.
- iii) Views on Social Reform.
- iv) Thought on Congress Party, Homerule, Contestant Co- Operation and Revolutionary.
- v) Role of Indian Freedom Movement, Evaluation.

**CHAPTER 3: Mahatma Gandhi**

- i) Views on Truth and Non-Violence.
- ii) Satyagraha, Means and End.
- iii) Views on Religion and Spiritualisation of Politics.
- iv) Untouchability, Communal Unity.
- v) Views on State, Trusteeship theory, Evaluation.

# K.B.C. North Maharashtra University, Jalgaon

## Syllabus for F.Y.B.A. Core Course Psychology

### Semester - II

#### Course Title: Fundamental Concepts of Psychology (Psy. 201)

Course Code: CCPSY-I  
Credit: 03  
Total Period: 60  
Total Hours: 50

Total Marks: 100  
External marks: 60  
Internal marks: 40



#### Course Objectives:

1. To relate the fundamental principles of Psychology in everyday life.
2. To make the students aware of the applications of psychological concepts in various fields so that they understand the relevance of Psychology in different areas of life.
3. To foster interest in the subject of Psychology and to create a foundation for further studies in Psychology.
4. To explain the concepts of intelligence and thinking, its types and measurement of intelligence as well as problem-solving and decision making to the students.

#### Unit-1- COGNITIVE PROCESS

(20)

- 1.1 Nature of Attention: The meaning of attention, Characteristics of attention, Types of attention, Determinants of attention- (Objective Determinants-Nature of stimulus, change in stimulus, novelty of stimulus, movement of stimulus, isolation of stimulus and subjective Determinants- Need, Interest, curiosity, Habit, Meaning)
- 1.2 Nature of Perception: Meaning and characteristics, Laws of perceptual organization
- 1.3 Factors influencing perception: Context and mental Set-effects, Needs and motives, Social and Cultural factors
- 1.4 Illusions and Hallucinations: Types of illusions, Hallucinations, Difference between Illusions and Hallucinations
- 1.5 Applying Psychology – Extra Sensory Perception: Telepathy, Clairvoyance, Precognition

#### Unit-2- LEARNING AND MEMORY

H.Y

(20)

- 2.1 Nature of Learning: Meaning and Characteristics of learning, learning styles
- 2.2 Learning Methods: Trial and errors method, Insight learning method, Classical Conditioning, Operant conditioning



2.3 Nature of Memory: Meaning, Process, Three Memory Storehouses- (Sensory memory-Iconic Memory, Echoic Memory, Short Term Memory, Long Term Memory-Declarative Memory, Procedural Memory, Semantic Memory, Episodic Memory)

2.4 Retention and its Methods: Recall method, Recognition method, Relearning method, Reconstruction method

2.5 Applying Psychology-Nature of Forgetting: Encoding Failure, Storage Decay, Retrieval Failure, Interference, Motivated Forgetting

### Unit – 3 INTELLIGENCE AND THINKING

H.V.

(20)

3.1 Nature of intelligence: Basic concepts of measurement (CA, MA, IQ)

3.2 Types of intelligence (Academic, Artificial, Mechanical, Kinaesthetic, Emotional, Social, Spiritual), Types of intelligence tests (Verbal and Nonverbal, Individual and Group)

3.3 Intellectual deficiency: Nature of intellectual deficiency, Types and reasons of intellectual deficiency

3.4 Thinking: Nature of thinking (Images, Concepts, Symbols and Signs, Language), Types of thinking (Perceptual, Conceptual, Reflective, Creative, Critical)

3.5 Applied Psychology-Problem solving: Meaning and stages of the problem-solving cycle – Sternberg, Decision Making stages (Setting goals, Gathering information, Decision, structuring, Making a final choice and Evaluating)

### REFERENCES:

1. Ciccarelli, Sandra, White N. (2011). Psychology: An Exploration (2nd edition), Pearson Publications
2. Ciccarelli, S and Meyer, G. E. (2011). Psychology, Pearson Publications, New Delhi.
3. Coon, D. & Mitterer, J. O. (2007). Introduction to psychology: Gateways to mind and behavior. Singapore: Thomson Wadsworth.
4. Feldman, Robert (2009). Understanding Psychology, 9th edition, Tata McGraw Hill.
5. Lahey, B. B. (2003). Psychology: An introduction. New Delhi: Tata McGraw-Hill.
6. Morgan, C. T., King, R. A., Weisz, J. R. and Schopler, J. (1986). Introduction to psychology. McGraw-Hill Book Co.
7. Morgan, King, Weisz, Schopler (2001). Introduction to psychology, Tata McGraw Hill
8. Passer, M. W. & Smith, R. E. (2008). Psychology: The science of mind and behaviour (4th Ed.) New Delhi: Tata McGraw-Hill.



# K.B.C. North Maharashtra University, Jalgaon



## Syllabus for F.Y.B.A. Core Course Psychology

### Semester - I

**Course Title: Basic Principles in Psychology (Psy-101)**

**Course Code: CCPSY-I**

**Credit: 03**

**Total Period – 60**

**Total**

**Hours:50**

**Total Marks: 100**

**Internal Exam: 40**

**External Exam: 60**

#### Course Objectives:

1. To impart knowledge of the basic concepts and modern trends in Psychology.
2. To make the students aware of the applications of Psychological concepts in various fields.
3. To elaborate the concept of personality, types and trait theories of personality and self-concept as well as SWOT analysis and SMART.
4. To elaborate the concepts of motivation and emotions, its types and effect emotions on Physical and mental health to the students.

#### Unit-1. INTRODUCTION TO PSYCHOLOGY

(20)

- 1.1 Nature of psychology: Meaning of psychology, Behavioural Science, Study of behaviour, Study of mental processes, Major goals of psychology- (Description and measurement of behaviour, Explain of behaviour, Prediction and control of behaviour, Behavioural change)
- 1.2. Modern perspectives of psychology: Behavioural, Bio-psychosocial, Developmental, Humanistic, Psychoanalytic and Cognitive
- 1.3 Branches of Psychology: Clinical Psychology, Counselling Psychology, Positive psychology, Industrial Psychology, Social Psychology, Developmental Psychology, Educational Psychology, Criminal & Forensic Psychology, Environmental psychology, Women psychology
- 1.4 Methods of Psychology: Observation method (Introspection, Naturalistic & Systematic), Case Study method, Interview method, Survey method, Experimental Method
- 1.5 Applying Psychology-Career in Psychology

#### Unit – 2. PERSONALITY AND SELF CONCEPT

P. E

(20)

- 2.1 Nature of Personality- Factors of shaping Personality (Genetic Endowment, Physique, Endocrine Glands, Family, Friends and Neighbour Hood, School, Social, Cultural, Technology, Mass Media)

- 2.2 Type and Trait of Personality: (Hippocrates, Kretchmer, Jung), (Allport's, Cattell's, McCrae and Costa big – 5 model)
- 2.3 Theories of Personality –Freud's Psychoanalytical (Structure of Personality and Division of Personality), Bandura's Social learning, Personality Assessment: – Self report measurement (questionnaire), Interview, Behavioural, Projective Techniques (Rorschach Inkblot test), TAT, Sentence completion test)
- 2.4 Self-Concept :- Nature of self-concept, Components of Self-concept (Self Awareness, Self-presentation, Self Esteem, Self-Respect, Self-control)
- 2.5 Applying Psychology- SWOT analysis, SMART analysis

### Unit – 3. **MOTIVATION & EMOTION**

H. V .

( 20)

- 3.1 Motivation: Nature of motivation, Motivation cycle and Maslow's Hierarchical theory of motivation,
- 3.2 Types of Motivation: Biogenic (Hunger, Thirst, Sex, Sleep, Temperature Regulation, Maternal) Social (Achievement, Power, Dependency, Affiliation, Acceptance and Aggression)
- 3.3 Frustration: Nature and reasons of Frustration, Conflicts-Nature and types of conflicts– (Approach–Approach, Avoidance-Avoidance, Approach–Avoidance, Double Approach–Avoidance), Conflict resolution-Direct and indirect ways, Effect of emotions on physical and mental health
- 3.4 Emotion: Nature and functions of emotions, Types of emotion (Primary and Secondary, Positive and Negative), Physiological changes and external expression of emotion.
- 3.5 Applying Psychology – Techniques of controlling emotions

#### Reference Books:

- 1) Baron, R. A. (2001). Psychology. New Delhi: Pearson Education Pvt. Ltd.
- 2) Santrock J.W. (2006) Psychology Essentials2; Tata McGraw-Hill Edition
- 3) Ciccarelli , Sandra, White N. (2011). Psychology: An Exploration (2nd edition), Pearson Publications
- 4) Ciccarelli, S and Meyer, G. E. (2011). Psychology, Pearson Publications, New Delhi.
- 5) Coon, D. & Mitterer, J. O. (2007). Introduction to psychology: Gateways to mind and behavior. Singapore: Thomson Wadsworth.
- 6) Feldman, Robert (2009). Understanding Psychology, 9th edition, Tata McGraw Hill.

**KAVAYITRI BAHINABAI CHAUDHARI  
NORTH MAHARASHTRA UNIVERSITY JALGAON**



**Choice Based Credit System (CBSC)**

**Faculty of Humanities**

**Under Graduate Programme (UG)**

**PSYCHOLOGY**

**Curriculum Structure and Scheme of Evaluation for B.A. First Year With effect from  
2022-23**

Semester	Paper No.	Title of the Paper	Period/Week	Credits
I	Psy - 101	Basic Principles in Psychology	04	03
II	Psy - 201	Fundamental Concepts of Psychology	04	03

**HIGHLIGHTS OF THE PAPER**

**1. Salient features of the paper:** For semester I, Course title "Basic Principles in Psychology" is for three credits. From this course, the students will get aware about basic principles in Psychology and they will also learn how to measure personality as well as intelligence quotient.

In semester II, Course title "Fundamental Concepts of Psychology" is for three credits. In this course, the students will learn the applications of psychological concepts in various fields so that they understand the relevance of Psychology in different areas of life. It also aims at fostering their interest in the subject of Psychology and to create a foundation for further studies in Psychology.

Utility of the Paper: From this paper students will prepare themselves in way to forth coming examination like SET/NET or other competitive exam.

- 2. Learning Objective of the Paper:** To make students understand the basic Psychological process and their application in everyday life. They also understand the fundamental concepts of psychology and co-relate these in our everyday life.
- 3. Prerequisites of the Paper:** In each semester theory is correlated with sub-units.



**K.B.C. North Maharashtra University, Jalgaon**  
**Syllabus for S.Y.B.A. Psychology**  
**[Discipline Specific Elective Courses- DSE-1B (03)] SEMESTER- IV**  
**Subject- Psychotic Disorders (PSY - 242)**



**Total marks = 60 Theory + 40 Internal**  
**Credit = 03**

**Total Periods – 60**  
**Clock Hours Period -45**

**Objective:** - To develop an understanding of the various psychological disorders  
And their treatment.

**Chapter -I: Clinical States of Psychosis Features**

H.V.

**Period 20**

- 1.1 Definition and nature of Psychosis
- 1.2 Different Between Illusion, Delusion and Hallucination
- 1.3 Types of Delusions – (Persecutory, Grandiose, Jealous, Somatic, Etc....)
- 1.4 Substance Induced Psychotic Disorders (Intoxication, Withdrawal)
- 1.5 Psychotic Disorders Due to another Medical Condition.  
(Brain Tumors, Traumatic Brain Injuries, Epilepsy, Huntington's disease, Thyroid Disease.)

**Chapter-2: Psychotic Features in Mood Disorders**

H.V.

**Period 20**

- 2.1- Types and Classification of Mood (Unipolar and Bipolar)
- 2.2- Clinical Features of Manic Episodes
- 2.3 Clinical Features of Depressive Episodes
- 2.4 Prognosis and Etiology of Mood Disorder (Good and Bad Prognosis Factor)
- 2.5 Management of Mood Disorder -: (-**Pharmacology Treatment**:- Antidepressant, ECT, Antipsychotic and Other Mood Stabilizers **Psychosocial**:- CBT, BT, Group Therapy, Family and Marital Therapy)

**Chapter -3: Schizophrenia**

H.V.

**Period 20**

- 3.1 Brief History of Schizophrenia
- 3.2 Phases of Schizophrenia (Prodromal, Active and Residual)
- 3.3 Symptoms of Schizophrenia (Positive, Negative and Disorganized)
- 3.4 Clinical Types of Schizophrenia (Paranoid, Catatonic, Disorganized, Residual..... )
- 3.5 Management of Schizophrenia ((a)-Pharmacology Treatment, ECT. (b) Psychosocial Treatment and Rehabilitation)

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Syllabus for S.Y.B.A. Psychology  
[Discipline Specific Elective Courses- DSE-1A (03)]

**SEMESTER- III**

**Subject- Psychoneurotic Disorders (PSY - 232)**

Total marks = 60 Theory + 40 Internal  
Credit = 03

Total Periods – 60  
Clock Hours Period – 45



**Objective:** - To develop an understanding of the various psychological disorders  
And their treatment.

**Chapter I: Abnormal Psychology: An Overview**

H.V.

Periods – 20

- 1.1 Definition and Nature of Normal Mental Health and Concept of Normality (According to WHO)
- 1.2 Definition and Criteria of Abnormal Behaviour (Psychological, Social, and Biological Criteria)
- 1.3 Brief History of DSM and ICD For Diagnosis Purpose
- 1.4 Various Perspectives of Psychopathology: (Biological, Psychodynamic, Behavioral, Cognitive, Humanistic, Socio-Culture and Diathesis Stress Model)
- 1.5 Assessment and Diagnosis of Psychological Disorders

**Chapter II: Anxiety and Stress Related Disorders**

H.V.

Periods – 20

- 2.1 Definition and nature of Neurosis and Psychosis
- 2.2 Anxiety Disorders-: (Definition, Physical symptoms and Psychological Symptoms, Diagnosis and Treatment)
- 2.3 Phobic Disorders-: Some Characteristic Features and Treatment of (Agoraphobia, Social Phobia and Specific Phobia)
- 2.4 Obsessive-Compulsive Disorders (OCD), (Define an Obsession and a Compulsion, Types of OCD, Etiology, and Treatment.)
- 2.5 Stress-: Definition, Stressors, Physical and Psychological Symptoms of Stress, Stress Management

**Chapter III-: Somatoform and Dissociative Disorders**

H.V.

Periods – 20

- 3.1 Somatoform Disorder (Definition, Nature, and Types)
- 3.2 Somatoform Disorder -: Etiology and Treatment
- 3.3 Dissociative Disorder (Definition, Nature and Types)
- 3.4 Dissociative Disorder -: Etiology and Treatment
- 3.5 Types of Dissociative Amnesia





Total marks = 60 Theory + 40 Practical  
Credit = 02

Periods – 60  
Clock Hours Period -45

### Objectives of Syllabus

1. Introduce students to the concepts, theories, and research which define this discipline of psychology.
2. Develop the students' capability for connecting discipline content to personal values and behaviour.
3. Provide an understanding of the explain issues underlying lifespan development.

### Chapter- I -Adolescence

H.V.

Periods – 15

- 1.1 Puberty :- The physical transition to Adulthood: Hormonal change, Body Growth, Sex maturation.
- 1.2 The psychological impact of pubertal events : Reaction to puberty change, Early Vs. late maturation
- 1.3 Health issues: Nutritional needs, eating disorder, sexual activities, STD, Teenage pregnancy
- 1.4 Cognitive Development : Piaget's theory, Erikson's theory : Identity vs. identity confusion, Self understanding: change in self concept, Self esteem, Identity status.
- 1.5 The family relations, peer relations, problems of development, depression, suicide & delinquency.

### Chapter- II- Early Adulthood

H.V.

Periods – 15

- 2.1 Health and fitness: Nutrition, Exercise, Substance Abuse, Psychological Stress
- 2.2 Vocational Choice : Selecting vocation, Factors influencing vocational choice, Establishing a career women & ethnic minorities , combining work and family.
- 2.3 Erikson's theory: Intimacy vs. Isolation, Close relationship, Romantic love, Friendship, Loneliness
- 2.4 Family life cycle : Living home, marriage, parenthood,
- 2.5 Diversity of Adult Life styles : single hood, cohabitation, childlessness, Infertility causes & techniques

### Chapter - III- Middle & Late Adulthood

H.V.

Periods – 15

- 3.1 Health & Fitness of midlife : Sexuality, Illness, Hostility & Anger, Adaptive the physical challenges: Stress management , Exercise an optimistic outlook
- 3.2 Erikson's Theory- Generativity vs. Stagnation, Stability & Change in Self Concept & Personality
- 3.3 Relationship at Midlife: Marriage & Divorce , Changing Parent Child Relationships, Grandparenthood, Middle age Children & Their Aging Parents, Siblings, Friendships
- 3.4 Late Adulthood: Nature, Physical Changes, Health, Fitness & Disabilities. Erikson's Theory- Ego integrity vs. Despair.
- 3.5 Relationship in Late Adulthood: Relationship with Adult Children, Grand Children. Retirement and Leisure : The Decision to Retire, Adjustment to Retirement, Leisure Activity.



**K.B.C. North Maharashtra University, Jalgaon**  
Syllabus for S.Y.B.A. Psychology  
[Discipline Specific Core Course- DSC-C (02)]  
**SEMESTER- III**



**Subject- Human Developmental Psychology- Early Life (PSY 231 C)**

**Total marks = 60 Theory + 40 Practical**  
**Credit = 02**

**Periods – 60**  
**Clock Hour Period -45**

**Objectives :**

1. To equip the learner with an understanding of the concept and process of human development across the life span.
2. To impart an understanding of the various domains of human development.

**Chapter- I -Introduction to Human Development**

**Periods - 15**

- 1.1 The Concept Of Human Development: Definition, Domains of Development, Basic Issue In Life Span Development.
- 1.2 The Life Span Perspective : Development as Lifelong, Development as Multidimensional & Multidirectional, Development as Plastic, Development as Embedded in Multiple Contexts.
- 1.3 Theories on Development : Freud-Psychoanalytical, Erikson- Psychosocial, Piaget- Cognitive Development.
- 1.4 Designs for Studying Development : Longitudinal, Cross-Sectional, Sequential .
- 1.5 Human Development in Indian Context.

**Chapter- II- Prenatal Development, Birth and Toddlerhood**

**H.V. & G**

**Periods - 15**

- 2.1 Genetic Foundation : Genetic Code, Sex Cells, Multiple Births, Pattern of Genetic inheritance, Genetic Counseling.
- 2.2 Prenatal Development : Conception, Period of the Zygote, Period of the Embryo, Period of the Fetus.
- 2.3 Childbirth: The Stages of Childbirth, Types of births, Complications of Childbirth.
- 2.4 Physical Development in Infancy and Toddlerhood : Body Growth, Influences on Early Physical Growth, Motor Development
- 2.5 Cognitive, Social & Emotional Development in Infancy and Toddlerhood: Piaget's Theory, Erikson's Theory, Emotional Development, Development of Attachment.

**Chapter- III- Early and Middle Childhood**

**H.V. & G**

**Periods - 15**

- 3.1 Physical Development : Body Growth, Common Health Problems, Motor Development and Play
- 3.2 Cognitive & Language Development: Piaget's Theory, Vocabulary, Grammar, Pragmatics.
- 3.3 Emotional Development : Understanding Emotion, Emotional Self- Regulation, Self-Conscious Emotions, Empathy
- 3.4 Social Development: Erikson's Theory, Self- understanding, Peer relations, Family influences
- 3.5 Parenting Style, Children with Disabilities.

# S.Y.B.A. PSYCHOLOGY



## EQUIVALENT COURSE

**CBCS Pattern**

**OLD Pattern**

Semester III New Syllabus From June 2019 (CBCS Pattern)			Semester III Old Syllabus From June 2014		
Paper No.	Paper Code No.	Name of the Course	Paper No.	Paper Code No.	Name of the Course
DSC-1 C (02)	PSY-231	Human Developmental Psychology- Early Life	G-2	PSY-231(A)  PSY-231(B)	Advance Social Psychology <b>OR</b> Human Developmental Psychology- Early Life
DSE-1A (03)	PSY- 232	Psychoneurotic Disorders	S-1	PSY-232	Psycho diagnostics
DSE- 2A (03)	PSY- 233	Psychopathology Practical (Testing)	S-2	PSY-233(A)  PSY-233(B)	Counseling Content & Process  <b>OR</b> Fundamentals of Testing

Semester IV New Syllabus From June 2019 (CBCS Pattern)			Semester IV Old Syllabus From June 2014		
Paper No.	Paper Code No.	Name of the Course	Paper No.	Paper Code No.	Name of the Course
DSC-1 D(02)	PSY-241	Human Developmental Psychology- Later Life	G-2	PSY-241(A)  PSY-241(B)	Social Psychology Process  <b>OR</b> Human Developmental Psychology- Later Life
DSE-1B (03)	PSY- 242	Psychotic Disorders	S-1	PSY-242	Psychopathology
DSE- 2B (03)	PSY- 243	Psychological Practical (Testing)	S-2	PSY-243(A)  PSY-243(B)	Counseling Therapy & Application <b>OR</b> Psychological Testing

### NON- EQUIVALENT COURSE

SEMESTER	Paper No.	Paper Code No.	Name of the Course
SEM-III	SEC- 1(02)	PSY- 234	Research Process in Psychology
SEM-IV	SEC- 2(02)	PSY- 244	Statistical Application and Report Writing in Psychology
SEM-IV	DSC-3D (02)	PSY- 245	Minor Study Project

**Dr. G. B. Chaudhari**  
Chairman, BOS Psychology  
K.B.C.N.M.U., Jalgaon



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**Syllabus for S.Y.B.A. Psychology**  
**[Discipline Specific Elective Course- DSE- 2 A (03)]**  
**SEMESTER- III**



**Subject- Psychopathology Practical (Testing) (PSY - 233)**

**Total marks = 60 External + 40 Internal**

**Total Periods – 85**

**Total Credit = 03**

**Clock Hours Period -85**

**Objectives**

This course aims at enabling students to –

1. To understand the psychological test
2. Applying the psychological test
3. To learn advanced techniques and tools
4. To Understand the Neurotic Behavior

**Any Seven Tests of The Following**

- 1) Mental Health Check List H. V.
- 2) Comprehensive Anxiety Test
- 3) Beck Depression Inventory
- 4) Bisht Battery Of Stress Scales
- 5) Stress Management Scale
- 6) NEO Personality Inventory
- 7) Aggression Scale
- 8) PGI Battery of Brain Dysfunction
- 9) Intelligence test (SPM)
- 10) Emotional Maturity Scale
- 11) Emotional Intelligence
- 12) Moral Values Scale

**\* For practical six periods in a week, and one period is sixty minutes.**

**Internal Examination Marks Distribution**

Any Two Psychological Test	Attendance & Performance	Viva-voce	Total
20	10	10	40

**\*Evaluation of marks in external examination**

**\*Practical Examination duration will be of 03 hours**

**Marks Distribution**

Conducting & Report Writing	Journal	Viva-voce	Total
20	20	20	60



**K.B.C. North Maharashtra University, Jalgaon**  
**Syllabus for S.Y.B.A. Psychology**  
**[Discipline Specific Elective Course- DSE- 2 B (03)]**  
**SEMESTER- IV**



**Subject- Psychological Practical (Testing) (PSY - 243)**

**Total marks = 60 External + 40 Internal**  
**Total Credit = 03**

**Total Periods – 85**  
**Clock Hours Period -85**

**Objectives**

This course aims at enabling students to –

1. To understand the psychological test
2. To understand the psychotic behavior
3. To learn advanced techniques and tools of psychological test and its interpretation.

**Any Seven Tests of The Following**

H.V. & G

1. Sexual Anxiety Test
2. Deprivation Scale
3. PGI Health Questionnaire
4. Kundu Neurotic Personality Inventory
5. Hindi Version of H.j. Eysencks M.P.I
6. Rosenzwing Picture Frustration
7. Sexy Myth Check Record
8. Social Distance Scale
9. Learning Disabilities Scale
10. Problem Solving Ability Test
11. Social Maturity Scale
12. School Adjustment Inventory

**\*For practical six periods in a week, and one period is sixty minutes.**

**Internal Examination Marks Distribution**

Any Two Psychological Test	Attendance & Performance	Viva-voce	Total
20	10	10	40

**\*Evaluation of marks in external examination**

**\*Practical Examination duration will be of 03 hours**

**Marks Distribution**

Conducting & Report Writing	Journal	Viva-voce	Total
20	20	20	60

F.Y.B.A



Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

FACULTY OF HUMANITIES

NEWSYLLABUS. F.Y.B.A.

SEMESTER-I

Paper code Eco G-101(A): Introductory Economics

General (Optional) paper

External Marks 60 + Internal Marks 40=Maximum total marks: 100

Total Credit: 3 points, Total Periods: 60

The objectives of the paper:

1. Introduced the students to the basic principles of economics.
2. To enable the students for appearing in the MPSC, UPSC and other competitive Examination
3. To provide a basic concept of Economics to the students who have not studied Economics.

Semester -I

**Unit -I Demand and Supply analysis**

20 Periods

1.1 Definitions of Economics

- i) Wealth definition
- ii) Welfare definition
- iii) Scarcity definition
- iv) Modern definition

2) Meaning and Definition Micro Economics

a. Demand: Definition, meaning and Law of Demand

b. Determination of demand

c. Increasing and decreasing in Demand

d. The elasticity of demand: meaning, determinants, and types

1.2. Supply: Meaning,

a. Law of supply.

b. Determinants of supply

c. Increasing and decreasing in Supply

d. The elasticity of supply: meaning, determinants and types.

1.3. The Concept of Perfect Competition.

a. Monopoly.

b. Monopolistic Competition.

c. Oligopoly

d. Duopoly.

1) Plant, Firm Industry

1.4. Price determination under Perfect competition

a. Demand and Supply equilibrium.

b. The value Paradox.



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**FACULTY OF HUMANITIES**

**NEW SYLLABUS, F.Y.B.A. \***

**SEMESTER-II**

**Paper code Eco G-201(A): Introductory Economics**

**General (Optional) paper**

**External Marks 60 + Internal Marks 40=Maximum total marks: 100**

**Total Credit: 3 points, Total Periods: 60**

**The objective of the paper:**

1. Introduced the students to the basic principles of economics.
2. To enable the students for appearing in the MPSC, UPSC and other competitive Examination
3. To provide a basic concept of Economics to the students who have not studied Economics.

**Semester-II**

**Unit- I International trade and Public Finance**

**20 Periods**

**1.1 International Trade**

- a. Meaning, Similarities and differences between Internal and International trade.
- b. Basis of International Trade
- c. The classical theory of international trade (Adam Smith)
- d. Advantages and Disadvantages of International Trade.
- e. Exchange rate: meaning and types.

**1.2 Public Finance:**

- a. Meaning, Definitions and Importance of public finance.
- b. Public expenditure: Meaning, role, principles, classification and causes in public expenditure.
- c. Public Revenue: Meaning, Tax and non-tax revenue, classification of taxes, Role of taxes in Economy.
- d. Public Debt: Meaning, objective, types and Importance.
- e. Budget: Meaning, Types of Deficit Finance.

**Unit: II Economic Growth, Development and Economic Planning, NITI Aayog, 20 Periods**

**2.1 Economic Development and Growth**

- a. Meaning.
- b. Indicators of Economic Developments.



S.Y.B.A



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S.Y.B.A. - CBCS Pattern

Proposed Syllabus w.e.f. June-2019

SEMISTER-III&IV

1. Paper course no. DSC Eco 231 C & DSC Eco 241 D
2. Paper title: Indian Economy Since 1980-I&II
3. Credit-2 Total Periods -60/ Clock Hours 45
4. External Marks 60+Practical marks 40=Total Marks 100
5. Objectives of paper :
  1. To enable students to have understanding the various issues of Indian Economy.
  2. To develop the analysing capability in the context of current Indian Economic Problems.
  3. To able the students for appearing the MPSC, UPSC and other competitive Examinations.

SEMISTER-III

DSC Eco 231 C - INDIAN ECONOMY SINCE 1980-I

1. **Indian Economy and Human Resources in India.** (Periods-20)
  - 1.1. Basic Features of Indian economy.
  - 1.2. India's recent position in the world Economy
  - 1.3. Meaning of Human Resource.
  - 1.4. Population in India-Size and Growth.
  - 1.5. Causes of the rapid growth of population.
  - 1.6. Problems of over population.
  - 1.7. Recent National Population Policy.
  - 1.8. Poverty and Unemployment.
    - 1.8.1. Poverty- Meaning and types.
    - 1.8.2. Measurements of Poverty in India
    - 1.8.3. Unemployment- Meaning and types.
    - 1.8.4. Policies for removing Unemployment and poverty.
2. **Infrastructure in India.** (Periods-20)
  - 2.1. Irrigation-sources, water management.
  - 2.2. Energy-sources, Crises of Energy.
  - 2.3. Transport-Types of Transport,
  - 2.4. Problems of transports.
  - 2.5. Communication and Information Technology-Types of communication.
  - 2.6. Role of Information Technology in Indian Development.
3. **Basic Issues in Agriculture.** (Periods-20)
  - 3.1. Role of Agriculture in Indian Economy.
  - 3.2. Nature of Indian Agriculture.
  - 3.3. Recommendations of Swami Nathan Commission on Agriculture.
  - 3.4. Agricultural Finance-Importance and Sources.
  - 3.5. Agricultural Marketing-Defects and Reforms.
  - 3.6. Farmers Suicides- Causes and Measures

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T.Y.B.A- CBCS Pattern

(ECONOMICS)

SEMESTER- V & VI

Revised syllabus (W.e.f. June 2020)

1. Paper course- No DSC -1 (E & F) Eco-351 & 361 : General Paper – 3<sup>rd</sup>
2. Paper Title: Indian Economy Since 1980 –III & IV
3. Credit – 3 Total Lectures – 60 + 60 (45 min / Lectures )
4. External Marks- 60 , Internal - 40
5. Objectives of paper :
  1. To enable students to have understanding the various issues of Indian Economy.
  2. To develop the analysing capability in the context of current Indian Economic Problems.
  3. To able the students for appearing the MPSC, UPSC and other competitive Examinations.

**SEMESTER-V**

**DSC-1(E)-Eco-351 Indian Economy Since 1980 –III**

1. **Financial system in India** 20 Lectures
  - a) The structure of Indian Financial System
  - b) Money Market-Meaning, Nature and Importance of Indian Money Market
  - c) Constituents of money market
  - d) Recent Reforms in Indian Money Market
  - e) Capital Market-Meaning and Nature of capital Market
  - f) Constituents of Capital Market
  - g) Defects of capital Market
  - h) Recent Reforms in Indian capital Market
  - i) Functions of SEBI
2. **Money and Banking in India.** 20 Lectures
  - a) Trends of Prices in India
  - b) Causes of raising prices in India u/e 117
  - c) Inflation -Meaning, consequences of Inflation in India
  - d) Anti-Inflationary policy of Government
  - e) Indian Banking-Structure of Indian Banking system
  - f) Functions of Commercial Banking in India
  - g) Progress of Commercial Banking since Nationalisation in India
  - h) Main Functions of RBI
  - i) Development Banking-Objectives and Functions



with reference to the U.G.C. model curriculum. The course structure for F.Y.B.Sc. (Chemistry) is as given below.

Course (Paper code)	Paper	Semester	No. of lectures	Credits	Internal Marks	External Marks
CH-101	Physical & Inorganic Chemistry (Core Course)	I	30	02	40	60
CH-102	Organic & Inorganic Chemistry (Core Course)	I	30	02	40	60
CH-103	Chemistry Practical	I	60	02	40	60
CH-201	Physical & Inorganic Chemistry (Core Course)	II	30	02	40	60
CH-202	Organic & Inorganic Chemistry (Core Course)	II	30	02	40	60
CH-203	Chemistry Practical	II	60	02	40	60

**Note:**

1. Each lecture is of one hour duration.
2. Each theory paper has two lectures per week.
3. Each practical course has four lectures per week.

**Chairman B.O.S.**

**Dean Science Faculty**

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electrode) using pH-meter.

3. Determination of dissociation constant of weak monobasic acid ( $\text{CH}_3\text{COOH}$ ) by conductance measurement.
4. Determination of relative viscosity of liquid A and B by viscometer.
5. Determination of percentage composition (v/v) of given mixture of ethyl alcohol and water by viscometer.

#### **B) Analytical Chemistry Experiments (Any 3)**

1. Preparation of std. 0.1N oxalic acid solution and standardization of NaOH solution.
2. Preparation of std. 0.1N  $\text{K}_2\text{Cr}_2\text{O}_7$  solution and standardization of ferrous ammonium sulphate solution.
3. Preparation of std. 0.1N NaCl solution and standardization of  $\text{AgNO}_3$  solution.
4. Preparation of std. 0.1N  $\text{ZnSO}_4$  solution and standardization of EDTA solution.
5. Determination of loss per gram and percentage purity of Zinc Carbonate gravimetrically.

**(Instruction: Prepare standard solutions preferably by using 50 ml volumetric flask)**

#### **C) Organic Qualitative Analysis (Any 5 compounds)**

- 1) Type determination
- 2) Preliminary tests
- 3) Physical constant
- 4) Functional group tests

(Structural formula not expected)

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### **CH: 203 Chemistry Practicals (Semester II)**

#### **A) Physical Chemistry Experiments (Any 3)**

Course	Semester-III	Lectures	Mar
			Internal
CH -301	Physical And Inorganic Chemistry ( Core Course)	30	40
CH -302	Organic and Inorganic Chemistry ( Core Course)	30	40
CH -303	Practical Chemistry	60	40
CH- 304 (SEC-1)	Basic Analytical Chemistry (Skill Enhancement Course)	30	40
<b>Semester- IV</b>			
CH -401	Physical And Inorganic Chemistry ( Core Course)	30	40
CH -402	Organic and Inorganic Chemistry ( Core Course)	30	40
CH -403	Practical Chemistry	60	40
CH -404 (SEC-II)	Advanced Analytical Chemistry (Skill Enhancement Course)	30	40

**Note:**

1. Each lecture is of one hour duration.
2. Each theory paper has two lectures per week.
3. Each practical course has four lectures per week.

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**Skill Enhancement Course**  
**SEC-1: Basic Analytical Chemistry**



**Chapter 1: Introduction to Analytical Chemistry(L-08, M-16/24)**

- a) Introduction: Analytical chemistry, its interdisciplinary nature, importance of analytical chemistry, types of analysis: qualitative and quantitative analysis
- b) Concept of sampling, definition, procedure of sampling, types of sampling
- c) Accuracy, precision, significant figures, significance of zero, rounding off
- d) Errors: Definition, types and sources of errors, minimisation of errors.
- e) Good laboratory practices: Material safety data sheet (MSDS), fire safety, Handling of chemicals

Ref. 1, 2, 3, 4, 5 (Relevant pages)

**Chapter 2: Acid base titrations (L-08, M- 16/24)**

- a) Principle, Acid-base indicators, Henderson-Hasselbalch equation, transition range of indicators.
- b) Study of following acid base titrations with respect to: neutralization curve, selection of indicators and calculation of  $P^{H}$ 
  - i) Strong acid versus strong base
  - ii) Weak acid versus strong base
- c) Applications of acid base titrations.

Ref. 1, 2, 3, 4, 5 (Relevant pages)

**Chapter 3: Precipitation titrations (L-06, M- 12/18)**

- a) Principle, precipitation titration curve, use of indicators in detection of end point.
- b) Preparation of  $AgNO_3$  solution, its standardisation by Mohr's method.
- c) Estimation of halides by Fajan's method
- d) Applications of precipitation titrations.

Ref. 1, 2, 3, 4, 5 (Relevant pages)

**Chapter 4: Chromatography (L-08, M-16/24)**



# Syllabus

Class- T.Y.B.Sc. Subject- Chemistry

Choice Based Credit System (CBCS) (60-40) Pattern

with effect from June-2020

Structure of Curriculum of T.Y.B.Sc. (Chemistry)

Semester – V



Course Type	Course code	Course Title	Credits	Hours per week	Teaching Hours
Core I	CH – 501	Principles of Physical Chemistry-I	3	3	45
Core II	CH – 502	Inorganic Chemistry	3	3	45
Core III	CH – 503	Organic Reaction Mechanism	3	3	45
Core IV	CH – 504	Industrial Chemistry	3	3	45
Skill Enhancement (SEC)	CH – 505	Analytical Instrumentation	3	3	45
Elective (Any One)	CH – 506 (A)	Biochemistry	3	3	45
	CH – 506 (B)	Green Chemistry	3	3	45
Core course (Practical)	CH – 507	Physical Chemistry Practical	2	4 (Per Batch)	60
	CH – 508	Inorganic Chemistry Practical	2	4 (Per Batch)	60
	CH – 509	Organic Chemistry Practical	2	4 (Per Batch)	60
Non-Credit Audit Course (Any One)	AC-510	NSS	No Credit	2- Batches	60
	AC-511	NCC		2- Batches	60
	AC-512	Sports		2- Batches	60

## Note:

1. Each lecture is of one hour (60 Minutes) duration.
2. Each theory paper has three lectures per week.
3. Each practical course has four lectures per week.
4. An industrial study tour is compulsory for the T.Y.B.Sc. Students. The students should submit their tour reports at the time of practical examination of VI<sup>th</sup> Semester.

5. Use of Chart/Text book/Hand book of practical is allowed during examination.
6. Scientific calculator (non-programmable) is allowed during theory and practical examination.
7. All units should be in SI unit.



### Semester VI

Class: T.Y.B.Sc

Course Type	Course code	Course Title	Credits	Hours per week	Teaching Hours
Core I	CH – 601	Principles of Physical Chemistry-II	3	3	45
Core II	CH – 602	Chemistry of Inorganic Solids	3	3	45
Core III	CH – 603	Spectroscopic Methods of Structure Determination	3	3	45
Core IV	CH – 604	Chemistry of Industrially Important Products	3	3	45
Skill Enhancement	CH – 605	Analytical Techniques	3	3	45
Elective (Any One)	CH – 606 (A)	Polymer Chemistry	3	3	45
	CH – 606 (B)	Research Methodology for Chemistry	3	3	45
Core course (Practical)	CH – 607	Physical Chemistry Practical	2	4 (Per Batch)	60
	CH – 608	Inorganic Chemistry Practical	2	4 (Per Batch)	60
	CH – 609	Organic Chemistry Practical	2	4 (Per Batch)	60
Non-Credit Audit Course (Any One)	AC-610	Soft Skill	No Credit	2- Batches	60
	AC-611	Yoga		2- Batches	60
	AC-612	Practicing Cleanliness		2- Batches	60

#### Note:

1. Each lecture is of one hour (60 Minutes) duration.
2. Each theory paper has three lectures per week.
3. Each practical course has four lectures per week.

## CH-504

**Subject- Industrial Chemistry**

(Theory: Lectures 45 hrs, Marks 60)

(Credits: 03)

**Course objectives**

- To produce graduates with enhanced skills, applied knowledge, aptitude to carry out higher studies or research and development in the various industrial areas.
- To make the student cognizant about important aspects of Chemical Industries, Industrial work culture and environment.
- To prepare the students for immediate entry to the workplace with sound theoretical knowledge and some basic experimental concepts in the area of various industries viz. Sugar Industry, Fermentation Industry, Petroleum and Petrochemicals.
- To offers the synergism between basic concepts of Chemistry with Industrial applications.
- To equip the students with knowledge of some industrial organic synthesis as requirement of diverse chemical industries.
- Empower the students to understand the concepts in chemical processing, engineering and industrial development.

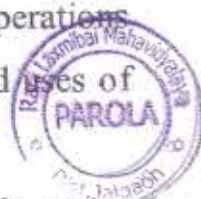
**Learning outcomes**

From the course CH: 504 Industrial Chemistry, the student will be able to understand....

- Basic requirements of Chemical Industry, different terms, operations and processes involved in chemical Industry.
- Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO).



- Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar and by-products of sugar industry.
- Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry.
- Understand Occurrence of Petroleum, theories of formation of Petroleum and different terms Viz. Knocking, Anti-Knock Compounds, Octane number, Cetane number, Gasohol and Power alcohol etc.
- Manufacturing processes involved in Industrial Organic Synthesis such as Methanol, Isopropanol, Glycerol, Acetylene and Aromatic hydrocarbon i.e. Toluene from petroleum with their uses.



#### **UNIT 1: General Aspects of Industrial Chemistry**

**(L-9, M-12)**

Introduction, Basic Requirements of Industrial Chemistry, Chemical Production, Raw Materials, Unit Process and Unit Operations, Quality Control, Quality Assurance, Process Control, Research and Development, Pollution Control, Human Resource, Safety Measures, Classification of Chemical Reactions, Batch and Continuous Process, Conversion, Selectivity, Yield, Copy Right Act, Patent Act and Trade Marks. Bureau of Indian Standards (BIS), International Organization for Standardization (ISO)

**Ref.1: Chapter 2(26, 27, 31 to 36)**

**Ref.4: Chapter 1 and 2 (Relevant Pages)**

**Ref.6: Chapter 1, 2 and 3 (Relevant Pages)**

**Ref: Websites and Web Pages**

[www.wikipedia.org/wiki/patentact](http://www.wikipedia.org/wiki/patentact) , [www.wikipedia.org/wiki/trademarks](http://www.wikipedia.org/wiki/trademarks),

[www.wikipedia.org/wiki/trademarks](http://www.wikipedia.org/wiki/trademarks),[www.wikipedia.org/wiki/bis](http://www.wikipedia.org/wiki/bis)

[www.wikipedia.org/wiki/iso](http://www.wikipedia.org/wiki/iso)

#### **UNIT 2: Sugar Industry**

**(L-9, M-12)**

Introduction, Sugar Industry in Maharashtra and India, Manufacture of Cane Sugar- [Refining (with flow sheet)], General Idea of Sulphitation and Carbonation, Concentration /Evaporation, Crystallization Separation of crystals. Grades, Baggase, Cellotex

**Ref.3: Chapter 38 1208 to 1218 (Relevant Points Only)**

5. *Chemistry and Technology of the Cosmetics and Toiletries Industry*, D.F. Williams and W.H. Schmitt Blackie Academic & Professional First edition 1992 Second edition 1996  
© Chapman & Hall ISBN-13 :978-94-0 10-7194-9 e-ISBN-13:978-94-009-1555-8
6. *Handbook of Industrial Chemistry Organic Chemicals*, Mohammad Farhat Ali, Bassam M. El Ali, James G. Speight, The McGraw-Hill Companies, 2005, ISBN 0-07-141037-6



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**UNIT 3: Fermentation Industry****(L-9, M-12)**

Introduction, Alcohol fermentation, Uses of alcohol, Theory underlying process of making alcohols beverages, Manufacture of Beer, Manufacture of Spirit, Alcohol from Cane Sugar Molasses, Theory of fractional distillation – Coffey's still, Rectified spirit, Absolute alcohol, Fusel oil, Proof spirit, Denatured alcohol.

**Ref.2:578-596.****Ref.3: Chapter 36, 1175-1190 (Relevant Points Only)****UNIT4: Petroleum Industry.****(L-9, M-12)**

Occurrence, Petroleum producer countries in the world, Exploration Methods, Composition of Petroleum, Refining or Distillation of Petroleum, Anti-Knock Compounds, Octane number, Cetane number, Petrohol (their definitions only), Manufacture of Petrol or Gasoline by Bergius Method, Cracking process- Thermal, Catalytic, Hydro cracking.

**Ref.1: 340 to 352, 356 to 358 and 363 to 368.****Ref.3: Chapter 4, 217 to 311 and Chapter 5, 312 to 342 (Relevant Points only)****UNIT 5: Industrial Organic Synthesis****(L-9, M-12)**

Manufacture of methanol from synthesis gas, Isopropanol from propylene, Glycerol from propylene via allyl chloride, Acetone by catalytic dehydrogenation of isopropanol. (with flow sheet diagram), Unsaturated Hydrocarbon –preparation of Acetylene from Natural gas (with flow sheet), Aromatic hydrocarbon- Preparation of toluene (with flow sheet)

**Ref.3: Chapter 11, 439 to 451 and Chapter 14, 493 to 522 (Relevant Points Only).****References:**

1. *Principles of Industrial Chemistry*, Chris A Clausen III and Guy Mattson, John Wiley and Sons, Inc. Somerset, 1978, New York.
2. *Shreve's Chemical Process Industries*, George T. Austin, 5<sup>th</sup> Edition, The McGraw-Hill, 1984, New York.
3. *Industrial Chemistry*, B. K. Sharma, 16<sup>th</sup> Edition, Goel Publishing House, Meerut, (U.P.) 2011, India.
4. *Comprehensive Industrial Chemistry*, P.G. More, 1<sup>st</sup> Edition, Pragati Prakashan, Meerut, (U.P.) 2010, India.



Semester VI

Core Course IV



CH-604

**Subject- Chemistry of Industrially Important Products**

(Theory: Lectures 45 hrs, Marks 60)

(Credits: 03)

**Course objectives**

- To make student perceptive about various commodity industries viz. **Cosmetics and Perfumes, Dyes and Pharmaceuticals, Pesticides, Soaps and Detergents**, related diversified and multidisciplinary fields of chemical industry.
- To produce graduates with enhanced skills, knowledge and research aptitude to carry out higher studies or research and development in the various industrial areas.
- To equip students with advance knowledge about various industrially important products.
- To makes students ready for immediate entry to the workplace with sound theoretical and basic experimental knowledge in the areas of various industries.
- To engender the substantial interest in the students to understand the concepts in chemical processing, engineering and industrial development of present era viz. **Cosmetics and Perfumes Industry, Dyes and Pharmaceuticals, Pesticides, Soaps and Detergents**, related multidisciplinary and diversified fields of chemical industry.
- To describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use.
- To gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries by discussions and exchange of experiences and knowledge.
- To develop proficiency in application of current aspects of industrial chemistry.



## Learning Outcomes

On successful completion of the course **CH: 604 Chemistry of Industrially Important Products**, the student will be able to understand....

- Describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use.
- Gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries.
- Importance of Cosmetics Industry and a general study including preparation and uses of the Hair dye, hair spray, shampoo, suntan lotions, lipsticks, talcum powder, nail enamel, creams (cold, and shaving creams).
- Perfumes and identify the distinguishing features of its components and also an essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone etc.
- Know about pesticides both natural and synthetic, benefits and adverse effects of it, also synthesis, manufacture and uses of pesticides viz. Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor).
- Definition, classification, raw material used in soaps and detergents, reaction involved in it, Manufacture of Soaps and cleansing action of soaps and detergents.
- Definition, properties of good dyes, relation between colour and constitution, classification of dyes according to their mode of application and chemical constitution.
- Importance's, definition and meaning of the different terms involved in Drugs and Pharmaceuticals Industry and also synthesis, uses, properties and industrial manufacture of Paracetamol, Aspirin, and Chloramphenicol.



**UNIT 1: Chemistry of Cosmetics****(L-9, M-12)**

Introduction, Raw materials and general study including preparation and uses of the following: Hair dye, shampoo, suntan lotions, lipsticks, talcum powder, nails enamel, creams (cold and shaving creams).

**Ref.: 6 Chapter -1, 1 to 34, Chapter -2, 36 to 100, Chapter -3, 104 to 145, Chapter - 4 149 to 181 and Chapter- 9, 290 to 309. Relevant Points Only**

**UNIT 2: Chemistry of Perfumes****(L-9, M-12)**

Essential oils A general study including properties, uses and importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone and antiperspirants and artificial flavours.

**Ref. 3: Chapter 53, 1520 to 1544 Relevant Points Only.**

**Ref.6: Chapter 8, 272 to 289, Chapter 10, 310 to 344, Relevant Points Only.**

**UNIT 3: Pesticide Chemistry****(L-9, M-12)**

General introduction to pesticides and their changing concepts (natural and synthetic), benefits and adverse effects of pesticides, structure activity relationship, synthesis and uses of representative pesticides in the following classes: Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor).

**Ref.3: Chapter 41, 1280 to 1318 Relevant Points Only.**

**Ref.7: Chapter 11, 381 to 426 Relevant Points Only.**

**UNIT 4: Soap and Detergents****(L-9, M-12)**

Soaps, Surfactants and its Importance, Raw Materials used in Soap Manufacture, Manufacture of Soaps (Continuous Process), Cleansing action of Soap, Classification of Soaps, Detergents, Principal group of Synthetic Detergents, Detergents builders and Additives, Comparison between Soap Detergent.

**Ref.3: Chapter 39, 1219 to 1251 and Chapter 40, 1252 to 1279 Relevant Points Only.**

**Ref. 6: Chapter- 5, 123 to 160 Relevant Points Only.**

**UNIT 5: Dyes, Drugs and Pharmaceuticals.****(L-9, M-12)**

(a) **Dyes:** Introduction, properties of dyes, Otto Witts theory only, Classification of dyes according to their mode of application and Chemical Constitution.

**Ref.3: Chapter 54, 1545 to 1608 Relevant Points Only.**



**Ref.6: Chapter 8, 259 to 288 Relevant Points Only.**

**(b) Drugs and Pharmaceuticals:** Introduction, Importance, Qualities of good drugs, Functional and chemotherapeutic drugs, Meaning of the terms: Prescriptions, Doses, Analgesic, Antipyretics, Antibiotics, Anti-inflammatory, Anti-viral, Cardiovascular, Cough and Cold Preparations, Sedatives and Hypnotics, contraceptives. Synthesis, uses, manufacture and properties of Paracetamol, Aspirin, Chloramphenicol

**Ref.4: Chapter 8, 144 to 194 Relevant Points Only.**

**Ref.6: Chapter 10, 331 to 379 Relevant Points Only.**



#### References:

1. *Principles of Industrial Chemistry*, Chris A Clausen III and Guy Mattson, John Wiley and Sons, Inc. Somerset, 1978, New York.
2. *Shreve's Chemical Process Industries*, George T. Austin, 5<sup>th</sup> Edition, The McGraw-Hill, 1984, New York.
3. *Industrial Chemistry*, B. K. Sharma, 16<sup>th</sup> Edition, Goel Publishing House, Meerut, (U.P.) 2011, India.
4. *Comprehensive Industrial Chemistry*, P.G. More, 1<sup>st</sup> Edition, Pragati Prakashan, Meerut, (U.P.) 2010, India.
5. *Chemistry and Technology of the Cosmetics and Toiletries Industry*, D.F. Williams and W.H. Schmitt Blackie Academic & Professional First edition 1992 Second edition 1996 © Chapman & Hall ISBN-13 :978-94-0 10-7194-9 e-ISBN-13:978-94-009-1555-8
6. *Handbook of Industrial Chemistry Organic Chemicals*, Mohammad Farhat Ali, Bassam M. El Ali, James G. Speight, The McGraw-Hill Companies, 2005, ISBN 0-07-141037-6

Semester V

Elective Course

CH-506(A)

Subject- Biochemistry

(Theory: Lectures = 45 hrs, Marks 60)

(Credits: 03)

### Learning Objectives

- To study different types of biomolecules.
- To study structure of biomolecules.
- To study classification of each type of biomolecules.
- To study reactions of the biomolecules.
- Study of metabolism and thus, study of metabolic processes and reactions involved.
- To study energetics of the metabolic processes.
- Students should understand: Structure and role of Carbohydrates, Amino acids, Proteins, Enzymes, lipids, Nucleic Acids and energy rich compounds in biochemical reactions.

### Course Outcomes

- Students will study biomolecules like carbohydrates, amino acids, proteins, enzymes, lipids and nucleic acids.
- Students will understand definitions, classifications and examples of these biomolecules.
- Students will learn the detailed structure of these biomolecules along with types of bonds or linkages present in their molecules.
- Students will learn the chemical properties of these biomolecules and the action of some reagents on them in the form of reactions or graphical presentation.
- Students will understand biochemical energetics of common energy rich compounds along with hydrolytic reactions.





- Students will learn metabolisms like Glycolysis, TCA cycle, Transamination, deamination and  $\beta$ -oxidation through reactions, enzymes involved, outlines and energetics.

### Unit 1. Carbohydrates

(L-09, M-12)

- Introduction**, definition, classification.
- Monosaccharides**: structure of glucose (open chain and ring structures). Kiliani Fischer synthesis of D-glucose. Reactions of glucose: oxidation with bromine water and nitric acid, reduction, acetylation, addition of HCN,  $\text{NH}_2\text{OH}$  and phenyl hydrazine, mutarotation.
- Disaccharides**: structure of sucrose, lactose and maltose.
- Polysaccharides**: storage polysaccharides, structure of starch, Structural polysaccharides, structure of cellulose.

Ref 1 and 2: Relevant pages

### Unit 2. Amino Acids and Proteins

(L-09, M-12)

- Amino acids**: Introduction, structure of amino acids, classification of amino acids, amphoteric nature of amino acids, reactions of amino acids: with FDNB and Dansyl chloride, formation of peptide bond
- Proteins**: Introduction, classification of proteins: based on functions and based on shape, structure of proteins: primary, secondary, tertiary and quaternary structure). Study of some proteins:  $\alpha$  keratins and hemoglobin. Separation of amino acids and proteins by paper electrophoresis and dialysis

Ref 1 and 2: Relevant pages

### Unit 3. Enzymes and Lipids

(L-09, M-12)

- Enzymes**: Introduction, specificity of enzymes, classification, role of enzymes in biochemical reactions, Michaelis Menten equation (no derivation). Effect of substrate concentration,  $\text{P}^{\text{H}}$  and temperature on enzyme catalyzed reactions. Enzyme inhibitors: introduction and types.
- Lipids**: Introduction, classification of lipids, fatty acids, nomenclature of fatty acids, triacyl glycerols, hydrogenation of oils, Saponification value and iodine value of oils, phospholipids and waxes.





Ref 1 and 2: Relevant pages



(L-09, M-12)

#### Unit 4. Nucleic Acids and Energy Rich Compounds

- a) **Nucleic acids:** Introduction, Components of nucleic acids: sugars, bases, nucleosides and nucleotides. Watson and Crick model of DNA, types of RNA (structure not expected)
- b) **Energy rich compounds:** Introduction, Pyrophosphates, acyl phosphates, enolic phosphates, thiol esters (structure, hydrolytic reaction and energetics). Energy carriers in biological redox systems:  $\text{NAD}^+$  and FAD

Ref 1 and 2- Relevant pages

#### Unit 5. Metabolism

(L-09, M-12)

Definition of metabolism,

- a) **Carbohydrate metabolism:** Glycolysis: reactions involved and energetics, TCA cycle (Kreb cycle): Reactions involved and energetic
- b) **Amino acid Metabolism:** Transamination, deamination (by enzymes - glutamic dehydrogenase, ammonia lyases, deaminases and deamidases), decarboxylation
- c) **Lipid Metabolism:**  $\beta$ - oxidation of fatty acids, reactions involved in  $\beta$ -oxidation, energetics of  $\beta$ -oxidation of palmitic acid.

Ref 1 and 2- Relevant pages

#### Reference Books

1. *Outlines of Biochemistry, Conn and Stumpf (4<sup>th</sup> Edition)*
2. *Principles of Biochemistry, A. L. Lehninger (2<sup>nd</sup> Edition)*

## CH-506(B)

## Subject- Green Chemistry

(Theory: Lectures = 45 hrs, Marks 60)

(Credits: 03)

**Course Objectives:**

- There is rising concern since 1970 about environmental pollution, depleting resources, climate change, ozone depletion, legislation which is getting stringent with strict environmental laws, rising cost of waste deposits, health concern and so on.
- We are facing the challenge to work towards sustainable development. Since 1990, today's society is moving towards becoming more and more environmentally conscious.
- Green chemistry has been introduced in 1990 for overall sustainable development against the environmental concerns.
- Green chemistry is not a new branch of chemistry, but it is a new way chemistry, which should be practiced regularly.
- Innovations and applications of green chemistry in education has helped companies not only to gain environmental benefits but at the same time to achieve economic and societal goals also.
- This is possible because these undergraduate students are ultimate scientific community of tomorrow.

**Learning Outcomes:**

- With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances.
- The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield.



- The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock, renewable energy sources, importance of green solvents, etc.
- The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems.
- Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry.



### UNIT 1. Introduction to Green Chemistry

(L-04, M-04)

Definition of Green Chemistry. Drawbacks of conventional chemistry. Need of Green Chemistry, Minamata Disease. Goals of Green Chemistry

Ref:1 Relevant Pages

Ref:6 Relevant Pages

### UNIT 2. Principles of Green Chemistry and Designing a Chemical Synthesis (L-12, M-18)

Twelve principles of Green Chemistry, role of Paul T. Anastas, importance of green chemistry with examples: Prevention of waste/by-products, Atom economy, Prevention or Minimization of hazardous products, Designing safer chemicals, Energy requirements for synthesis, Selection of suitable solvents, Selection of starting materials, Use of protecting groups, Use of catalysts, Designing of biodegradable products, Prevention of chemical accidents, Strengthening of analytical techniques, industrial safety.

Ref:1 Relevant Pages

Ref:2 Relevant Pages

### UNIT 3. Techniques in Green Chemistry

(L-12, M-16)

a) Microwave assisted synthesis- Introduction and importance, Applications- Esterification, Fries rearrangement, Orthoester Claisen Rearrangement, Diels-Alder Reaction, Hofmann Elimination.

b) Ultrasound assisted reactions- Introduction and importance, Application- Esterification, saponification, aromatic substitution reactions, alkylation, oxidation, reduction.



Ref:1 Relevant Pages

Ref:3 Relevant Pages



**UNIT 4. Solvents, Reagents and Catalysts in Green Chemistry** (L-14, M-18)

- a) Solvents- Introduction and Importance, Examples-Michael Addition in water, Bis-indolyl methane in ionic liquid, tetrazole synthesis in deep eutectic solvent.
- b) Reagents- Introduction and Importance, Examples- Alkylation using dimethyl carbonate, Solid phase peptide synthesis using Merrifield reagent.
- c) Catalysts- Introduction and Importance, Examples- Reduction of carbonyl group using Baker's yeast, Esterification using Lipase enzyme, Zeolite clay and Cyclodextrin.

Ref:1 Relevant Pages

Ref 2: Relevant Pages

**UNIT 5. Future Trends in Green Chemistry** (L-03, M-04)

Biomimetic, Photochemical reactions, Multifunctional Reagents, Green chemistry in sustainable development.

Ref:1 Relevant Pages

Ref 3: Relevant Pages

Ref 5: Relevant Pages

**Reference Books:**

1. *New Trends in Green Chemistry*, V.K. Ahluwalia and M.R. Kidwai: Anamalaya Publishers (2005).
2. *Green Chemistry- Theory and Practical*, P.T. Anastas and J.K. Warner: Oxford University Press (1998).
3. *Introduction to Green Chemistry*, A. S. Matlack: Marcel Dekker (2001).
4. *Real-World Cases in Green Chemistry*, M.C. Cann & M.E. Connely: American Chemical Society, Washington (2000).
5. *Introduction to Green Chemistry*, M. A. Ryan & M. Tinnesand, American Chemical Society, Washington, (2002).
6. *Silent Spring*, Rachel Carson, Houghton Mifflin Company, (1962).

\* \* \* \* \*

## CH-606(A)

## Subject- Polymer Chemistry

(Theory: Lectures = 45 hrs, Marks 60)

(Credits: 03)

**Learning Objectives**

- The course offers the basic concepts of polymer, polymerization, classes of polymers, important properties, and poly(lactic acid) as a biodegradable polymer.
- The course also offers to study preparation, properties, and applications of industrially important selected polymers.
- The course will give chance to study various mechanisms of polymerization and learn different techniques of polymerization.
- The student will be able to understand glass transition temperature and factors affecting on it and various ways to express molecular weight of polymers.

**Course Outcomes**

After completing this course, the graduate should be able to

- Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response.
- Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index.
- Identify different mechanisms of polymerizations viz. free radical, ionic, and condensation polymerizations.
- Distinguish techniques of polymerization based on physical conditions required for the preparation of polymers in laboratory or industry.
- Familiar with preparation, properties, and applications of industrially important selected polymers.



### UNIT 1. Basic Concepts of Polymers

(L-09, M-12)

Introduction, brief history, monomers and polymers, degree of polymerization, functionality, linear, branched and cross linked polymers, homopolymers, Types of copolymers:- random, alternate, block and graft copolymers, Tacticity (stereochemistry) of polymers: isotactic, syndiotactic and atactic polymers. Classification of polymers:- based on a) origin- natural and synthetic polymers b) native backbone chain – organic and inorganic polymers c) thermal response – thermoplastic and thermo setting polymers d) ultimate form and use – plastic, elastomer, fibre and liquid resin, Degradation of polymers:- types of degradation: chain end and random degradations.

Ref. 1 and 2: Relevant pages

### UNIT 2. Chemistry of Polymerization

(L-09, M-12)

Introduction, chain growth polymerization (initiation, propagation, termination, and kinetics): free radical polymerization, ionic (cationic and anionic) polymerizations, step growth polymerization (mechanism and kinetics), ring opening polymerization.

Ref. 1 and 2: Relevant pages

### UNIT 3. Polymerization Techniques & Polymer Processing Techniques

(L-9, M-12)

Polymerization techniques: - Bulk polymerization, solution polymerization, suspension polymerization, emulsion polymerization, interfacial condensation polymerization.

Polymer processing techniques:- Calendaring, die casting, film casting, and compression moulding.

Ref. 1 and 2: Relevant pages

### UNIT 4. Study of Some Important Polymers

(L-09, M-12)

Preparation, properties and applications of - Polyethylene [PE], Polypropylene [PP], Poly(vinyl chloride) [PVC], Polystyrene [PS], Polyacrylonitrile [PAN], Polycarbonates [PC], Phenol-formaldehyde resins [PF], Epoxy resins, Polyester - Polyethyleneterephthalate [PET], Polyamides (Nylon-6 and Nylon-6,6), Poly(vinyl alcohol) [PVA], Poly(lactic acid) [PLA], Poly(aniline), and Polybutadiene.

Ref. 1 and 2: Relevant pages



## UNIT 5. Glass Transition Temperature

(L-09, M-12)

Glass transition temperature:- Definition and explanation, factors affecting glass transition temperature, Glass transition temperature and molecular weight, Glass transition temperature and melting point, importance of glass transition temperature, determination of glass transition temperature by dilatometry.

Molecular weights of polymers:-types of molecular weights-number average molecular weight, weight average molecular weight, viscosity average molecular weight, sedimentation average molecular weight, and poly dispersity index.

**Ref. 1 and 2:** Relevant pages

### Reference Books

1. *Polymer Science*, V. R. Govarikar, N. V. Viswanathan, JayadevSreedhar, New Age International (P) Ltd., New Delhi, 1997.
2. *Text books of Polymer Science*, F. W. Billmeyer, John Wiley & Sons; 3<sup>rd</sup> edition, 1984.



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## CH-606(B)

## Subject- Research Methodology for Chemistry

(Theory: Lectures = 45 hrs, Marks 60)

(Credits: 03)

**Course Objectives:**

- To familiarize students towards basics of research, process of research and methods.
- To enable the student in conducting research work and formulating research synopsis and report.
- To learn the analysis of primary research articles and peer review articles.
- To improve student understanding of how scientific questions are developed and posed through proposals and dissemination of research results.
- To learn the scientific method of collecting and analyzing information.
- To learn the presentation of scientific information
- To aware the students about proper laboratory safety and techniques.

**Learning outcomes:**

The learning outcomes for this course of the following Chemistry Graduate Program Goals:

- Students will learn about what is research, research methods and impact of chemical research on society through pure and applied research.
- Students will learn how to analyze research in chemistry drawn from contemporary primary chemical literature.
- Student will formulate thesis topic, explain its significance and propose the methodology to be used in the thesis topic research.
- Student will demonstrate proficiency in scientific writing which includes:





- Ability to interpret and synthesize primary research literature related to the student's thesis topic.
  - Ability to write a coherent narrative that explains the significance of the thesis research with regard to the primary research literature.
  - Ability to report original research results in a coherent narrative.
  - Ability to explain and defend conclusions drawn from original results in narrative form.
  - Prepare and present scientific topics orally utilizing presentation software such as PowerPoint.
- Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
  - Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
  - Students will be able to communicate the results of scientific work in oral, written and electronic formats.
  - Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behaviour in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

### **UNIT 1: Introduction to Research**

(L-9, M-12)

Definition of Research, Objectives of Research, Importance, and need for Research in a related field. Motivation in Research Methods versus Methodology, Classification and types of Research, Pure and applied Research, Difference between Computational lab and wet lab research, theoretical and experimental models, Criteria of Good Research Application of theoretical knowledge in designing of experiments. Methods of Data Collection

List of National Importance Institutes and List of CSIR Laboratories

Ref. 3: 1-24.

### **UNIT 2: Print Literature Resources**

(L-9, M-12)



Sources of information: Primary, secondary, tertiary sources; Journals: Journal abbreviations, abstracts, current titles, reviews, monographs, dictionaries, text-books, current contents, Introduction to Chemical Abstracts and Beilstein, Subject Index, Substance Index, Author Index, Formula Index with examples.

Ref. 1: 299-317;

Ref. 2: 1569-1603



### UNIT 3: Digital Literature Resources

(L-9, M-12)

The Internet and World Wide Web. Internet resources for chemistry. Finding and citing published information. Web resources, E-journals, Journal access, TOC alerts, Citation index, Impact factor, H-index, UGC infonet, E-books. The introduction of Search engines, Scirus, Google, Google Scholar, Chem Industry, Wiki- Databases, ChemSpider, American Chemical Society, Royal Society of Chemistry, Wiley-inter science, Science Direct, Springer, SciFinder, Scopus, C&EN News Reaxys.

Ref. 1: 299-317;

Ref. 2: 1569-1603

### UNIT 4: Writing Scientific Reports

(L-9, M-12)

Writing Skills, Reporting practical and project work, Referencing, Organizing a poster display. Communication Skills, Body Language, Giving an oral presentation. Content of Research Papers, How to download Research Paper? How to Read Research Paper, Abstract and Summary. What are Paper, Patent and Review? Introduction of Plagiarism and self Plagiarism.

Ref. 1: 325-348; Ref. 3: 344-360.

### UNIT: 5 Chemical Safety and Ethical Handling of Chemicals

(L-9, M-12)

Safe working procedure and protective environment, protective apparel, emergency procedure and first aid, laboratory ventilation. Safe storage and use of hazardous chemicals, procedure for working with substances that pose hazards, flammable or explosive hazards, disposal of waste chemicals, recovery, recycling and reuse of laboratory chemicals, incineration and transportation of hazardous chemicals.

Ref. 6: 1.31-1.36, 1.40, 2.1-2.16, 5.79-5.85, 7.41-7.50, 8.25-8.31.

Reference Books:



BOS (PHYSICS)-Faculty of Science & Technology  
**Kavayitri Bahinabai Chaudhari**  
**North Maharashtra University, Jalgaon**  
Class: F. Y. B. Sc.      Subject: **Physics**  
Choice Base Credit System (With effect from June 2022)

The Board of Studies in Physics has unanimously accepted the revised syllabus prepared by different committees, discussed and finalized in the **Workshop on Syllabus restructuring at F. Y. B. Sc. Physics (CBCS Pattern)** held on 11<sup>th</sup> April 2022.

The titles of the papers for F.Y.B.Sc. (Physics) are as given below:

Semester	Credits	Course code	Course Title	No. of Credits	Hours/ semester	Marks	
						Internal	External
I	Theory-04 Practicals-02	PHY 101	Basic Mechanics	02	30	40	60
		PHY 102	Dynamics and Properties of Matter	02	30	40	60
		PHY 103	LAB -I	02	60	40	60
II	Theory-04 Practicals-02	PHY 201	Electricity and Electrostatics	02	30	40	60
		PHY 202	Dielectrics, Magnetism and Electromagnetism	02	30	40	60
		PHY 203	LAB -II	02	60	40	60

Note: The industrial/study tour is compulsory for students of F. Y. B. Sc. (Physics).

**Semester I**  
**PHY 101: Basic Mechanics**  
**(Credits: 02); (30 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the concepts of Basic Mechanics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Basic Mechanics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and knowledge of Basic Mechanics to understand and solve real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1. Vectors**

Vector algebra, Scalar and vector products (Dot, Cross, Scalar Triple Product, Vector Triple Product, Derivatives of a vector with respect to a parameter. **(04 Lectures, 12 Marks)**

**Unit 2. Ordinary Differential Equations**

Types of differential equations, degree and order of differential equation (definitions only), linear and non-linear differential equations (definitions only), homogeneous and non-homogeneous differential equations (definitions only), 1<sup>st</sup> order homogeneous differential equations, 2<sup>nd</sup> order homogeneous differential equations with constant coefficients (definitions with examples). **(08 Lectures, 16 Marks)**

**Unit 3. Laws of Motion**

Frames of reference, Newton's Laws of motion, Dynamics of a system of particles, Centre of Mass, Centre of mass of two particle system, Centre of mass of n-particle system, Centre of mass of a rigid body, Centre of mass of a circular ring. **(10 Lectures, 16 Marks)**

**Unit 4. Momentum and Energy**

Conservation of momentum, Work and energy, Conservation of energy, Motion of rockets. **(04 Lectures, 08 Marks)**

**Unit 5. Rotational Motion**

Angular velocity and angular momentum, Torque, Conservation of angular momentum. **(04 Lectures, 08 Marks)**





**Semester I**  
**PHY 102: Dynamics and Properties of Matter**  
**(Credits: 02): (30 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the concepts of Dynamics and Properties of Matter to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Dynamics and Properties of Matter.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to .....

1. Apply the concept and knowledge of Dynamics and Properties of Matter to understand and solve real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1. Gravitation**

Newton's Law of Gravitation, Central force, Motion of a particle in the central force field Kepler's Laws (Statement only). Conservation of angular momentum. Areal velocity is constant. Satellite in circular orbit. Geosynchronous orbit. Applications of satellites, Weightlessness, Basic idea of global positioning system(GPS). **(08 Lectures, 16 Marks)**

**Unit 2. Surface Tension**

Concept of surface tension, Examples of surface tension, surface tension, surface energy. Angle of contact, Wettability, Relation between surface tension, Excess pressure and Curvature, Factors affecting surface tension, surface tension of water by Jaeger's method, Applications of surface tension. **(07 Lectures, 14 Marks)**

**Unit 3. Elasticity**

Hooke's law, Stress-strain diagram, Elastic moduli, Relation between elastic constants ( $Y$ ,  $k$  and  $\eta$ ). Poisson's Ratio, Expression for Poisson's ratio in terms of elastic constants, Work done in stretching and work done in twisting a wire, Torsional pendulum. To determine  $Y$ ,  $k$ ,  $\eta$  and  $\sigma$  by Searle's method. **(07 Lectures, 14 Marks)**

**Unit 4. Fluid Dynamics and Viscosity:**

Introduction, General concept of fluid flow, Streamline and turbulent flow, Critical velocity, Different forms of energy possessed by liquids, Bernoulli's theorem, Applications of Bernoulli's theorem- Venturimeter and Pitot tube to find the rate of flow. Concept of viscosity, Definition,



**Semester II**  
**PHY 202: Dielectrics, Magnetism and Electromagnetism**  
**(Credits: 02): (30 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the concepts of Dielectrics, Magnetism and Electromagnetism to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Dielectrics, Magnetism and Electromagnetism.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and knowledge of Dielectrics, Magnetism and Electromagnetism to understand and solve real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1. Capacitance and dielectrics**

Introduction, Calculation of effective/equivalent capacitance for series and parallel combination, Parallel plate capacitor with and without dielectric, Cylindrical capacitor and Spherical capacitor, Energy per unit volume in electrostatic field, Dielectric constant, Electric polarization, Gauss's law in dielectrics, Three electric vectors  $\vec{E}$ ,  $\vec{D}$ ,  $\vec{P}$  and the relation between them, Introduction to super capacitors and its applications.

**(10 Lectures, 20 Marks)**

**Unit 2. Magnetism**

Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility, Brief introduction of diamagnetic, paramagnetic and ferromagnetic materials. Hard and Soft magnetic materials. Introduction to Magnetostatics; Biot-Savart's law and its applications-straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law (statement only).

**(08 Lectures, 16 Marks)**

**Unit 3. Electromagnetic induction:**

Faraday's laws of electromagnetic induction, Lenz's law, self inductance and mutual inductance,  $L$  of single coil,  $M$  of two coils, Reciprocity theorem of mutual induction, Energy stored in a magnetic field.

**(05 Lectures, 10 Marks)**



#### Unit 4. Maxwell's equations and Electromagnetic wave propagation

Equation of continuity of current, Displacement current, Maxwell's equations, Poynting vector for plane wave, electromagnetic wave propagation through vacuum and isotropic dielectric medium, transverse nature of EM waves, polarization.

(07 Lectures, 14 Marks)

#### Reference Books:

1. Electromagnetics, 2<sup>nd</sup> Edition, B.B. Laud, Wiley Eastern Limited
2. Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education.
3. Electricity and Magnetism, J.H. Fewkes & J. Yarwood. Vol. I, 1991, Oxford Univ.Press.
4. Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.11
6. Introduction to Electrodynamics, 3rd Edn.D.J. Griffiths, 1998, Benjamin Cummings.
7. Electrodynamics- D. J. Griffiths.
8. Electrodynamics, Kumar, Gupta and Singh
9. New simplified Physics, S. L. Arora, Dhanpat Rai and Co., (A reference book for class XII, Volume I)
10. Concept of Physics, H. C. Verma, Volume 2.





**BOS (PHYSICS)-Faculty of Science & Technology**  
**Kavayitri bahinabai Chaudhari**  
**North Maharashtra University, Jalgaon**  
Class: S. Y. B. Sc. Subject: Physics  
**Choice Base Credit System (With effect from June 2019)**

The Board of Studies in Physics in its meeting held on **4<sup>th</sup> July 2018** has unanimously accepted the revised syllabus (as per CBCS pattern) prepared by different committees, discussed and finalized in workshop restructuring of S.Y.B.Sc. Syllabus.

The titles of the papers for S.Y.B.Sc. (Physics) are as given below:

Semester	Course		No. of Credits	Hours per semester	Marks	
	Course code	Course Title			Internal marks	External marks
III	PHY 301	Thermodynamics and Kinetic theory of gases	02	30	40	60
	PHY 302(A) OR PHY 302(B)	Electronics-I OR Instrumentation	02	30	40	60
	PHY 303	LAB-III	02	60	40	60
	PHY 304: (Skill Enhancement course I)	Renewable energy and Energy Harvesting	02	30	40	60
IV	PHY 401	Waves, Oscillations and acoustics	02	30	40	60
	PHY 402	Optics and LASERS	02	30	40	60
	PHY 403	Lab IV	02	60	40	60
	PHY 404: (Skill Enhancement course II)	Electrical Circuits and Network Skills	02	30	40	60

**Note: The industrial/study tour is compulsory for students of S. Y. B. Sc. (Physics).**

**Semester III: Physics paper I**  
**PHY 301: Thermodynamics and Kinetic theory of gases**  
**(Credits: 02) :( 30 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Thermodynamics and kinetic theory of gases to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Thermodynamics and kinetic theory of gases.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Basics of thermodynamics and its First Law: (08 L, 15 M)**

Thermodynamic Description of system, Zero<sup>th</sup> Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between  $C_p$  and  $C_v$ , Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient, Reversible and irreversible processes.

**Unit 2: Second and Third Law of Thermodynamics and Entropy: (08 L, 15 M)**

Second law & Entropy, Carnot's cycle & theorem, Entropy changes in reversible and irreversible processes, Entropy-temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero, Enthalphy.

**Unit 3: Heat Engines: (07 L, 15 M)**

Carnot's Engine, Otto Engine and Cycle, Diesel Engine and Cycle, Efficiencies of all heat engines.

**Unit 4: Kinetic Theory of Gases: (07 L, 15 M)**

Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zero<sup>th</sup> Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases.

**Reference Books:**

- Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
- A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
- Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
- Heat and Thermodynamics, M. W. Zemasky and R. Dittman, 1981, McGraw Hill 13
- Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W. Sears & G. L. Salinger. 1988, Narosa
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. Chand Publications



**Semester III: Physics paper II**  
**PHY 302 (A): Electronics –I**  
**(Credits: 02) :( 30 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Electronics of gases to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Electronics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Electronics to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1 Semiconductor diodes**

**(07 L, 14 M)**

(Revision on metal, insulator and semiconductors, Intrinsic and Extrinsic semiconductor), Semiconductor Diodes: p and n type semiconductors. Barrier Formation in PN Junction Diode. Qualitative Idea of Current Flow Mechanism in Forward and Reverse Biased Diode. PN junction and its characteristics. Static and Dynamic Resistance. Principle, Construction, Working and Characteristics of (1) LEDs (2) Photodiode (3) Solar Cell (P-N Junction), (4) Zener Diode

**Unit 2: Rectifiers and Power Supplies**

**(05 L, 10M)**

Introduction to Rectifiers, Types: Half-wave & Full-Wave Rectifiers (Centre-tapped and Bridge Rectifiers), Calculation of Ripple Factor and Rectification Efficiency, Basic idea about capacitor filter, D.C. power Supply (unregulated and regulated), Zener Diode as a voltage regulator.

**Unit 3: Bipolar junction transistor**

**(06L, 12M)**

Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC configurations. Active, Cutoff, and Saturation Regions. Current gains  $\alpha$  and  $\beta$ . Relations between  $\alpha$  and  $\beta$ . Load Line analysis of Transistors. DC Load line and Q point.

**Unit 4: Digital Electronics**

**(12 L, 24 M)**

Binary Numbers, Decimal to Binary and Binary to Decimal Conversion, Binary Addition, Binary Subtraction using 2's Complement Method, AND, OR and NOT Gates (Realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNOR Gates, De Morgan's Theorems, Boolean Laws, Simplification of Logic Circuit using Boolean Algebra, Fundamental Products, Min terms and Max terms, Conversion of a Truth Table into an Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh's Map, Half Adders and Full Adders and Subtractors, 4-bit binary Adder-Subtractor.

**Reference Books:**

1. Electronic Principles – A. P. Malvino, Mc Graw-Hill Publishing House
2. Electronic fundamentals and applications – J. D. Ryder, Prentice Hall 4th Edition
3. Principles of Electronics – V. K. Mehta, S. Chand Publications, New Delhi
4. Electronic Devices and Circuits – Allen Mottershead, Good year Publishing Company
5. Digital Principles and Applications – Malvino and Leach, Mc Graw-Hill Publication.
6. Modern Digital Electronics – R. P. Jain, Tata Mc Graw-Hill Pvt. Ltd., New Delhi
7. Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
8. Electronic devices and circuits, S. Salivahanan and N. Suresh Kumar, 2012, Tata Mc-Graw Hill.
9. Microelectronic Circuits, M.H. Rashid, 2ndEdn.,2011, Cengage Learning.
10. Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6th Edn., Oxford University Press.
11. Fundamentals of Digital Circuits A Anand Kumar, 2nd Edition, 2009, PHI Learning Pvt.Ltd.





## Semester III: Physics paper IV

### PHY 304: Skill Enhancement Course I (SEC-I)

#### Renewable energy and Energy Harvesting (Credits: 02) Theory: (30 L, 60M)

[The aim of this course is not just to impart theoretical knowledge to the students but to provide them with exposure and hands-on learning wherever possible]

**Unit 1. Conventional and Non-conventional energy Sources:** Fossil fuels and Nuclear Energy, their limitation, need of renewable energy, non-conventional energy sources. (02L, 04M)

#### Unit 2 . Solar Energy

Solar energy, its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems. Solar energy utilization by Solar roof panels. (06 L, 12 M)

#### Unit 3. Ocean, geothermal, Hydro and Biomass energy resources.

- Ocean Energy:** Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. (03 L, 06M)  
Tidal energy, Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power. (02 L, 04M)
- Geothermal Energy:** Geothermal Resources, Geothermal Technologies. (02 L, 04M)
- Hydro Energy:** Hydropower resources, hydropower technologies, environmental impact of hydro power sources. (02 L, 04M)
- Biomass energy:** biomass, biochemical conversion, biogas generation, Ocean biomass (02L, 04M)

#### Unit 4. Energy Harvesting:

- Wind Energy harvesting:** Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies (03 L, 06M)
- Piezoelectric Energy harvesting:** Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modeling piezoelectric generators, Piezoelectric energy harvesting applications, Human power (04 L, 08M)
- Electromagnetic Energy Harvesting:** Linear generators, physics mathematical models, recent applications, (02 L, 04M )
- Carbon captured technologies, cell, batteries, power consumption (01 L, 02M )
- Environmental issues and sustainability of renewable energy sources, (01 L, 02M )

#### Demonstrations and Experiments

- Demonstration of Training modules on Solar energy, wind energy, etc.
- Conversion of mechanical energy (vibration) into voltage using piezoelectric materials
- Conversion of thermal energy into voltage using thermoelectric modules.

#### Reference Books:

- Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
- Solar energy - M P Agarwal - S Chand and Co. Ltd.
- Solar energy - Suhas P Sukhatme Tata McGraw - Hill Publishing Company Ltd.
- Godfrey Boyle, "Renewable Energy, Power for a sustainable future", 2004, Oxford University Press, in association with The Open University.
- Dr. P Jayakumar, Solar Energy: Resource Assessment Handbook, 2009
- J. Balfour, M. Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).
- [http://en.wikipedia.org/wiki/Renewable\\_energy](http://en.wikipedia.org/wiki/Renewable_energy)



**Semester IV: Physics paper VI**  
**PHY 402: Optics and LASERS**  
**(Credits: 02) : (30 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Optics and LASERS to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Optics and LASERS.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Optics and LASERS to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit I: Geometrical Optics:** Deviation produced by thin lenses, equivalent focal length of two thin lenses separated by a distance and when in contact. Power of lens, Spherical aberration in lens, reduction of spherical aberration (without derivation), Chromatic aberration, Achromatism; (two lenses in contact and separated by finite distance without derivation). **(04L, 10M)**

**Unit II: Interference:** Principle of superposition of two, Concept of interference, Intensity distribution in the interference pattern, Division of amplitude and division of wavefront. Young's Double Slit experiment, Expression for fringe width, Fresnel's Biprism and Lloyd's Mirror. Phase change on reflection: Stokes' treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes). fringe width in case of fringes of equal thickness. Newton's rings-experimental setup, theory and its application to determine wavelength of source and refractive index of liquids **(10L, 20M)**

**Unit III : Diffraction:** Definition of diffraction, Concept of diffraction, Types of diffraction, Fresnel Diffraction: Half-period zones, Zone plate, Fresnel Diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis, Fraunhofer diffraction: Single slit; Double Slit. Multiple slits and Diffraction grating. **(08L, 14M)**

**Unit IV: Polarization:** Polarization, Polarization by reflection, Brewster's law, Polarization by double refraction in uniaxial crystals, Maluss Law Double refracting crystals, Positive and negative crystals, Production and detection of circularly and elliptically polarized light, Nicol prism, Optical activity, Rotation of the plane of polarization, Specific rotation, Polarimeter or Sacherimeter, (Principle and working). **(04L, 10M)**

**Unit V: Non-linear optics:** Principle of LASER, Characteristics of LASER, Basic steps required to form a LASER: absorption, spontaneous emission, stimulated emission, Metastable state, population inversion, optical pumping, Types of LASER- He-Ne LASER, Applications of LASER (list only) **(04L, 06M)**

**Reference Books:**

1. Fundamentals of Optics, F A Jenkins and H E White, 1976, McGraw-Hill
2. Principles of Optics, B.K. Mathur, 1995, Gopal Printing
3. Fundamentals of Optics, H.R. Gulati and D.R. Khanna, 1991, R. Chand Publication
4. University Physics. FW Sears, MW Zemansky and HD Young 13/e, 1986. Addison-Wesley
5. Lasers and nonlinear optics – B. B. Laud
6. An Introduction to Laser – Theory and applications – M. N. Avadhanale
7. A textbook of Optics: Dr. N. Subrahmanyam, Brijlal and Dr. M.N.Avadhanulu, S.Chand Publishing.Co.Ltd.
8. Optics: Singh and Agrwal, Pragati Prakashan, Meerut.
9. Optics and Thermodynamics- Sarkar and Sharma, Himalaya Publishing House



**BOS (PHYSICS)-Faculty of Science & Technology**  
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 Class: T. Y. B. Sc. Subject: Physics  
 Choice Base Credit System (With effect from June 2020)

The Board of Studies in Physics has unanimously accepted the revised syllabus (as per CBCS pattern) prepared by different committees, discussed and finalized in the **Online Workshop on Curriculum Development in Physics at T. Y. B. Sc.** held on 15<sup>th</sup> and 16<sup>th</sup> May 2020.

The titles of the papers for T.Y.B.Sc. (Physics) are as given below:

Sem	Course type	Course code	Course title	Credits	Total hrs /week	Total teaching periods	Total marks	
							CA	UA
V	Discipline specific Course (DSC)	PHY 501	Mathematical Physics	3	3	45	40	60
		PHY502	Solid State Physics	3	3	45	40	60
		PHY 503	Atomic and molecular physics	3	3	45	30	60
		PHY 504(A) Or PHY 504(B)	Electronics-II Or Instrumentation -II	3	3	45	40	60
	Skill Enhancement course (SEC)	PHY 505	Solar Energy and applications	3	3	45	40	60
	DSE Elective course (Any one)	PHY 506(A) PHY 506(B) PHY 506(C) PHY 506(D) PHY 506 (E)	Technical Electronics- I or Refrigeration and Air conditioning- I or Vacuum Technology-I or Microprocessor-I or Programming in C++ I	3	3	45	40	60
	DSC CORE Practicals	PHY 507	Physics Practical I	2	4 (per batch)	60	40	60
		PHY 508	Physics Practical II	2	4 (per batch)	60	40	60
		PHY 509	Physics Practical III or Project	2	4 (per batch)	60	40	60
	Non credit audit course (Any one)	AC 501(A)	NCC	No credit	2	30	100	
AC 501(B)		NSS						
AC 501 (C)		Sports						
			<b>Total credit</b>	<b>24</b>				





Sem	Course type	Course code	Course title	Credits	Total hrs /week	Total teaching periods	Total marks	
							CA	UA
VI	Discipline specific Course (DSC)	PHY 601	Quantum mechanics	3	3	45	40	60
		PHY602	Material Science	3	3	45	40	60
		PHY 603	Nuclear Physics	3	3	45	30	60
		PHY 604	Modern Physics	3	3	45	40	60
	Skill Enhancement course (SEC)	PHY 605	Basic Instrumentation Skills	3	3	45	40	60
	DSE Elective course (Any one)	PHY 606 (A)	Technical Electronics- I or Refrigeration and Air conditioning- II or Vacuum Technology-II or Microprocessor-I or Programming in C++ II	3	3	45	40	60
		PHY 606 (B)						
		PHY 606 (C)						
		PHY 606 (D)						
		PHY 606 (E)						
	DSC CORE Practicals	PHY 607	Physics Practical I	2	4 (per batch)	60	40	60
		PHY 608	Physics Practical II	2	4 (per batch)	60	40	60
		PHY 609	Physics Practical III or Project	2	4 (per batch)	60	40	60
	Non credit audit course (Any one)	AC 601(A)	Soft skill	No credit	2	30	10	0
AC 601(B)		Yoga						
AC 601(C)		Practicing Cleanliness						
			<b>Total credit</b>	<b>24</b>				

Note: The industrial/study tour is compulsory for students of T. Y. B. Sc. (Physics).

**Semester V: (DSC): Physics paper II**  
**PHY 502: Solid State physics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Solid state Physics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Solid state Physics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ...

1. Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: The Crystal Structure**

Classification of solids, Lattice, Basis & crystal structure, translational vector, Unit cell, Primitive unit cell, symmetry operations, Types of lattices (2D & 3D), Miller indices, Interplaner spacing, Number of atoms per unit cell, co-ordination number, atomic radius and packing fraction for SC, BCC and FCC structures, Study of CsCl, NaCl and ZnS structures, Concept of reciprocal lattice and its properties with proofs.

**(10P, 14M)**

**Unit 2: X-Ray Diffraction**

Crystal as a grating for X-rays, Bragg's diffraction condition in direct lattice and reciprocal lattice, Ewald's construction, X-ray diffraction methods, Laue method, Rotating crystal method and Powder method, Analysis of cubic crystal by powder method, Brillouin zones (1D & 2D).

**(08P, 10M)**

**Unit 3: Cohesive energy and Bonding in solids**

Cohesive energy and formation of molecules, Definition of dissociation energy of molecule, Types of bonding, Ionic bond, Covalent bond, Molecular bond, Metallic bond and Hydrogen bond, Madelung energy, Madelung constant for one dimensional ionic crystal.

**(09P, 12M)**

**Unit 4: Lattice vibrations and Thermal Properties**

Lattice heat capacity, Classical theory of specific heat, Einstein's theory of specific heat, Vibrational modes in one dimension monoatomic lattice, Debye's model of specific heat of solids, Limitations of Debye model.

**(09P, 12M)**

**Unit 5: Free electron theory of metals and Band theory of solids**

Drude-Lorentz classical theory, Sommerfield's quantum theory, Free electron gas in 1-D and 3-D, Fermi level and fermi energy, Density of states, Formation of Energy band, Distinction between metals, semiconductors and insulators, Hall Effect, Hall co-efficient and mobility.

**(09P, 12M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Introduction to Solid State Physics: Charles Kittel
2. Solid State Physics: A.J. Dekkar
3. Solid state Physics: R. L. Singhal
4. Solid State Physics: S.L. Gupta, V. Kumar.
5. Solid State Physics: S.L. Kakani, C. Hemrajan
6. Solid State Physics: C.M. Kachhava
7. Solid State Physics: R.L. Singhal, Kedar Nath, Ram Nath & Co.
8. Fundamentals of Solid State Physics: B.S. Saxena, R.C. Gupta, P.N. Saxena, Pragati Prakashan, Meerut
9. Concepts of Solid State Physics: J.N. Mandal, Pragati Prakashan, Meerut.
10. Solid State Physics: R. K. Puri and V. K. Babbar
11. Solid State Physics, H. Ibach and H. Kutha, Springer (Online available book)



**Semester V: (DSC): Physics paper III**  
**PHY 503: Atomic and Molecular physics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Atomic and Molecular Physics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Atomic and Molecular Physics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and knowledge of Atomic and Molecular Physics to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Vector Atom Model**

Introduction, Quantum numbers, Physical interpretation of quantum numbers, Electron spin, Larmor precession of electron orbit, Pauli's exclusion principle, Definition of L-S coupling and j-j coupling, Spin-Orbit interaction, Spectral terms, Selection rules, Spectra of single valence electron system (sodium). Problems.

**(08P, 11M)**

**Unit 2: Two Valence Electron System**

Introduction, Spin-spin and orbit-orbit interaction, L-S and j-j coupling schemes, Singlet triplet separations, s-p and p-d configuration in L-S coupling and j-j coupling, Lande Interval rule, Spectra of Helium, Problems.

**(10P, 13M)**

**Unit 3: Zeeman & Paschen Back effect**

Introduction, Magnetic dipole moment, Zeeman Effect: Experimental set up, Normal and Anomalous Zeeman Effect for single valence electron system, Lande 'g' factor for two valence electron system (L-S and j-j coupling), Paschen Back effect for single valence electron system, Problems.

**(10P, 13M)**

**Unit 4: X-ray spectra**

Origin and nature of X-ray, Characteristic X-ray spectra, Moseley's law and its importance, Energy level of Cadmium, Regular and Irregular doublets and their laws, Applications of X-ray (List only)

**(07P, 10M)**

**Unit 5: Molecular spectra**

Introduction, Regions of electromagnetic spectrum, Types of molecular spectra, Rotational spectra of rigid diatomic molecule, Rotational energy levels of rigid diatomic molecule, Vibration of atoms in a diatomic molecule, Vibrational energy levels for Diatomic molecule, Raman spectra - Experimental set up, Explanation of Stoke's and Anti-stoke's lines, Applications of Raman effect.

**(10 P, 13M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Introduction to Atomic Spectra: H.E. White, McGraw Book Company, Inc.
2. Fundamental of Molecular spectroscopy: C.N. Banwell, Tata McGraw hill, 3rd edition.
3. Spectra of Diatomic Molecules: G Hertzberg, D Van Nostrand company, Inc., New York.
4. Perspectives of Modern Physics: Arthur Beiser, McGraw Hill Kogakusha Ltd, Tokyo.
5. Atomic spectra and Molecular spectra: Raj kumar, Kedarnath Ramnath Prakashan.
6. Introductory Raman spectroscopy: Elsevier publication.
7. Theoretical Atomic physics (Fourth Edition): Harald Friedrich.
8. Physics of Atoms and Molecules (Second edition): B. H. Bransden & C. J. Joacham.
9. The fundamentals of Atomic and Molecular Physics: Robert L. Brooks.



**Semester V: (DSC): Physics paper IV**  
**PHY 504(A): Electronics-II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Electronics and Digital Electronics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Electronics and Digital Electronics.
2. To provide the knowledge and methodology necessary for solving problems in Physics
3. The course also involves the related experiments based on the theory

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Electronics and Digital Electronics to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Transistor biasing and Transistor amplifiers**

Need of biasing, Different methods of biasing (only list), Voltage Divider bias method in detail, Single stage RC coupled Common emitter amplifier. Working, voltage gain, frequency response and bandwidth, Definition of Voltage amplifier and Power amplifier, Class A, B, C and AB power amplifiers (only load line diagram and explanation) and application list of each type. **(09P, 11M)**

**Unit 2: Transistorised Sinusoidal Oscillators**

Types of feedbacks, Barkhausen Criterion, Oscillatory circuit (tank circuit), Types of Oscillators (List only), Hartley oscillator, RC phase shift Oscillator. **(04P, 07M)**

**Unit 3: Semiconductor switching devices**

**FET:** Types (n-channel and p-channel), Constructional detail, electronic symbol, working principle and I-V Characteristics, FET parameters, Introduction to MOSFET, Applications: FET as a VVR, FET as an amplifier.

**UJT:** Constructional detail, Equivalent circuit, symbol, working principle and I-V Characteristics, Applications: UJT as a switch, UJT as a relaxation oscillator

**SCR:** Constructional detail, symbol, Equivalent circuit of SCR, working principle and I-V Characteristics, Transistor analogy and its working, Important terms (break over voltage, holding current, forward current rating), Applications: SCR as a switch, Controlled rectification using SCR **(09P, 12M)**

**Unit 4: Digital Electronics**

**A) Flip-flops:** Logic circuit, truth table, working and symbols of R-S Flip Flop, J-K Flip Flop. **(06 P, 08M)**

**B) Counters:** Types of counters (Asynchronous and Synchronous), 3 bit Asynchronous up counter (Serial counter), 3 bit Asynchronous down counter, 3-bit Asynchronous Up-down counter, 3 bit Synchronous up counter (Parallel counter), modulus of counter, mod-3 counter, mod-5 counter, and mod 10. **(07P, 10M)**

**C) Data Processing circuits:**

Multiplexer (2 to 1 & 4 to 1 line), De-multiplexer (1 to 2 & 1 to 4 line), Decoder (1 to 2 & 1 to 4 line; BCD to decimal decoder), Encoder (Decimal to BCD encoder). **(05P, 6M)**

**D) Timer:** Functional block diagram of IC-555 (Timer), Pin configuration, Astable, Monostable and Bistable multivibrator using IC 555, Application: Square wave Generator **(05P, 6M)**

**(Total: 45 Periods, 60 Marks)**

**References**

1. Principles of Electronics – V. K. Mehta, S. Chand Publications, New Delhi.
2. Basic Electronics – B. L. Theraja, S. Chand Publications, New Delhi.
3. Digital Principles and Applications – Malvino and Leach, McGraw-Hill Publication.
4. Electronic Principles – A. P. Malvino, Mc-Graw-Hill Publishing House.
5. Modern Digital Electronics – R. P. Jain, Tata McGraw-Hill Pvt. Ltd., New Delhi.
6. Integrated Circuits – K. R. Botkar, Khanna Publishers (2004).
7. Electronic fundamentals and applications – J. D. Ryder, Prentice Hall 4<sup>th</sup> Edition.
8. Electronic Devices and Circuits – Allen Mottershead, Good year publishing Company

**Semester V: (DSC): Physics paper IV**  
**PHY 504(B): Instrumentation-II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Instrumentation to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Instrumentation
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Instrumentation to understand and to solve real life problems
2. Understanding of the course will create scientific temperament.

**Unit 1: Introduction to Instrumentation**

Definitions: Resolution, Threshold, Range and span, Hysteresis, Dead band, Backlash, Drift, Impedance loading and matching. Functional elements of measurement system (Brief description). Classification of instruments- Deflection and Null type, Manually operated and automatic type, Analog and Digital types, Self-generating and power-operated types, Contacting and Non-contacting types. Dynamic Characteristics of Instruments: Dynamic response of zero order, First order, & Second order instrument. **(10P, 12M)**

**Unit 2: Transducers**

Introduction, Analog transducers- Electromechanical type, Potentiometric Resistance-type, Inductive type, Self-generating type, Non-self generating type, Capacitance type, Piezo-electric type, Resistance-strain gauges, Opto-electric transducer, Digital transducers: Frequency domain transducers, Digital encoders, Optical encoders, Shaft encoder. **(11P, 16M)**

**Unit 3: Data Acquisition Systems**

Introduction, Data converters, Digital to analog converters- Binary weighted and R-2R ladder, Analog to digital converters - Successive approximation method, Single and dual slope integration type ADC, Data transmission elements-Electrical-type, Pneumatic-type, Position type, Radio-Frequency type. **(12P, 16M)**

**Unit 4: Data Presentation Systems**

Indicating elements- Digital voltmeters, Digital Multimeter, CRO (Analog & Digital), Recorders- Strip chart, X-Y recorder, Digital data recording (CD Recording system). Display elements- Classification of displays, Display devices- LED, LCD, 7-segment display, Dot matrix display, Electro luminescent display. **(12P, 16M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Instrumentation: Measurement and analysis - Nakra and Chaudhary
2. Electronic Instrumentation - H.S. Kalsi
3. Electronic Instrumentation and Measurement Techniques - Helfrick and Cooper
4. Instrumentation: Device and system - Rangan, Mani, Sharma
5. Transducers & Instrumentation- D.V.S. Murty, PHI Publication.
6. Electrical and Electronic Measurement & Instrumentation - A.K. Sawhney
7. Transducers and display systems: B. S. Sonde, Tata McGraw-Hill Publishing Company.
8. Data Converters- B. S. Sonde, Tata McGraw-Hill Publishing Company Limited.
9. Audio and Video Engineering System: R.G. Gupta, Tata McGraw-Hill Publishing Company.



**Semester V: (SEC): Physics paper V**  
**PHY 505: Solar energy and applications**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

The aim of this course is not just to impart theoretical knowledge solar energy fundamentals and applications to the students but to provide them with exposure and hands-on learning wherever possible.

**Course objectives:**

1. To impart knowledge of basic concepts of clean, safe and affordable energy.
2. To provide the knowledge about variety of solar energy applications.
3. To provide the knowledge and methodology of conversion of solar energy into heat & electricity.

**Course outcome:**

- Learner will be able to ...
1. Apply the concept of use of knowledge of energy resources, solar radiations and conversion to real life problem.
  2. Understanding of the course will create scientific temperament.
  3. To impart knowledge of basic concepts of solar cell fundamentals.
  4. To provide the knowledge and methodology of conversion of solar energy into electricity.

**Unit 1: Solar Radiation:**

The Sun, structure of the sun, solar constant, spectral distribution of extra-terrestrial radiation, Solar radiation at the earth's surface (terrestrial radiation), solar time and equation of time, Definitions, air mass, beam radiation, diffuse radiation, global radiation, irradiance, solar insolation, Solar radiation geometry, Empirical equation (derivation not expected) for Monthly Average: 1) Daily global radiation, 2) Daily diffuse radiation, 3) Hourly global radiation, 4) Hourly diffuse radiation, Solar radiation on tilted surfaces, Instruments for measuring solar radiation: Pyranometer, Pyrheliometer, (05P, 08M)

**Unit 2: Solar Collectors:**

**Flat plate collector:** Types (Liquid flat-plate type, Evacuated Tube collector type, flat-plate with Absulator, Polymer solar collector), materials for collectors (Absorber plate, Insulation and Cover plate), Efficiency of flat plate collector, Loss coefficients and Heat transfer, Heat Removal Factor, Improvement in efficiency.

**Solar Concentrating Collectors:** Flat plate collector with reflector, Cylindrical parabolic collector, Thermal analysis, Performance analysis. (10P, 12M)

**Unit 3: Solar Photovoltaics:**

A P-N junction, Energy level diagram of semiconductors, Fermi level in doped semiconductors, Photovoltaic principals, Materials for Solar cell, Single crystal silicon cell: Principle, construction, working, equivalent circuit, I-V characteristics of solar cell, Fill factor, Power-voltage characteristics of solar cell, Maximum conversion efficiency, Actual conversion efficiency, Limitations to cell efficiency, Multicrystalline silicon cell, Thin Film Solar Cell, Short circuit current, Open circuit voltage, Maximizing the performance, Cell size. (10P, 12M)

**Unit 4: Solar Thermal Applications:**

Solar water heater: Direct natural circulation type, Direct forced circulation type, Design consideration of solar water heater, Series and Parallel Arrays, Solar drying of food (Direct type and Indirect mode type), Solar cooling and refrigeration, Solar thermal power generation, Solar furnace (Direct incident type). (10P, 14M)





### Unit 5: Solar PV Applications:

**PV Systems:** Classification, Basic Photovoltaic power system, Stand-alone PV system, Solar Cell Modules (Solar PV arrays), Series and Parallel combination of PV Modules, Grid-connected system, Solar power satellite, Power conditioning and control. Design of PV System: Array size and Battery size.

**Energy storage:** electro chemical batteries, large capacity approaches.

**PV Applications:** Industrial applications, Social applications, Consumer applications. (10P, 14M)

(Total: 45 Periods, 60 Marks)

### Demonstrations and Experiments:

(Note: Total 4 experiments are expected to be taken in the LAB by the teacher of this course while teaching the course.)

#### A) Solar Thermal Applications (Any two of the following)

1. Study of Solar Box Cooker
2. Study of Concentrating type Solar Cooker.
3. Solar Energy Measurements using Pyranometer.
4. Solar Energy Measurements using Pyrhelimeter.
5. Study of Solar still for Water distillation.
6. Study of Solar Dryer: Hot air collector.

#### B) Solar PV Applications (Any two of the following)

1. Measurement of  $V_{OC}$  and  $I_{SC}$  of a Solar cell.
2. Determination of I-V & P-V Characteristics of a Solar cell.
3. Determination of I-V & P-V Characteristics of Series and Parallel combination of PV Modules.
4. Effect of Shading on Solar PV Module Output Power.
5. Study of Power versus load characteristics of Solar Photovoltaic panel
6. Study of Solar Lantern/ Street light

**Note:** For Solar energy modelling techniques, the software used for simulation in solar energy field, comparative review of software for solar photovoltaics, solar thermal systems and buildings. Use of software such as TRNSYS, PVSYS, PVSOL, SAM, SOLTRACE, HOMER, Meteonorm etc is advised.

### References:

1. Solar Energy- S. P. Sukhatme and J K Nayak, Fourth Edition, Tata Mac Graw Hill Co. Ltd.
2. Solar Energy Fundamentals and Applications – H P Garg and J Prakash, Tata McGraw Hill Co. Ltd.
3. Solar Energy Utilisation – G D Rai, Khanna Publishers.
4. Solar Engineering and Thermal Processes – Duffie J. and W. Beckman (1991), John Willey and Sons Inc.
5. Solar Power Engineering – Magal B. S. (1990), Tata Mac Graw Hill Co. Ltd.
6. Renewable Energy Sources and Conversion Technology – Bansal N. K., M. K. M. Meliss (1990), Tata Mac Graw Hill Co. Ltd.



**Semester V: (DSE): Physics paper VI**  
**PHY 506(A): Technical Electronics-I**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Technical Electronics to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Technical Electronics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Technical Electronics to real life problems
2. Understanding of the course will create scientific temperament.

**Unit 1: Components and devices**

Resistors, Capacitors, Inductors (Types, construction and specification), Identification of resistor and capacitor values, Transformers: Types, (Single phase power transformer, auto transformer, isolation, AF, RF, IF), Switches, Types of switches, Relay Types (list only), Electromagnetic relay: Principle, Construction and Working. [Ref. 1 to 6] **(06P, 09M)**

**Unit 2: Optoelectronic Devices**

LED (Construction, Working & Applications), Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (Construction, working, characteristics & applications), Introduction to phototransistor. [Ref. 2 to 5, 8] **(05P, 08M)**

**Unit 3: Printed Circuit Board**

Idea of PCB, advantages, copper clad, Etching processes, Different steps for making PCB, Precautions while making PCB, Principle of Photolithography (For PCB). [Ref. 2, 3 & 4] **(06P, 7M)**

**Unit 4: DC Power Supplies**

Block diagram of unregulated and regulated power Supply, their merits and demerits, Series regulated power supply, Voltage regulation (Load and Line), Study of Monolithic voltage regulators: Precision voltage regulator (IC 723), Three-terminal general purpose regulators ICs- 78xx and 79xx. [Ref 1 to 3, 15] **(07P, 10M)**

**Unit 5: Operational amplifier and its applications**

Introduction to differential amplifier, Block diagram of Opamp, Schematic symbol and Pin diagram of IC 741, Important terms of OPAMP such as input impedance, output impedance, input offset voltage, open loop voltage gain, input bias current, slew rate, Ideal and practical parameters of Op-Amp, Concept of virtual ground, inverting and non-inverting amplifier with gain expressions, off-set null, Applications: Adder, Subtractor, Integrator, Differentiator, Comparator. [Ref 2, 3, 13, 14] **(12 P, 14M)**

**Unit 6: Data Converters**

D to A Converters: Resistive divider network, Binary ladder network. A to D Converters: Successive approximation type, Single slope, Dual slope, Voltage to Time, Voltage to Frequency. [Ref. 7 to 12] **(09P, 12M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Principles of Electronics – V. K. Mehta, S. Chand Publications, New Delhi.
2. Basic Electronics (Solid State): B.L. Thereja, Publisher: S. Chand & Company, New Delhi.
3. Basic Electronics: B. Grob, Publisher: McGraw Hill Book Co. New York.
4. A Textbook of Applied Electronics – R S Sedha, Publisher: S Chand & Company, New Delhi.
5. Electronic Instrumentation: H.S. Kalsi, Tata McGraw-Hill Publishing Company Limited, New Delhi.



6. Electronic components and Materials-Principles, Manufacture and Maintenance: S. M. Dhir, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7. Measurement and Instrumentation Principles: Alan S. Morris., Publisher: Butterworth-Heinemann.
8. Transducers and display systems: B. S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
9. Digital Principles and Applications: A.P. Malvino and D. P. Leach. Tata McGraw-Hill Publishing Company Limited, New Delhi.
10. Data Converters-: B.S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
11. Modern Electronic Instruments and Measurement techniques: Albert D. Helfrick, William D. Cooper, Prentice Hall India Pvt. Ltd, New Delhi.
12. A course in Electrical and Electronic Measurements and Instruments: A. K. Sawhney, Dhanpat Rai and Sons.
13. Op-Amps & Linear Integrated Circuits - R. A. Gaikwad, Publisher: Pearson.
14. Operational Amplifier - G. B. Clayton
15. Integrated Circuits - K. R. Botkar, Khanna Publishers (2004).
16. Optoelectronics: J. D. Ryder
17. Power supplies: B. S. Sonde





**Semester V: (DSE): Physics paper VI**  
**PHY 506(B): Refrigeration and Air conditioning-I**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Refrigeration and Air conditioning to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Refrigeration and Air conditioning.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to

1. Apply the concept and use of knowledge of Refrigeration and Air conditioning to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Heat Transfer:**

Introduction, Conduction through slab, pipe, hollow sphere, Convection, Heat transfer by convection, Expression for heat transfer coefficient, combined conduction and convection heat transfer, Fins and their applications. (Ref. 1: Chapter -15) (6L, 10M)

**Unit 2: Air Refrigeration system:**

Introduction, Reversed Carnot cycle and as most efficient refrigerator, C.O.P. and its dependence on source and sink temperature, Bell-Coleman air refrigeration system, Advantages and disadvantages of air refrigeration system. (Ref. 1: Chapter - 3) (7L, 10M)

**Unit 3: Vapour Refrigeration system:**

**i) Simple Vapour Compression Refrigeration system:**

Vapour compression refrigerator, Construction of various lines on T-S chart, P- H diagram for vapour compression refrigeration, Analysis of vapour compression system Advantages and disadvantages of vapour compression refrigeration over air refrigeration system. (Ref.1: Chapter-4)

**ii) Absorption Refrigeration system:**

Introduction, Simple absorption system, Practical ammonia absorption system, C.O.P. of the absorption refrigeration system, Domestic Electrolux refrigerator, Advantages and disadvantages of absorption refrigeration over compression refrigeration system. (Ref. 1: Chapter -6) (14L, 16M)

**Unit 4: Refrigerants:**

Classification of refrigerants: primary and secondary refrigerants, Desirable thermodynamic, safe working and physical properties of refrigerants, important refrigerants, refrigerant nomenclature, selection of refrigerant. (Ref.1: Chapter -11) (06L, 8M)

**Unit 5: Refrigeration equipments:**

**Compressors:** Functions, Reciprocating compressor, hermetically sealed compressor, Rotary compressor with sealing blade and eccentric motor, **Condensers:** Functions, Air cooled and water cooled condensers, Evaporative condensers, Cooling towers, **Evaporators:** Functions, Primary and Secondary evaporators, flooded evaporators, Dry expansion systems, Shell & coil evaporators.

**Expansion Devices:** Functions, Automatic expansion valve, Thermostatic expansion valve, Solenoid control valve, Low side and high side float valves. (Ref.1: Chapter -13)

(12 L, 16M)

**(Total: 45 Periods, 60 Marks)**

**Reference Books:**

1. A course in Refrigeration and Air-Conditioning: S.C. Arora & S. Domkundwar, Dhanpat Rai & Co. 7th Edition
2. Basic Refrigeration and Air-Conditioning: P.N. Ananthanarayanan, Tata McGraw Hill, New Delhi 3rd Edition
3. Principles of Refrigeration: Roy J Dossat, Pearson Education (Singapore) Ltd. 4th Edition



**Semester V: (DSE): Physics paper VI**  
**PHY 506(C): Vacuum Technology-I**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Vacuum technology to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Vacuum technology
2. To introduce the concepts and offer a fundamental insight to vacuum technology, the principles involved, pumps and gauges used
3. To provide the knowledge and methodology necessary to create and maintain vacuum.
4. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Vacuum technology to understand and solve real life problems.
2. Get knowledge of which pump to use to create vacuum.
3. Knowledge of which gauge to use for measuring vacuum.
4. Understanding of the course will create scientific temperament.

**Unit 1: Basics for Vacuum**

Atmosphere and Vacuum, Gas pressure, Equations of ideal gas, Fundamental assumptions of kinetic theory of gas, Mean free path, Gas diffusion, Viscosity of gas, Thermal conductivity.

(7P, 8M)

Throughput and Speed, Different units of measurement of vacuum, Ranges of vacuum, Vacuum circuits: Impedance and Conductance, Mechanism of gas flow, pumping speed of vacuum pump.

(10P, 12M)

**Unit 2: High vacuum pumps**

Rotating vane type rotary pump: principle, construction, working, ultimate pressure attainable, factors on which the optimum performance of the pump depends, pump characteristics. Oil diffusion vapour pump (single stage, multistage): principle, construction, working, ultimate pressure attainable, factors on which the optimum performance of the pump depends, pump characteristics.

(8P, 12M)

**Unit 3: Ultrahigh vacuum pumps**

Turbomolecular pump, Sorption pump, Ion pump, Cryogenic pump: principle, construction, working, ultimate pressure attainable.

(10P, 14M)

**Unit 4: Vacuum gauges**

U-tube manometer, McLeod gauge, Thermal conductivity gauges- Thermocouple gauge, Pirani gauge, Semiconductor gauge, Ionization gauges- Hot cathode and Cold cathode gauge, Bayard-Alpert gauge.

(10P, 14M)

(Total: 45 Periods, 60 Marks)

**References:**

1. Introduction to Theory and Practical of High Vacuum Technology : L.Ward & J.P. Bum, Butterworths.
2. High Vacuum Techniques : J. Yarwood.
3. Design and Construction of Vacuum systems : G.W. Green.
4. Vacuum Sealing Techniques : A. Roth
5. High Vacuum Engineering : A.E. Barrington
6. Handbook of Vacuum Technology: Karl Jouston
7. Vacuum Physics and Techniques, T. A. Delchar, Chapman and Hall.

**Semester V: (DSE): Physics paper VI**  
**PHY 506(D): Microprocessor-I**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Microprocessor to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Microprocessor.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems
2. Understanding of the course will create scientific temperament.

**Unit-1: Fundamentals of Microcomputer**

Simple microcomputer architecture, Microcomputer operation, Address bus, Data bus, control bus, memory, Semiconductor and Magnetic memory, Cache memory, RAM and ROM, High level and Low level language, Assembler, Compiler and Interpreter. (12P, 16M)

**Unit-2: Architecture of 8085 Microprocessor**

The 8085 pin diagram and function of each pin, Microprocessor communication and bus timings, Demultiplexing the bus AD7- AD0, Microprocessor Architecture and function of each block. (12P, 16M)

**Unit-3: Instruction Set of 8085 Microprocessor**

Study of addressing mode for 8085:- Implied addressing, Register addressing, Immediate addressing, Direct addressing and Indirect addressing. Instruction set: Data transfer instructions, Arithmetic instructions, Logical instructions, Branching instructions, Stack/PUSH and POP instructions, I/O and Machine control instruction. (15P, 20M)

**Unit-4: Stack and Subroutines**


Stack, Subroutine, types of Subroutine and Macro (06P, 08M)

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Fundamentals of Microprocessors and Microcomputers – Badri Ram, Dhanpat Rai & Sons, Delhi.
2. Microprocessor Fundamentals – Roger L. Tokheim.
3. 8085 Assembly Language Programming – L. A. Leventhal.
4. Microprocessor Architecture programming and Applications 8080 & 8085 – Ramesh Gaonkar.
5. 8086 Microprocessor programming and Interfacing – Gibson.
6. Advanced Microprocessor and peripherals (Architecture, programming and interfacing) – A. K. Ray, K. M. Bhurchandi.
7. Microprocessors and Microcomputers- Soumitra Kumar Mandal.





**Semester V: (DSE): Physics Paper VI**  
**PHY 506 (E): Programming in C++ - I**  
**(Credits: 03) : ( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamental Concept of Computer Programming language C++.

**Course Objectives:**

1. The course is designed to provide basic knowledge of C++ Programming.
2. C++ Programming is intended for software engineers, system analysts, program managers.
3. To learn how to design programs and applications using C++.
4. To develop problem-solving skills and their implementation through C++ Programming.

**Course Outcome: At the end of the course, the student will be able to**

1. Explain basic principles of C++ programming language
2. Concept of Variable, Operators, Control structure, Functions used in C++ programming
3. Develop skills in writing a simple C++ program using a different statement
4. Apply the best features of mathematics, engineering, and natural sciences to program real-life problems.

**Unit 1: Elements of C++**

What is C++?, applications of C++, comments, I/O streams, the structure of the C++ program. [ L: 04 M: 8 ]

**Unit 2: Variable and Expressions**

Variables, tokens, keywords, identifiers and constants, basic data types, user-defined data types & derived data types. Declaration and initialization of variables. [ L: 08 M: 12 ]

**Unit 3: Operators in C++**

Scope resolution operators, member dereferencing operator, memory management operators, manipulators, type cast operator, expressions and their types. [ L: 08 M: 14 ]

**Unit 4: Control structure**

If, if-else, else-if, switch, break, continue. [ L: 10 M: 10 ]

**Loop structures:** while, do-while, for, nested for loop.

**Unit 5: Functions in C++**

Introduction, function prototyping, call by value & call by reference, Inline functions, reference arguments and default arguments. Math library functions. [ L: 10 M: 10 ]

**Unit 6: Introduction to arrays, structures & union in C++**

Definition, declaration, examples. [ L: 05 M: 6 ]

[ Total: 45 Periods, 60 Marks ]

**References :**

1. Master in C++ - K.R.Venugopal
2. C++ Programming - E.Balaguruswami
3. Turbo C++ Programming - Robert Lafore
4. C++ Programming - Yashwant Kanitkar.



**Semester V: (LAB): Physics paper VII**  
**PHY 507: Physics practical -I**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**

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**Perform any ten experiments:**

1. Moment of Inertia by Bifilar suspension.
2.  $\gamma$  and  $\eta$  by Searl's method.
3.  $\gamma$  by Koenig's method.
4.  $\gamma$  by Newton's rings.
5. Searl's Goniometer.
6. Lloyd's single mirror.
7. To estimate temperature of Na flame.
8. Measurement of resistivity by four probe method.
9. Frequency of AC/ Tuning fork by stroboscope.
10. Variation of resistance of a filament of a bulb with its temperature.
11. Determination of velocity of sound using ultrasonic Interferometer.
12. Electromagnetic Pendulum.
13. Determination of circular aperture of LASER.
14. Measurement of self-inductance of a coil by Anderson's bridge.
15. To determine the human audibility.
16. Study of I-V characteristics of solar cell.
17. Determination of fill factor and efficiency of solar cell.
18. To determine the solar constant.



**Semester V: (LAB): Physics paper VIII**  
**PHY 508: Physics practical -II**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**

**Group A: Perform any five experiments (Solid state physics, Electronics, Instrumentation):**

1. Hall effect.
2. Analysis of XRD pattern.
3. Measurement of resistivity by two probe method.
4. Characteristics of JFET.
5. UJT characteristics.
6. UJT as relaxation oscillator.
7. Study of RC/LC filter (Low pass and High Pass)
8. Study of Heartly oscillator. (Calculation of frequency and verification of frequency from sinusoidal output waveform)
9. Measurement of self inductance using Maxwell's induction bridge.
10. Multiplexer (2 to 1 or 4 to 1) and/or De-multiplexer (1 to 2 or 1 to 4).

{For more knowledge and understanding, one can help the students to study, understand and use the VESTA software for determination of crystal structure on the basis of given data.}

**Group B: Perform any five experiments from the following any one optional courses:**

**A) Technical Electronics:**

1. To make two PCB's i) Using discrete components ii) Using IC components.
2. To study inverting and non inverting configuration of Op amp.
3. To study of OP AMP as an adder.
4. DAC (R- 2R ladder, without OP- AMP).
5. To study reverse bias characteristics of photodiode.
6. To study characteristics of photo transistor.
7. To design and study of regulated power supply using IC 723.
8. Designing and fabrication of transformer.
9. Triangular, square wave generator using OP AMP.
10. V to F converter using IC-741.
11. V to T converter using IC-741.
12. Study of function generator.
13. To study fixed voltage regulator using 78XX and 79XX.

{For more knowledge and understanding, one can help the students to study, understand and use the SKYLAB software to write and execute programs to study out put of inverting or non- inverting configuration of OPAMP, Opamp as adder or subtractor etc}

**B) Refrigeration and Air conditioning:**

1. Study of different tools used in Refrigeration and Air Conditioning.
2. To carry out the following operations on Copper tube i) Cutting ii) Bending iii) Flaring.





3. Study of hermetically sealed compressor used in refrigeration systems.
4. To carry out Swaging and Brazing of Copper tubes.
5. Study of thermostatic switch, LP/HIP cut out switch and filters used in Refrigeration and A. C. systems.
6. Leakage testing and charging of a refrigeration system.

#### C) Vacuum technology:

1. To describe function of various parts of Rotary pump (with schematic diagram).
2. To describe the constructional details & working of vapour diffusion pump.
3. To measure the pumping speed of vacuum system by steady state method.
4. Study of McLeod gauge.
5. To calibrate & study the function of Pirani gauge.
6. To evacuate a system with a rotary pump (measurement of vacuum with & without ballast using McLeod gauge).

#### D) Microprocessor:

1. Diode matrix ROM.
2. Application of DAC (square/triangular sweep wave).
3. Up-down counter (4-bit).
4. Hexadecimal/decimal counter.
5. Multiplexer/Demultiplexer (using IC).
6. Study of shift register (using IC).
7. Shift an 8-bit and 16-bit number left by one bit.
8. One's and Two's Complement of number.

#### E) Programming in C++:

1. Write a C++ program to display the string "T. Y. B. Sc. Physics"
2. Write a C++ program to make addition, subtraction, multiplication & division
3. Write a C++ program to demonstrate the use of scope resolution operator
4. Write a C++ program to check whether given no. is palindrome or not
5. Write a C++ program to demonstrate the use of the inline function for finding a maximum of two numbers
6. Write a C++ program to accept array elements as positive and negative nos. & only print positive nos. as output (use continue statement) e.g. {10, -20, 3, 5, -7} O/P: {10,3,5}
7. Write a C++ program to generate Fibonacci series up to 20 terms e.g. 1, 1, 2, 3, 5, 8,..... (20 terms)
8. Write a C++ program to create the following structure Roll-No. Stud-Name Class. Enter at least five records

**Semester V: (LAB): Physics paper VII**  
**PHY 509: Project -I**  
**(Credits: 02); (60 L, 100M (40 Internal + 60 External))**




**ASSESSMENT OF PROJECT- FIRST TERM:**

Student should submit a Progress Report on the work done by him/her during the First Phase of the project i.e. on the topics

1. Project Selection
2. Literature Search Strategy
3. Literature Review
4. Project Planning.
5. Experimental work (30 to 40 %)

**Instructions:**

1. The topic of project of the first term must be continued in the second term.
2. The project report of first term should be maintained and should be produced to examiner of second term.
3. The student will have to give a seminar on the project topic in the practical exam.
4. The student must perform his project presentation by PPT on LCD projector.



**Semester VI: (DSC): Physics paper I**  
**PHY 601: Quantum Mechanics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Quantum Mechanics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Quantum Mechanics
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Quantum Mechanics to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: The Schrodinger Equation**

Introduction to Quantum Mechanics, Wave function and its Physical interpretation, normalized and orthogonal wave functions, Requirements of wave function, Formulation of time dependent and time independent Schrödinger equation (Steady state equation), Probability current density and equation of continuity, Solution of Schrodinger's equations, Energy eigenvalues and eigenfunctions, Expectation value, Ehrenfest's theorem, Postulates of Quantum Mechanics. (Ref: 1, 2 and 9)

**(14P, 14M)**

**Unit 2: Applications of Schrödinger steady state equation**

Particle in a one dimensional rigid box (derivation of energy eigenvalues and eigenfunctions), Step potential (Probability of reflection (R) and transmission (T)), Linear Simple Harmonic oscillator (derivation of energy eigenvalues and eigenfunctions) (1D). (Ref: 2,6 and 7)

**(12P, 16M)**

**Unit 3: Quantum theory of Hydrogen atom**

Schrödinger equation in spherical polar co-ordinate system, Schrödinger equation for Hydrogen atom-separation of radial and angular part. Solutions of R,  $\Theta$ ,  $\Phi$  equations, Significance of quantum numbers n, l, m and  $m_s$ . (Ref: 1).

**(09P, 14M)**

**Unit 4: Operators in Quantum Mechanics**

Operators and linear operators, Position, Momentum operator, angular momentum operator, and total energy operator (Hamiltonian), Commutator bracket, Commutator algebra, Commutator brackets using position, momentum and angular momentum operator, Commutation relations and Hamiltonian operator; Commutation rules for components of orbital angular momentum; Commutation relations of  $L^2$  with components of orbital angular momentum; Commutation relation of components of orbital angular momentum with position operator, Ladder operators  $L_+$ ,  $L_-$ . Concept of parity, parity operator and its eigenvalues. (Ref: 2 and 4)


**(10P, 16M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Perspectives of Modern physics : Arthur Beiser.
2. Advanced Quantum Mechanics: Satya Prakash, Kedarnath Ram Nath, Meerut
3. Quantum Mechanics: Gupta, Kumar, Sharma. Sultan Chand & Sons
4. Quantum Mechanics: Chatwal and Anand. Himalaya Publ. Co.
5. Quantum Mechanics: I.I Schiff.
6. Quantum Mechanics: Powell and Crasemann, Addison-Wesley Pub. Co.
7. Introduction to Quantum Mechanics: D. Griffiths Published by Prentice Hall.
8. Quantum Physics: 2<sup>nd</sup> Ed. H.C. Verma, Surya Publications, Ghaziabad (UP), 2009.
9. Quantum Mechanics: Concepts and Applications, Nouredine Zettili, Wiley Publications.





**Semester VI: (DSC): Physics paper II**  
**PHY 602: Material Science**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Material Science to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Material Science.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Material Science to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Introduction to materials**

**Classification of materials**

**Properties of Materials: Mechanical Properties:** Interpretation of tensile stress – strain curve, Stress, strain (tensile, compressive and shear), strength, elasticity, plasticity, ductility, malleability, hardness, toughness, creep, fatigue, stiffness, Isotropy, Anisotropy, Deformation, Elastic and Plastic deformation, factor affecting the mechanical properties. **Thermal Properties:** Heat capacity, Thermal expansion, Thermal conductivity. **Electrical Properties:** Conductivity, resistivity, dielectric strength, piezoelectricity. **Optical Properties:** Wavelength spectrum of electromagnetic waves, Refraction, Reflection, absorption and Transmission of non-metallic materials. **(12P, 15M)**

**Unit 2: Atomic disorder in materials**

**Solid solution:** Types of solid solution - Substitutional and Interstitial solid solution, Hume Rothery Rules of solid solubility **Imperfections or defects in solids:** (i) Point defects: vacancies, Frenkel defect, Schottky defect, (ii) Line defects (Dislocation): Edge dislocation, screw dislocation, (iii) Surface defects or interfacial defects and (iv) Volume defect. **Plastic deformation:** Mechanism by slip system. **(06P, 10M)**

**Unit 3: Diffusion of solid material**

**Atomic diffusion-** Introduction, Classification of Diffusion.

**Diffusion mechanism** – Vacancy mechanisms, Interstitial mechanism, Direct interchange mechanism, Diffusivity, Self diffusion in nickel, Steady state Diffusion (Fick's first law of diffusion) and Non steady state Diffusions (Fick's second law of diffusion), variation of diffusivity with temperature, Activation energy for diffusion, factor affecting the diffusion. **(09 P, 12M)**

**Unit 4: Phase Diagram**

Phase diagram, Phase equilibrium, Construction of phase diagram, Interpretation of phase diagram, Gibb's Phase rule, classification of phase diagram - Unary Phase diagram, Binary Phase Diagram, Binary Phase Diagram for: i) Sugar-Water, ii) NaCl-water, Eutectic reaction, lever rule, Sb-Bi phase diagram, Pb-Sn phase diagram. **(10 P, 13M)**


**Unit 5: Organic Materials:**

**Polymers:** Properties of polymer, Molecular weight, Molecular structure. **Types of Polymers:** Plastics and elastomers, Plastic, Thermoplast, Thermosets Polymerization, Mechanism of polymerization, Degree of polymerization: Addition Polymerization, Co-Polymerization, and Condensation Polymerization. **(08P, 10M)**

**(Total: Periods 45, Marks 60)**

**References:**

1. Materials Science & Engineering: An Introduction (6th Edition): William D. Callister
2. Elements of Materials Science & Engineering: Van Vlack
3. First Course in Materials Science & Engineering: V Raghavan.
4. Material Science: S. L. Kakani, Amit Kakani, New Age International Publishers
5. Material Science : G.K.Narula and K.S.Narula, Tata McGraw Hill.
6. Material Science and Processes : S.K.Hajra— Chaudhari, Indian Book Distributing company.



**Semester VI: (DSC): Physics paper III**  
**PHY 603: Nuclear Physics**  
**(Credits: 03) : (45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Nuclear Physics to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Nuclear Physics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to . . .

1. Apply the concept and use of knowledge of Nuclear Physics to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Nucleus and Nuclear Forces**

Nuclear compositions:- Constituents, charge, size, density, atomic mass of nucleus, nuclear magnetic moment, concept of parity(even and odd), classification of nuclei, mass defect and binding energy, stability of nuclei, packing fraction, Problems. Nuclear forces: Nuclear force, features of nuclear forces, saturation and short range nuclear forces, charge symmetry and charge independence, spin dependence of nuclear force, Meson exchange theory of nuclear forces. Elementary particles (List only). (9L, 12M)

**Unit 2: Radioactivity**

Introduction, Law of radioactive decay, half life, mean life, specific activity, partial radioactive decay, successive disintegration, Applications of radioactivity (Agricultural, Biological, Medical and industrial), Problems. (06L, 08M)

**Unit 3: Nuclear Models**

Types of nuclear models (List only). Single particle shell model: Introduction, Assumptions, Evidence of shell model, Theory of nuclear shell potential, nuclear spin and parities, limitations of shell model. Liquid drop model: Introduction, assumptions, semi-empirical mass formula. Limitations of Liquid drop model, Problems. (07L, 09M)

**Unit 4: Nuclear Reactions**

Introduction, Theories of nuclear reactions, conservation laws, Q-value equation, Energetic of exoergic reactions, Energetic of endoergic reactions, Threshold energy, Problems. (07L, 09M)

**Unit 5: Nuclear Energy**

Introduction, Nuclear fission, Explanation on the basis of liquid drop model, energy available from fission:- Estimation of energy from masses of fission fragments and from binding energy, Nuclear chain reaction, Nuclear Fusion, Nuclear Reactor: Basic principle, classification, constituents parts, Heterogeneous reactor, Swimming pool reactor, Power reactor, Problems. (10L, 14M)

**Unit 6: Nuclear Detectors and Accelerators**

Types of detectors, Geiger-Mueller counter, Scintillation counter, Classification of accelerators: Cyclotron and Betatron. (06L, 08M)

**(Total: 45 Lectures, 60 Marks)**

**References:**

1. The atomic Nucleus: R D Evans, McGraw Hill Book Company.
2. Nuclear Physics: D C Tayal, Himalaya Publishing House, Bombay.
3. Nuclear Physics: Irving Kaplan, Narosa Publishing House, New Delhi.
4. Basic Nuclear Physics and Cosmic Rays: B N Srivastava, Pragati Prakashan, Meerut.
5. Concepts of Modern Physics- Arthur Beiser (5th Edition).
6. Atomic Physics: J.B. Rajam.
7. Introduction to Nuclear Physics: H.A. Enge (Addison Wesley Co.)





**Semester VI: (DSC): Physics paper IV**  
**PHY 604: Modern and Applied Physics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Modern and Applied Physics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Modern and Applied Physics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Modern and Applied Physics to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Plank's Quantum theory:**

Planck's quantum theory, properties of photon, Planck's constant and light as a collection of photons; photo-electric effect and Compton effect. Experimental verification of Compton's effect. **(04 P, 06 M)**

**Unit 2: Bohr's and Sommerfield theories of hydrogen atom**

Introduction of atomic spectra, Inadequacy of classical planetary model of hydrogen atom, Bohr's theory of hydrogen atom, Extension of Bohr's theory, Experimental verification of discrete atomic energy levels, correspondence principle, Bohr's Sommerfield model and relativistic effects, Limitations of quantum mechanical model. **(09 P, 12 M)**

**Unit 3: Matter Waves (Foundation of Quantum mechanics)**

Need of quantum mechanics, Wave particle duality of matter, de-Broglie hypothesis, Expression for matter waves, Electron diffraction, Davission and Germer experiment, concept of wave group, phase velocity, group velocity, particle velocity and relations between them, Uncertainty principle, Thought experiment (Gamma ray microscope), different forms of uncertainty principle, applications of uncertainty principle (Non existence of electron in nucleus, determination of ground state of electron and size of hydrogen atom). **(09 P, 12 M)**

**Unit 4: Fiber Optics**

Introduction, construction of optical fiber, principle of operation, concept of acceptance angle, numerical aperture, attenuation in optical fiber and attenuation limit, preparation of optical fiber, optical fiber materials, types of optical fiber Single mode and multimode fibers, advantages and disadvantage of optical fiber, communication, Applications of fiber optics, Detail discussions on following applications: Temperature sensor, displacement sensor, fiber optic endoscopy, fiber optic communications. **(07P, 09 M)**

**Unit 5: Holography and its application**

Concept of monochromatic and coherent source, basic idea of hologram, construction and re-construction hologram, types of hologram (1st only), application of holography in microscopy and character recognition. **(07P, 09 M)**

**Unit 6: Introduction to bioelectricity**

Electricity observed in living systems, examples and origin of bioelectricity, sodium and potassium transport, Nernst equation, resting and action potential, conduction velocity. **(09 P, 12 M)**

**Total: (45 Periods, 60 Marks)**


**References**

1. Concepts of Modern Physics: S. L. Gupta, S. Gupta, Third Edition-1989, Publisher: Dhanpat Rai and Son's.
2. Modern Engineering Physics: A. S. Vasudevan, Publisher: S Chand.
3. Physics for Engineers: M.R. Srinivasan, Publisher: New Age International.





4. REFRESHER COURSE IN PHYSICS, VOLUME-II. C. L. Arora, Publisher: C. Chand and Company Ltd., New Delhi.
5. Modern Physics – B. L. Theraja, Publisher: C. Chand and Company Ltd., New Delhi.
6. Elementary Modern Physics - Atam P. Arya, Publisher: Addison Wesley Longman Publishing Co., New edition
7. An Introduction to Lasers -Theory and Applications. - M. N. Avadhanalu, Publisher: C. Chand and Company Ltd., New Delhi.
8. Introduction to Fiber Optics: Ajoy Ghatak, K. Thyagarajan, Publisher: Cambridge University Press, 1998.
9. From Neuron to brain - Kuffler & Nicholas, Publisher: Sinauer Associates is an imprint of Oxford University Press: 5 edition (2011).
10. Biomedical Instrumentation and Measurements (II Edition) - L. Cromwell, F. J. Weibell, E. A. Pfeiffer (Pearson Education Singapore Pvt. Ltd.).



**Semester VI: (SEC): Physics paper V**  
**PHY 605: Basic Instrumentation Skills**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Basic Instrumentation skills to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Basic Instrumentation skills.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Handle and use various basic mechanical and electrical measuring instruments.
2. Understanding of the course will create scientific temperament.

*(This course is to get exposure with various aspects of instruments and their usage through hands-on mode. Experiments listed below are to be done in continuation of the topics.)*

**Unit 1. Use of basic measuring instruments:**

Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects. Study of Vernier calliper, Screw gauge, travelling microscope and their utility to measure the dimension of a solid block, volume of cylindrical objects, diameter of a thin wire and capillary tube, thickness of metal sheet, etc. Use of Sextant to measure height of buildings, mountains, etc.

**(04 P, 06M)**

**Unit 2. Electrical quantity measuring instruments:**

PMMC, Voltmeter (D.C. and A.C), specifications and their significance. Ammeter (D.C. and A.C), specifications and their significance. Ohmmeter (Series and Shunt type), specifications and their significance. Multimeter, Steps of measurement of dc voltage and dc current, ac voltage, ac current and resistance using multimeter. Specifications of a multimeter and their significance. **(12 P, 14M)**

**Unit 3: Cathode Ray Oscilloscope**

Block diagram of basic CRO, Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only- no mathematical treatment), brief discussion on screen phosphor, visual persistence and chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac), frequency, time period and phase. Introduction of Dual trace CRO and digital oscilloscope, probes. **(12P, 14M)**

**Unit 4: Signal Generators and Analysis Instruments**

Block diagram, explanation and specifications of low frequency signal generators, pulse generator, and function generator. Brief idea for testing, specifications. **(07P, 10M)**

**Unit 5: Digital Instruments**

Principle and working of digital meters. Comparison of analog and digital instruments. Characteristics of a digital meter. Block diagram and Working principle of digital voltmeter (Ramp type only); Block diagram and working of a digital multimeter. Digital Frequency meter: Block diagram and Working principle: frequency and period measurement, accuracy and resolution. **(10P, 16M)**

**Total: (45 Periods, 60 Marks)**

**The test of lab skills will be of the following test items:**

1. Use of an oscilloscope.



2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment.
4. Use of Digital multimeter for measuring voltages
5. Trouble shooting a circuit

**Laboratory Exercises:**

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. Measurement of voltage, frequency, time period and phase angle of a wave using CRO.
4. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times of a wave using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.

**Open Ended Experiments:**

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

**Reference Books:**

1. Principles of Electronics – V. K. Mehta, S. Chand Publications, New Delhi.
2. Basic Electronics (Solid State): B.L. Theraja, Publisher: S. Chand and Company, New Delhi.
3. Electrical measurements and measuring instruments: R K Rajput, S. Chand and Co. New Delhi.
4. Digital Principles and Applications: A.P. Malvino and D. P. Leach, Tata McGraw-Hill Publishing Company Limited, New Delhi.
5. Modern Electronic Instruments and Measurement techniques: Albert D. Helfrick, William D. Cooper, Prentice Hall India Pvt. Ltd, New Delhi.
6. A course in Electrical and Electronic Measurements and Instruments: A. K. Sawhney, Dhanpat Rai and Sons.
7. Digital electronics, R P Jain
8. Basic Electronics: B. Grob, Publisher: McGraw Hill Book Co. New York.
9. Electronic Instrumentation: H.S. Kalsi, Tata McGraw-Hill Publishing Company Limited, New Delhi.
10. Digital instrumentation by A J Bouwens
11. A text book in Electrical Technology - B L Theraja – S. Chand and Co.
12. Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
13. Logic circuit design, Shimon P. Vingron, 2012, Springer.
14. Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
15. Electronic Devices and circuits, S. Salivahanan and N. S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
16. Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
17. Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India



**Semester VI: (DSE): Physics paper VI**  
**PHY 606(A): Technical Electronics II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

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**Course description:**

This course is aimed at introducing the fundamentals of Technical Electronics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Technical Electronics
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to .....

1. Apply the concept of use of knowledge of Technical Electronics to real life problems.
  2. Understanding of the course will create scientific temperament.
- .....



**Unit 1: Sound System**

Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (Principle, construction and working), Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multiway speaker system (woofer and tweeter), Connection type of speakers (series, parallel and series-parallel type). [R1, R2, R9].

**(08P, 12M)**

**Unit 2: Public Address System**

Block diagram of Public Address (P.A.) system and its explanation, requirements of P. A. system, typical P.A. Installation planning (Auditorium having large capacity, college sports), Volume control, Tone control and Mixer system, Concept of Hi-Fi system, Monophony, Stereophony, Quadraphony, Dolby A and Dolby B system, CD- Player: Block diagram of CD player and function of each block. [R1, R2, R9].

**(10P, 14M)**

**Unit 3: Medical instruments.**

Biopotential, Types of electrodes, ECG (principle, block diagram, features) Ultrasonography: working principle [R 3, 4, 5]

**(07P, 8M)**

**Unit 4: Transducer**

Definition, Classification, Selection of transducer, Electrical transducer: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Piezo-electric Transducer, Optoelectronic transducers: I.D.R, Chemical sensors: pH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). [R7, R8].

**(10P, 14M)**

**Unit 5: Modern appliances**

**Remote Control:** Operating principle, block diagram, features.

**Microwave Oven:** Operating principle, block diagram, features.

**Cellular Phone:** Operating principle, Block diagram, specifications, features, and functions performed.

**Washing Machine:** Operating principle, block diagram, features. Fuzzy Logic (Idea only).

**Electronic Weighing Systems:** Operating principle, Block diagram, features. [R8].

**Infrared Thermometer:** Operating principle, Block diagram, features. **(10P, 14M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Audio and Video Engineering System: R.G. Gupta, Tata Mc-GrawHill Publishing Company Ltd, New Delhi.
2. Basic Electronics: B. I. Thereja, S. Chand Publications, New Delhi.

3. Introduction to Bio-medical Electronics: Joseph-Du-bary, Tata Mc-Graw Hill Publishing Company Ltd, New Delhi.
4. Medical instrumentation Application and design: J. C. Wobster
5. Biomedical instruments and measurements: L. Cromwell, F. J. Weibell, Printice Hall of India of India Pvt. Ltd, New Delhi.
6. Transducers and display systems: B.S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7. Solid state Gas sensors- edited by P. T. Moseley and B.C. Tofeld, Harwell, Adam Hilger and Philadelphia
8. Measurement and Instrumentation Principles: Alan S. Morris, Butterworth-Hememann.
9. Consumer Electronics: J.S. Chintode, Technical Publication, Pune.



**Semester VI: (DSE): Physics paper VI**  
**PHY 606(B): Refrigeration and Air conditioning II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



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**Course description:**

This course is aimed at introducing the fundamentals of Refrigeration and air conditioning to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Refrigeration and air conditioning
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Refrigeration and air conditioning to understand and solve the real life problems.
  2. Understanding of the course will create scientific temperament.
- .....

**Unit 1: Psychrometry:**

Introduction. Meaning of air conditioning, Five main factors of comfort air conditioning, Psychrometry and psychrometric properties, psychrometric relations: Dalton's law of partial pressure; relation between partial pressure & specific humidity; relation between degree of saturation & relative humidity, Types of psychrometers, Psychrometric processes, Bypass factor and its relation, Summer air conditioning systems for Hot & Dry; Hot & Humid out door conditions, Summer air conditioning with evaporative cooling, Winter air conditioning system for mild cold weather. (Ref. 1: Chapter -16) (12L, 16M)

**Unit 2: Cooling load calculations & design of air conditioning systems:**

Different heat sources, Heat flow due to conduction, Sun load, Occupants load, Equipment load, Infiltration load, Miscellaneous heat sources, Design aspects of air conditioning system, Cooling load and air quantities. (Ref. 1: Chapter -19) (7L, 10M)

**Unit 3: Air Conditioning equipments:**

Air cleaning and Air Filters: Functions, Types, Wet filters, Electronic filters, and Centrifugal dust collector. Cooling Coils: Bypass factor of multidepth coils, Humidifiers: Functions, Atomization type humidifiers, Impact type humidifiers, Pan & coil type humidifiers, Dehumidifiers: Functions, Refrigeration humidifiers, Spray type humidifiers, De-humidifying air washers, Fans and Blowers: Functions, Axial flow fans, Centrifugal fans, Grills and Registers. (Ref. 1: Chapter -25) (10L, 14M)

**Unit 4: Air Conditioning Control systems:**

Basic elements of control systems, Temperature control elements: Bimetal type thermostat, Sealed bellow type thermostat, Electrical resistance and thermocouple type thermostat, Humidity Control Elements: Hair type humidistat, Absorption type thermostat, Water vapour recorder, Actuators: Relays Introduction to Transmission systems: Pre heat and humidification control systems, Cooling dehumidification and reheat control system, Face and bypass control system. (Ref. 1: Chapter -26) (10L, 12M)

**Unit 5: Solar Refrigeration System**

Vapour Compression Refrigeration system using solar energy, Vapour absorption refrigeration system using solar energy, Solar refrigeration using a solid absorption cycle, Solar refrigerators using Photovoltaic panels. (Ref. 1: Chapter -28) (6L, 8M)

**(Total: 45 Periods, 60 Marks)**

**Reference Books:**

1. A course in Refrigeration and Air -Conditioning: S.C. Arora & S. Domkundwar. Dhanpal Rai & Co. 7th Edition
2. Basic Refrigeration and Air -Conditioning: P.N. Ananthanarayanan, Tata Mcgraw Hill, New Delhi 3<sup>rd</sup>
3. Principles of Refrigeration: Roy J. Dossat, Pearson Education (Singapore) Ltd. 4th Edition





**Semester VI: (DSE): Physics paper VI**  
**PHY 606(C): Vacuum Technology-II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Vacuum technology to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Vacuum technology.
2. The course should prepare the student for operating, simulating and construction of vacuum systems.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply important laws of physics which govern how a vacuum system works.
2. Account for which components are used in a vacuum system, their construction, function and use.
3. Account for troubleshooting a vacuum system.
4. Run simulations and write a specification for a simple vacuum system.

**Unit 1: Vacuum materials and components**

Adsorption, Absorption, Desorption, Diffusion and penetration of gases through solid surfaces, Vapour pressure of different materials, Outgassing of materials, Desired properties of materials used for fabrication of vacuum system. **(7P, 8M)**

(i) Vacuum Seals: (a) Permanent seals- Welding, Brazing, Soldering (b) Demountable seals- Waxes, Resins and Adhesives, Gaskets seal: Elastomer, metal, Feedthroughs: Electrical Feedthroughs, Motion Feedthroughs: Wilson seal, Bellows seal. **(8P, 11M)**

(ii) Valves: (a) Roughing and For-line valves: Disk valve, Ball valve. (b) High vacuum valves: Gate valve, disk valve, flap valve, Butter-fly valve. (c) Gas admittance valves: disk valve, Needle valve. **(8P, 11M)**

**Unit 2: Leak detection**

Real and Virtual leaks, Leak detection method: (a) Over pressure method- Bubble method, Halide torch, Sniffer technique. (b) Low pressure method- Blocking (sealing) method, Tesla coil, Halogen leak detector, Organic vapour and gas probe with suitable pressure gauge as detector. **(11P, 14M)**

**Unit 3: Vacuum system fabrication**

General consideration of designing, Construction of High vacuum system (Combination of Rotary and Oil diffusion pump), Its operational procedure, Construction of Ultrahigh vacuum system and its operational procedure. **(8P, 11M)**

**Unit 4: Application of Vacuum Technology**

Applications of Vacuum technology in Research and Industry. **(3P, 5M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Introduction to Theory and Practical of High Vacuum Technology : L.Ward & J.P. Bunn, Butterworths.
2. High Vacuum Techniques : J. Yarwood.
3. Design and Construction of Vacuum systems : G.W. Green.
4. Vacuum Sealing Techniques : A. Roth
5. High Vacuum Engineering : A.E. Barrington
6. Handbook of Vacuum Technology: Karl Jouston
7. Vacuum Physics and Techniques, T. A. Delchar, Chapman and Hall.



**Semester VI: (DSE): Physics paper VI**  
**PHY 606(D): Microprocessor- II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

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**Course description:**

This course is aimed at introducing the fundamentals of Microprocessor to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Microprocessor
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
  2. Understanding of the course will create scientific temperament.
- .....

**Unit 1: Assembly Language Programming**

Masking of 4- MSB and LSB of given number, One's and two's complement of 16- bit numbers, Shift 16- bit numbers left by one bit, 8- bit addition, 8- bit subtraction, Decimal addition and decimal subtraction of two 8 bit numbers, 8- bit multiplication, Find largest and smallest numbers from a series of given number, Find square root of given number from Look up table. Code conversion programs: Hex to ASC II conversion, BCD to binary conversion, Decimal to seven segment conversion.

**(15P, 20M)**

**Unit 2: Interfacing of Memory and Peripheral Devices**

Introduction, Interfacing with RAMS & ROMS, I/O interfacing basics, Interfacing with practical I/O memory mapped I/O and I/O mapped I/O schemes, Direct Memory Access (DMA), Data transfer.

**(09P, 12M)**

**Unit 3: Programming Peripheral Interface (PPI)**

Architecture of Intel-8255, Pin diagram of Intel-8255, Functions of each pin, Control word format, Operations of Mode-0, Mode-1 & Mode-2., Single-Bit Set/Reset (BSR) Mode and Applications of 8255 PPI (list only) .

**(10P, 13M)**

**Unit 4: Programming Communication Interface and Counter/Interval Timer**

Architecture of Intel-8251, Pin diagram of Intel 8251, Functions of each pin, Mode word format, Control word format, Status word format, Architecture of Intel-8253, pin diagram of Intel-8253, Functions of each pin, Operations of Mode-0, Mode-1, Mode-2, Mode-3, Mode- 4 and Mode-5.

**(11P, 15M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Fundamentals of Microprocessors and Microcomputers – Badri Ram, DhanpatRai& Sons, Delhi.
2. Microprocessor Fundamentals – Roger L. Tokheim.
3. 8085 Assembly Language Programming – L. A. Leventhal.
4. Microprocessor Architecture programming and Applications 8080 & 8085 – Ramesh Gaonkar.
5. 8086 Microprocessor programming and Interfacing – Gibson.
6. Advanced Microprocessor and peripherals (Architecture, programming and interfacing) – A. K. Ray, K. M. Bhurchandi.
7. Microprocessors and Microcomputers- Soumitra Kumar Mandal.

**Semester VI: (DSE): Physics paper VI**  
**PHY 606 (E): Programming in C++ - II**  
**(Credits: 03) : ( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the object-oriented concept Programming language C++.

**Course Objectives:**

- To learn Object-Oriented Design with C++ Programming
- Ability to write a computer program to solve a specific program
- To handle abnormal termination of a program using exception handling

**Course Outcomes:**

1. Acquire knowledge of Object and Class.
2. Explore polymorphism using function overloading and operator overloading.
3. Understand the different aspects of the hierarchy of classes and their extensibility
4. Understands the concept of Virtual function, streams, and files, Generic Programming.
5. Write programs for handling run time errors using exceptions

**Unit 1: Objects & Classes**

[ L: 06 M: 08 ]

Simple classes (class specification, C++ objects, accessing class members), constructors and destructors, constant member functions.

**Unit 2: Functions and operator overloading**

[ L: 10 M: 12 ]

Overloading functions, introduction to operating overloading, overloading unary and binary operators, overloading arithmetic assignment operator.

**Unit 3: Inheritance**

[ L: 10 M: 10 ]

Derived class and base class, derived class constructors, public and private inheritance, multiple inheritances, hierarchical inheritance, multilevel inheritance, containership (classes within classes).

**Unit 4: Virtual functions**

[ L: 06 M: 10 ]

Virtual functions, pure virtual functions, friend functions, Static functions, copy constructor, this pointer.

**Unit 5: Generic programming**

[ L: 05 M: 10 ]

Introduction to a template, function within a template, introduction to exceptional handling.

**Unit 6: File and streams**

[ L: 08 M: 10 ]

Input/Output streams, classes for steam operation, opening and closing files, file pointers and their manipulations, error handling during file operations.

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Master in C++ - K.R.Venugopal
2. C++ Programming - E.Balaguruswami
3. Turbo C++ Programming - Robert Lafore
4. C++ Programming - Yashwant Kanitkar.



**Semester VI: (LAB): Physics paper VII**  
**PHY 607: Physics practical -I**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



**Perform any TEN experiments:**

1. Surface tension by Quinke's method.
2. Surface tension by soap bubble method.
3. Characteristics of G.M. counter.
4. Diffraction by straight edge/cylindrical obstacle.
5.  $e/m$  using Thomson's method.
6. Viscosity by rotating cylinder method.
7. Determination of 'g' by conical pendulum.
8. Study of oscillatory charge and discharge through an inductance and resistance.
9. To determine value of Boltzmann Constant using V-I characteristics of PN diode.
10. To determine work function of material of cathode using photocell.
11. To determine value of Plank's constant using LEDS of at least four different colours.
12. To study intensity response of photocell and verify inverse square law of radiations.
13. To measure the numerical aperture of an optical fiber.
14. Study of bending loss in optical fiber.
15. Study of I-V characteristics of photocell.
16. Determination of Plank's constant of Photocell.
17. Study of Solar still for water distillation.
18. Study of box type Solar cooker.

**Semester V: (LAB): Physics paper VIII**  
**PHY 508: Physics practical -II**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



**Group A: Perform any five experiments (Solid state physics, Electronics, Instrumentation):**

1. Hall effect.
2. Analysis of XRD pattern.
3. Measurement of resistivity by two probe method.
4. Characteristics of JFET.
5. UJT characteristics.
6. UJT as relaxation oscillator.
7. Study of RC/LC filter (Low pass and High Pass)
8. Study of Hearty oscillator. (Calculation of frequency and verification of frequency from sinusoidal output waveform)
9. Measurement of self inductance using Maxwell's induction bridge.
10. Multiplexer (2 to 1 or 4 to 1) and/or De-multiplexer (1 to 2 or 1 to 4).

{For more knowledge and understanding, one can help the students to study, understand and use the VESTA software for determination of crystal structure on the basis of given data.}

**Group B: Perform any five experiments from the following any one optional courses:**

**A) Technical Electronics:**

1. To make two PCB's i) Using discrete components ii) Using IC components.
2. To study inverting and non inverting configuration of Op amp.
3. To study of OP AMP as an adder.
4. DAC (R- 2R ladder, without OP- AMP).
5. To study reverse bias characteristics of photodiode.
6. To study characteristics of photo transistor.
7. To design and study of regulated power supply using IC 723.
8. Designing and fabrication of transformer.
9. Triangular, square wave generator using OP AMP.
10. V to F converter using IC-741.
11. V to T converter using IC-741.
12. Study of function generator.
13. To study fixed voltage regulator using 78XX and 79XX.

{For more knowledge and understanding, one can help the students to study, understand and use the SKYLAB software to write and execute programs to study out put of inverting or non- inverting configuration of OPAMP, Opamp as adder or subtractor etc}

**B) Refrigeration and Air conditioning:**

1. Study of different tools used in Refrigeration and Air Conditioning.
2. To carry out the following operations on Copper tube i) Cutting ii) Bending iii) Flaring.

3. Study of hermetically sealed compressor used in refrigeration systems.
4. To carry out Swaging and Brazing of Copper tubes.
5. Study of thermostatic switch, LP/HP cut out switch and filters used in Refrigeration and A. C. systems.
6. Leakage testing and charging of a refrigeration system.



**C) Vacuum technology:**

1. To describe function of various parts of Rotary pump (with schematic diagram).
2. To describe the constructional details & working of vapour diffusion pump.
3. To measure the pumping speed of vacuum system by steady state method.
4. Study of McLeod gauge.
5. To calibrate & study the function of Pirani gauge.
6. To evacuate a system with a rotary pump (measurement of vacuum with & without ballast using McLeod gauge).

**D) Microprocessor:**

1. Diode matrix ROM.
2. Application of DAC (square/triangular sweep wave).
3. Up-down counter (4-bit).
4. Hexadecimal/decimal counter.
5. Multiplexer/Demultiplexer (using IC).
6. Study of shift register (using IC).
7. Shift an 8-bit and 16-bit number left by one bit.
8. One's and Two's Complement of number.

**E) Programming in C++:**

1. Write a C++ program to display the string "T. Y. B. Sc. Physics"
2. Write a C++ program to make addition, subtraction, multiplication & division
3. Write a C++ program to demonstrate the use of scope resolution operator
4. Write a C++ program to check whether given no. is palindrome or not
5. Write a C++ program to demonstrate the use of the inline function for finding a maximum of two numbers
6. Write a C++ program to accept array elements as positive and negative nos. & only print positive nos. as output (use continue statement) e.g. {10, -20, 3, 5, -7} O/P: {10,3,5}
7. Write a C++ program to generate Fibonacci series up to 20 terms e.g. 1, 1, 2, 3, 5, 8,..... (20 terms)
8. Write a C++ program to create the following structure Roll-No. Stud-Name Class. Enter at least five records



**Semester V: (LAB): Physics paper VII**  
**PHY 509: Project -I**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



**ASSESSMENT OF PROJECT- FIRST TERM:**

Student should submit a Progress Report on the work done by him/her during the First Phase of the project i.e. on the topics :

1. Project Selection
2. Literature Search Strategy
3. Literature Review
4. Project Planning.
5. Experimental work (30 to 40 %)

**Instructions:**

1. The topic of project of the first term must be continued in the second term.
2. The project report of first term should be maintained and should be produced to examiner of second term.
3. The student will have to give a seminar on the project topic in the practical exam.
4. The student must perform his project presentation by PPT on LCD projector.

**Semester VI: (DSC): Physics paper I**  
**PHY 601: Quantum Mechanics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Quantum Mechanics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Quantum Mechanics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Quantum Mechanics to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: The Schrodinger Equation**

Introduction to Quantum Mechanics, Wave function and its Physical interpretation, normalized and orthogonal wave functions, Requirements of wave function, Formulation of time dependent and time independent Schrödinger equation (Steady state equation), Probability current density and equation of continuity, Solution of Schrodinger's equations, Energy eigenvalues and eigenfunctions, Expectation value, Ehrenfest's theorem, Postulates of Quantum Mechanics. (Ref:1, 2 and 9)

**(14P, 14M)**

**Unit 2: Applications of Schrödinger steady state equation**

Particle in a one dimensional rigid box (derivation of energy eigenvalues and eigenfunctions), Step potential (Probability of reflection (R) and transmission (T)), Linear Simple Harmonic oscillator (derivation of energy eigenvalues and eigenfunctions) (1D). (Ref: 2,6 and 7)

**(12P, 16M)**

**Unit 3: Quantum theory of Hydrogen atom**

Schrödinger equation in spherical polar co-ordinate system, Schrödinger equation for Hydrogen atom-separation of radial and angular part, Solutions of R,  $\Theta$ ,  $\Phi$  equations, Significance of quantum numbers n, l, m<sub>l</sub> and m<sub>s</sub>. (Ref: 1)

**(09P, 14M)**

**Unit 4: Operators in Quantum Mechanics**

Operators and linear operators, Position, Momentum operator, angular momentum operator, and total energy operator (Hamiltonian), Commutator bracket, Commutator algebra, Commutator brackets using position, momentum and angular momentum operator, Commutation relations and Hamiltonian operator; Commutation rules for components of orbital angular momentum; Commutation relations of  $L^2$  with components of orbital angular momentum; Commutation relation of components of orbital angular momentum with position operator, Ladder operators L<sub>+</sub>, L<sub>-</sub>. Concept of parity, parity operator and its eigenvalues.(Ref: 2 and 4)

**(10P, 16M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Perspectives of Modern physics : Arthur Beiser.
2. Advanced Quantum Mechanics: Satya Prakash, Kedarnath Ram Nath, Meerut
3. Quantum Mechanics: Gupta, Kumar, Sharma, Sultan Chand & Sons
4. Quantum Mechanics: Chatwal and Anand, Himalaya Publ. Co.
5. Quantum Mechanics: L.I.Schiff.
6. Quantum Mechanics: Powell and Crasemann, Addison-Wesley Pub. Co.
7. Introduction to Quantum Mechanics: D. Griffiths Published by Prentice Hall.
8. Quantum Physics: 2<sup>nd</sup> Ed. H.C. Verma, Surya Publications, Ghaziabad (UP), 2009.
9. Quantum Mechanics: Concepts and Applications, Nouredine Zettili, Wiley Publications.

**Semester VI: (DSC): Physics paper II**  
**PHY 602: Material Science**  
**(Credits: 03) : (45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Material Science to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Material Science.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Material Science to real life problems.
2. Understanding of the course will create scientific temperament.



**Unit 1: Introduction to materials**

**Classification of materials**

**Properties of Materials: Mechanical Properties:** Interpretation of tensile stress – strain curve. Stress, strain (tensile, compressive and shear), strength, elasticity, plasticity, ductility, malleability, hardness, toughness, creep, fatigue, stiffness, Isotropy, Anisotropy, Deformation, Elastic and Plastic deformation, factor affecting the mechanical properties. **Thermal Properties:** Heat capacity, Thermal expansion, Thermal conductivity. **Electrical Properties:** Conductivity, resistivity, dielectric strength, piezoelectricity. **Optical Properties:** Wavelength spectrum of electromagnetic waves, Refraction, Reflection, absorption and Transmission of non-metallic materials. **(12P, 15M)**

**Unit 2: Atomic disorder in materials**

**Solid solution:** Types of solid solution - Substitutional and Interstitial solid solution, Hume Rothery Rules of solid solubility. **Imperfections or defects in solids:** (i) Point defects: vacancies, Frenkel defect, Schottky defect, (ii) Line defects (Dislocation): Edge dislocation, screw dislocation, (iii) Surface defects or interfacial defects and (iv) Volume defect. **Plastic deformation:** Mechanism by slip system. **(06P, 10M)**

**Unit 3: Diffusion of solid material**

**Atomic diffusion** - Introduction, Classification of Diffusion

**Diffusion mechanism** – Vacancy mechanisms, Interstitial mechanism, Direct interchange mechanism, Diffusivity, Self diffusion in nickel, Steady state Diffusion (Fick's first law of diffusion) and Non steady state Diffusions (Fick's second law of diffusion), variation of diffusivity with temperature, Activation energy for diffusion, factor affecting the diffusion. **(09 P, 12M)**

**Unit 4: Phase Diagram**

Phase diagram, Phase equilibrium, Construction of phase diagram, Interpretation of phase diagram, Gibb's Phase rule, classification of phase diagram - Unary Phase diagram, Binary Phase Diagram, Binary Phase Diagram for: i) Sugar-Water, ii) NaCl-water, Eutectic reaction, lever rule, Sb-Bi phase diagram, Pb-Sn phase diagram. **(10 P, 13M)**

**Unit 5: Organic Materials:**

**Polymers:** Properties of polymer, Molecular weight, Molecular structure. **Types of Polymers:** Plastics and elastomers, Plastic: Thermoplast, Thermosets Polymerization, Mechanism of polymerization, Degree of polymerization, Addition Polymerization, Co-Polymerization, and Condensation Polymerization. **(08P, 10M)**

**(Total: Periods 45, Marks 60)**

**References:**

1. Materials Science & Engineering: An Introduction (6th Edition): William D. Callister
2. Elements of Materials Science & Engineering: Van Vlack
3. First Course in Materials Science & Engineering: V Raghavan.
4. Material Science: S. L. Kakani, Amit Kakani, New Age International Publishers.
5. Material Science : G.K.Narula and K.S.Narula, Tata McGraw Hill.
6. Material Science and Processes : S.K.Hajra – Chaudhari, Indian Book Distributing company.



**Semester VI: (DSC): Physics paper III**  
**PHY 603: Nuclear Physics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Nuclear Physics to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Nuclear Physics
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Nuclear Physics to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Nucleus and Nuclear Forces**

Nuclear compositions:- Constituents, charge, size, density, atomic mass of nucleus, nuclear magnetic moment, concept of parity (even and odd), classification of nuclei, mass defect and binding energy, stability of nuclei, packing fraction, Problems. Nuclear forces: Nuclear force, features of nuclear forces, saturation and short range nuclear forces, charge symmetry and charge independence, spin dependence of nuclear force, Meson exchange theory of nuclear forces, Elementary particles (List only). (9L, 12M)

**Unit 2: Radioactivity**

Introduction, Law of radioactive decay, half life, mean life, specific activity, partial radioactive decay, successive disintegration, Applications of radioactivity (Agricultural, Biological, Medical and industrial), Problems. (06L, 08M)

**Unit 3: Nuclear Models**

Types of nuclear models (List only). Single particle shell model: Introduction, Assumptions, Evidence of shell model, Theory of nuclear shell potential, nuclear spin and parities, limitations of shell model. Liquid drop model: Introduction, assumptions, semi-empirical mass formula. Limitations of Liquid drop model, Problems. (07L, 09M)

**Unit 4: Nuclear Reactions**

Introduction, Theories of nuclear reactions, conservation laws, Q-value equation, Energetic of exoergic reactions, Energetic of endoergic reactions, Threshold energy, Problems. (07L, 09M)

**Unit 5: Nuclear Energy**

Introduction, Nuclear fission, Explanation on the basis of liquid drop model, energy available from fission:- Estimation of energy from masses of fission fragments and from binding energy. Nuclear chain reaction, Nuclear Fusion, Nuclear Reactor: Basic principle, classification, constituents parts, Heterogeneous reactor, Swimming pool reactor, Power reactor, Problems. (10L, 14M)

**Unit 6: Nuclear Detectors and Accelerators**

Types of detectors, Geiger-Mueller counter, Scintillation counter, Classification of accelerators: Cyclotron and Betatron. (06L, 08M)

**(Total: 45 Lectures, 60 Marks)**

**References:**

1. The atomic Nucleus: R D Evans, McGraw Hill Book Company,
2. Nuclear Physics: D C Tayal, Himalaya Publishing House, Bombay.
3. Nuclear Physics: Irving Kaplan, Narosa Publishing House, New Delhi,
4. Basic Nuclear Physics and Cosmic Rays: B N Srivastava, Pragati Prakashan, Meerut.
5. Concepts of Modern Physics – Arthur Beiser (5th Edition),
6. Atomic Physics: J.B. Rajam.
7. Introduction to Nuclear Physics: H.A. Enge (Addition Wesley Co.)

**Semester VI: (DSC): Physics paper IV**  
**PHY 604: Modern and Applied Physics**  
**(Credits: 03) :( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Modern and Applied Physics to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Modern and Applied Physics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ...

1. Apply the concept and use of knowledge of Modern and Applied Physics to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Plank's Quantum theory:**

Planck's quantum theory, properties of photon, Planck's constant and light as a collection of photons; photo-electric effect and Compton effect. Experimental verification of Compton's effect. (04 P, 06 M)

**Unit 2: Bohr's and Sommerfield theories of hydrogen atom**

Introduction of atomic spectra, Inadequacy of classical planetary model of hydrogen atom. Bohr's theory of hydrogen atom. Extension of Bohr's theory. Experimental verification of discrete atomic energy levels. correspondence principle, Bohr's Sommerfield model and relativistic effects. Limitations of quantum mechanical model. (09 P, 12 M)

**Unit 3: Matter Waves (Foundation of Quantum mechanics)**

Need of quantum mechanics, Wave particle duality of matter, de-Broglie hypothesis, Expression for matter waves, Electron diffraction, Davission and Germer experiment, concept of wave group, phase velocity, group velocity, particle velocity and relations between them, Uncertainty principle, Thought experiment (Gamma ray microscope), different forms of uncertainty principle, applications of uncertainty principle (Non existence of electron in nucleus, determination of ground state of electron and size of hydrogen atom). (09 P, 12 M)

**Unit 4: Fiber Optics**

Introduction, construction of optical fiber, principle of operation, concept of acceptance angle, numerical aperture, attenuation in optical fiber and attenuation limit, preparation of optical fiber, optical fiber materials, types of optical fiber Single mode and multimode fibers, advantages and disadvantage of optical fiber, communication, Applications of fiber optics, Detail discussions on following applications: Temperature sensor, displacement sensor, fiber optic endoscopy, fiber optic communications. (07P, 09 M)

**Unit 5: Holography and its application**

Concept of monochromatic and coherent source, basic idea of hologram, construction and re-construction hologram, types of hologram (list only), application of holography in microscopy and character recognition. (07P, 09 M)

**Unit 6: Introduction to bioelectricity**

Electricity observed in living systems, examples and origin of bioelectricity, sodium and potassium transport, Nernst equation, resting and action potential, conduction velocity. (09 P, 12 M)

**Total: (45 Periods, 60 Marks)**

**References**

1. Concepts of Modern Physics: S. L. Gupta, S. Gupta, Third Edition-1989, Publisher: Dhanpat Rai and Son's.
2. Modern Engineering Physics, A. S. Vasudevan, Publisher: S Chand.
3. Physics for Engineers: M.R. Srinivasan, Publisher: New Age International.

4. REFRESHER COURSE IN PHYSICS, VOLUME-II, C. L. Arora, Publisher: C. Chand and Company Ltd., New Delhi.
5. Modern Physics – B. L. Theraja, Publisher: C. Chand and Company Ltd., New Delhi
6. Elementary Modern Physics - Atam P. Arya. Publisher: Addison Wesley Longman Publishing Co., New edition
7. An Introduction to Lasers -Theory and Applications - M. N. Avadhanulu, Publisher: C. Chand and Company Ltd., New Delhi.
8. Introduction to Fiber Optics: Ajoy Ghatak, K. Thyagarajan, Publisher: Cambridge University Press, 1998.
9. From Neuron to brain - Kuffler & Nicholas, Publisher: Sinauer Associates is an imprint of Oxford University Press; 5 edition (2011).
10. Biomedical Instrumentation and Measurements (II Edition) - L. Cromwell, F. J. Weibell, E. A. Pfeiffer (Pearson Education Singapore Pvt. Ltd.),





**Semester VI: (SEC): Physics paper V**  
**PHY 605: Basic Instrumentation Skills**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Basic Instrumentation skills to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Basic Instrumentation skills.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Handle and use various basic mechanical and electrical measuring instruments
2. Understanding of the course will create scientific temperament.



*(This course is to get exposure with various aspects of instruments and their usage through hands-on mode. Experiments listed below are to be done in continuation of the topics.)*

**Unit 1. Use of basic measuring instruments:**

Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects. Study of Vernier calliper, Screw gauge, travelling microscope and their utility to measure the dimension of a solid block, volume of cylindrical objects, diameter of a thin wire and capillary tube, thickness of metal sheet, etc. Use of Sextant to measure height of buildings, mountains, etc.

**(04 P, 06M)**

**Unit 2. Electrical quantity measuring instruments:**

PMMC, Voltmeter (D.C. and A.C), specifications and their significance. Ammeter (D.C. and A.C), specifications and their significance. Ohmmeter (Series and Shunt type), specifications and their significance. Multimeter, Steps of measurement of dc voltage and dc current, ac voltage, ac current and resistance using multimeter. Specifications of a multimeter and their significance. **(12 P, 14M)**

**Unit 3: Cathode Ray Oscilloscope**

Block diagram of basic CRO, Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only- no mathematical treatment), brief discussion on screen phosphor, visual persistence and chemical composition. Time base operation, synchronization, Front panel controls. Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac), frequency, time period and phase. Introduction of Dual trace CRO and digital oscilloscope, probes.

**(12P, 14M)**

**Unit 4: Signal Generators and Analysis Instruments**

Block diagram, explanation and specifications of low frequency signal generators, pulse generator, and function generator. Brief idea for testing, specifications.

**(07P, 10M)**

**Unit 5: Digital Instruments**

Principle and working of digital meters. Comparison of analog and digital instruments. Characteristics of a digital meter. Block diagram and Working principle of digital voltmeter (Ramp type only). Block diagram and working of a digital multimeter; Digital Frequency meter: Block diagram and Working principle: frequency and period measurement, accuracy and resolution.

**(10P, 16M)**

**Total: (45 Periods, 60 Marks)**

**The test of lab skills will be of the following test items:**

1. Use of an oscilloscope.



2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment.
4. Use of Digital multimeter for measuring voltages
5. Trouble shooting a circuit

#### **Laboratory Exercises:**

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. Measurement of voltage, frequency, time period and phase angle of a wave using CRO.
4. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times of a wave using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.


#### **Open Ended Experiments:**

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

#### **Reference Books:**

1. Principles of Electronics – V. K. Mehta, S. Chand Publications, New Delhi.
2. Basic Electronics (Solid State): B.L. Theraja, Publisher: S. Chand and Company, New Delhi.
3. Electrical measurements and measuring instruments: R K Rajput, S. Chand and Co. New Delhi.
4. Digital Principles and Applications: A.P. Malvino and D. P. Leach, Tata McGraw-Hill Publishing Company Limited, New Delhi.
5. Modern Electronic Instruments and Measurement techniques: Albert D. Helfrick, Willam D. Cooper, Prentice Hall India Pvt. Ltd, New Delhi.
6. A course in Electrical and Electronic Measurements and Instruments: A. K. Sawhney, Dhanpat Rai and Sons.
7. Digital electronics, R P Jain
8. Basic Electronics: B. Grob, Publisher: McGraw Hill Book Co. New York,
9. Electronic Instrumentation: H.S. Kalsi, Tata McGraw-Hill Publishing Company Limited, New Delhi.
10. Digital instrumentation by A J Bouwens
11. A text book in Electrical Technology - B I. Theraja – S. Chand and Co.
12. Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
13. Logic circuit design, Shimon P. Vingron, 2012, Springer.
14. Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
15. Electronic Devices and circuits, S. Salivahanan and N. S.Kumar, 3rd Ed., 2012, Tata Me-Graw Hill
16. Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
17. Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India





**Semester VI: (DSE): Physics paper VI**  
**PHY 606(A): Technical Electronics II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Technical Electronics to Under Graduate students

**Course objectives:**

1. To impart knowledge of basic concepts in Technical Electronics.
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept of use of knowledge of Technical Electronics to real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Sound System**

Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (Principle, construction and working), Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multiway speaker system (woofer and tweeter), Connection type of speakers (series, parallel and series-parallel type). [R1, R2, R9].

(08P, 12M)

**Unit 2: Public Address System**

Block diagram of Public Address (P.A.) system and its explanation, requirements of P. A. system, typical P.A. Installation planning (Auditorium having large capacity, college sports), Volume control, Tone control and Mixer system, Concept of Hi-Fi system, Monophony, Stereophony, Quadraphony, Dolby A and Dolby B system, CD- Player: Block diagram of CD player and function of each block. [R1, R2, R9].

(10P, 14M)

**Unit 3: Medical instruments.**

Biopotential, Types of electrodes, ECG (principle, block diagram, features) Ultrasonography: working principle [R 3, 4, 5]

(07P, 8M)

**Unit 4: Transducer**

Definition, Classification, Selection of transducer, Electrical transducer: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Piezo-electric Transducer, Optoelectronic transducers: LDR, Chemical sensors: pH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). [R7, R8].

(10P, 14M)

**Unit 5: Modern appliances**

**Remote Control:** Operating principle, block diagram, features.

**Microwave Oven:** Operating principle, block diagram, features.

**Cellular Phone:** Operating principle, Block diagram, specifications, features, and functions performed.

**Washing Machine:** Operating principle, block diagram, features, Fuzzy Logic (Idea only),

**Electronic Weighing Systems:** Operating principle, Block diagram, features.

[R8].

**Infrared Thermometer:** Operating principle, Block diagram, features.

(10P, 14M)

(Total: 45 Periods, 60 Marks)


**References:**

1. Audio and Video Engineering System: R.G. Gupta, Tata Mc-GrawHill Publishing Company Ltd, New Delhi.
2. Basic Electronics: B. L. Thereja, S. Chand Publications, New Delhi.



3. Introduction to Bio-medical Electronics: Joseph-Du-bary, Tata Mc-Graw Hill Publishing Company Ltd, New Delhi.
4. Medical instrumentation Application and design: J. C. Wobster
5. Biomedical instruments and measurements: L. Cromwell, F. J. Weibell, Printice Hall of India of India Pvt. Ltd, New Delhi.
6. Transducers and display systems: B.S. Sonde, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7. Solid state Gas sensors- edited by P. T. Moseley and B.C. Tofeld, Harwell, Adam Hilger and Philadelphia
8. Measurement and Instrumentation Principles: Alan S. Morris, Butterworth-Heinemann.
9. Consumer Electronics: J.S. Chintode, Technical Publication, Pune.





**Semester VI: (DSE): Physics paper VI**  
**PHY 606(B): Refrigeration and Air conditioning II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Refrigeration and air conditioning to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Refrigeration and air conditioning.
2. To provide the knowledge and methodology necessary for solving problems in Physics
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Refrigeration and air conditioning to understand and solve the real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Psychrometry:**

Introduction, Meaning of air conditioning, Five main factors of comfort air conditioning, Psychrometry and psychrometric properties, psychrometric relations: Dalton's law of partial pressure: relation between partial pressure & specific humidity; relation between degree of saturation & relative humidity, Types of psychrometers, Psychrometric processes, Bypass factor and its relation, Summer air conditioning systems for Hot & Dry; Hot & Humid out door conditions, Summer air conditioning with evaporative cooling, Winter air conditioning system for mild cold weather. (Ref. 1: Chapter -16) (12L, 16M)

**Unit 2: Cooling load calculations & design of air conditioning systems:**

Different heat sources, Heat flow due to conduction, Sun load, Occupants load, Equipment load, Infiltration load, Miscellaneous heat sources, Design aspects of air conditioning system. Cooling load and air quantities. (Ref. 1: Chapter -19) (7L, 10M)

**Unit 3: Air Conditioning equipments:**

Air cleaning and Air Filters: Functions, Types, Wet filters, Electronic filters, and Centrifugal dust collector. Cooling Coils: Bypass factor of multidepth coils, Humidifiers: Functions, Atomization type humidifiers, Impact type humidifiers, Pan & coil type humidifiers, Dehumidifiers: Functions, Refrigeration humidifiers, Spray type humidifiers, De-humidifying air washers, Fans and Blowers: Functions, Axial flow fans, Centrifugal fans, Grills and Registers. (Ref. 1: Chapter -25) (10L, 14M)

**Unit 4: Air Conditioning Control systems:**

Basic elements of control systems, Temperature control elements: Bimetal type thermostat, Sealed bellows type thermostat, Electrical resistance and thermocouple type thermostat, Humidity Control Elements: Hair type humidistat, Absorption type thermostat, Water vapour recorder, Actuators: Relays Introduction to Transmission systems: Pre heat and humidification control systems, Cooling dehumidification and reheat control system, Face and bypass control system. (Ref. 1: Chapter -26) (10L, 12M)


**Unit 5: Solar Refrigeration System**

Vapour Compression Refrigeration system using solar energy, Vapour absorption refrigeration system using solar energy, Solar refrigeration using a solid absorption cycle, Solar refrigerators using Photovoltaic panels. (Ref.1: Chapter -28) (6L, 8M)

**(Total: 45 Periods, 60 Marks)**

**Reference Books:**

1. A course in Refrigeration and Air Conditioning: S.C. Arora & S. Domkundwar. Dhanpat Rai & Co. 7th Edition
2. Basic Refrigeration and Air Conditioning. P.N. Ananthanarayanan, Tata McGraw Hill, New Delhi 3<sup>rd</sup>
3. Principles of Refrigeration: Roy J Dossat, Pearson Education (Singapore) Ltd. 4th Edition



**Semester VI: (DSE): Physics paper VI**  
**PHY 606(C): Vacuum Technology-II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the fundamentals of Vacuum technology to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Vacuum technology.
2. The course should prepare the student for operating, simulating and construction of vacuum systems.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to

1. Apply important laws of physics which govern how a vacuum system works.
2. Account for which components are used in a vacuum system, their construction, function and use.
3. Account for troubleshooting a vacuum system.
4. Run simulations and write a specification for a simple vacuum system.

**Unit 1: Vacuum materials and components**

Adsorption, Absorption, Desorption, Diffusion and penetration of gases through solid surfaces, Vapour pressure of different materials, Outgassing of materials, Desired properties of materials used for fabrication of vacuum system.

**(7P, 8M)**

(i) Vacuum Seals: (a) Permanent seals- Welding, Brazing, Soldering (b) Demountable seals- Waxes, Resins and Adhesives, Gaskets seal: Elastomer, metal. Feedthroughs: Electrical Feedthroughs, Motion Feedthroughs: Wilson seal, Bellows seal.

**(8P, 11M)**

(ii) Valves: (a) Roughing and For-line valves: Disk valve, Ball valve. (b) High vacuum valves: Gate valve, disk valve, flap valve, Butter-fly valve. (c) Gas admittance valves: disk valve, Needle valve.

**(8P, 11M)**

**Unit 2: Leak detection**

Real and Virtual leaks, Leak detection method: (a) Over pressure method- Bubble method, Halide torch, Sniffer technique. (b) Low pressure method- Blocking (sealing) method, Tesla coil, Halogen leak detector, Organic vapour and gas probe with suitable pressure gauge as detector.

**(11P, 14M)**

**Unit 3: Vacuum system fabrication**

General consideration of designing, Construction of High vacuum system (Combination of Rotary and Oil diffusion pump), Its operational procedure, Construction of Ultrahigh vacuum system and its operational procedure.

**(8P, 11M)**

**Unit 4: Application of Vacuum Technology**

Applications of Vacuum technology in Research and Industry.

**(3P, 5M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Introduction to Theory and Practical of High Vacuum Technology : L.Ward & J.P. Bunn, Butterworths.
2. High Vacuum Techniques : J. Yarwood.
3. Design and Construction of Vacuum systems : G.W. Green.
4. Vacuum Sealing Techniques : A. Roth
5. High Vacuum Engineering : A.E. Barrington
6. Handbook of Vacuum Technology: Karl Jousten
7. Vacuum Physics and Techniques, T. A. Delchar, Chapman and Hall.



**Semester VI: (DSE): Physics paper VI**  
**PHY 606(D): Microprocessor- II**  
**(Credits: 03) : ( 45 Lectures 60 Marks)**



**Course description:**

This course is aimed at introducing the fundamentals of Microprocessor to Under Graduate students.

**Course objectives:**

1. To impart knowledge of basic concepts in Microprocessor
2. To provide the knowledge and methodology necessary for solving problems in Physics.
3. The course also involves the related experiments based on the theory.

**Course outcome:**

Learner will be able to ....

1. Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
2. Understanding of the course will create scientific temperament.

**Unit 1: Assembly Language Programming**

Masking of 4- MSB and LSB of given number, One's and two's complement of 16- bit numbers, Shift 16- bit numbers left by one bit, 8- bit addition, 8- bit subtraction, Decimal addition and decimal subtraction of two 8 bit numbers, 8- bit multiplication, Find largest and smallest numbers from a series of given number, Find square root of given number from Look up table, Code conversion programs:-Hex to ASC II conversion, BCD to binary conversion, Decimal to seven segment conversion.

**(15P, 20M)**

**Unit 2: Interfacing of Memory and Peripheral Devices**

Introduction, Interfacing with RAMS & ROMS, I/O interfacing basics, Interfacing with practical I/O memory mapped I/O and I/O mapped I/O schemes, Direct Memory Access (DMA), Data transfer.

**(09P, 12M)**

**Unit 3: Programming Peripheral Interface (PPI)**

Architecture of Intel-8255, Pin diagram of Intel-8255, Functions of each pin, Control word format, Operations of Mode-0, Mode-1 & Mode-2., Single-Bit Set/Reset (BSR) Mode and Applications of 8255 PPI (list only).

**(10P, 13M)**

**Unit 4: Programming Communication Interface and Counter/Interval Timer**


Architecture of Intel-8251, Pin diagram of Intel 8251, Functions of each pin, Mode word format, Control word format, Status word format, Architecture of Intel-8253, pin diagram of Intel-8253, Functions of each pin, Operations of Mode-0, Mode-1, Mode-2, Mode-3, Mode- 4 and Mode-5.

**(11P, 15M)**

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Fundamentals of Microprocessors and Microcomputers – Badri Ram, Dhanpat Rai & Sons, Delhi.
2. Microprocessor Fundamentals – Roger L. Tokheim.
3. 8085 Assembly Language Programming – L. A. Leventhal.
4. Microprocessor Architecture programming and Applications 8080 & 8085 – Ramesh Gaonkar.
5. 8086 Microprocessor programming and Interfacing – Gibson.
6. Advanced Microprocessor and peripherals (Architecture, programming and interfacing) – A. K. Ray, K. M. Bhurchandi.
7. Microprocessors and Microcomputers- Soumitra Kumar Mandal.



**Semester VI: (DSE): Physics paper VI**  
**PHY 606 (E): Programming in C++ - II**  
**(Credits: 03) :( 45 Lectures 60 Marks)**

**Course description:**

This course is aimed at introducing the object-oriented concept Programming language C++

**Course Objectives:**

- To learn Object-Oriented Design with C++ Programming
- Ability to write a computer program to solve a specific program
- To handle abnormal termination of a program using exception handling

**Course Outcomes:**

1. Acquire knowledge of Object and Class
2. Explore polymorphism using function overloading and operator overloading.
3. Understand the different aspects of the hierarchy of classes and their extensibility
4. Understands the concept of Virtual function, streams, and files, Generic Programming.
5. Write programs for handling run time errors using exceptions

**Unit 1: Objects & Classes**

[ L: 06 M: 08 ]

Simple classes (class specification, C++ objects, accessing class members), constructors and destructors, constant member functions.

**Unit 2: Functions and operator overloading**

[ L: 10 M: 12 ]

Overloading functions, introduction to operating overloading, overloading unary and binary operators, overloading arithmetic assignment operator.

**Unit 3: Inheritance**

[ L: 10 M: 10 ]

Derived class and base class, derived class constructors, public and private inheritance, multiple inheritances, hierarchical inheritance, multilevel inheritance, containership (classes within classes).

**Unit 4: Virtual functions**

[ L: 06 M: 10 ]

Virtual functions, pure virtual functions, friend functions, Static functions, copy constructor, this pointer.

**Unit 5: Generic programming**

[ L: 05 M: 10 ]

Introduction to a template, function within a template, introduction to exceptional handling.

**Unit 6: File and streams**

[ L: 08 M: 10 ]

Input/Output streams, classes for steam operation, opening and closing files, file pointers and their manipulations, error handling during file operations.

**(Total: 45 Periods, 60 Marks)**

**References:**

1. Master in C++ - K.R.Venugopal
2. C++ Programming - E.Balaguruswami
3. Turbo C++ Programming - Robert Lafore
4. C++ Programming - Yashwant Kanitkar.

**Semester VI: (LAB): Physics paper VII**  
**PHY 607: Physics practical -I**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



Perform any TEN experiments:

1. Surface tension by Quinke's method.
2. Surface tension by soap bubble method.
3. Characteristics of G.M. counter.
4. Diffraction by straight edge/cylindrical obstacle.
5.  $e/m$  using Thomson's method.
6. Viscosity by rotating cylinder method.
7. Determination of 'g' by conical pendulum.
8. Study of oscillatory charge and discharge through an inductance and resistance.
9. To determine value of Boltzmann Constant using V-I characteristics of PN diode.
10. To determine work function of material of cathode using photocell.
11. To determine value of Plank's constant using LEDS of at least four different colours.
12. To study intensity response of photocell and verify inverse square law of radiations.
13. To measure the numerical aperature of an optical fiber.
14. Study of bending loss in optical fiber.
15. Study of I-V characteristics of photocell.
16. Determination of Plank's constant of Photocell.
17. Study of Solar still for water distillation.
18. Study of box type Solar cooker.



**Semester VI: (LAB): Physics paper VIII**  
**PHY 608: Physics practical -II**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



**Group A: Perform any Five experiments (Material Science, Electronics, Instrumentation):**

1. Determination of curie temperature of Ferrite.
2. Determination of specific heat of graphite at different temperature
3. To study characteristics of thermistors.
4. Determination of thermoelectric power.
5. Study of Astable Multivibrator using IC 555.
6. Binary weighted DAC (R-2R ladder) using OP-AMP.
7. Determination of Core losses in transformers.
8. To study of clocked RS flip flop using NAND gates.
9. Study of IC 7490 as mod 2, mod 5 and mod 10 counter.
10. To study RC coupled Single stage transistor amplifier. (Voltage gain , Frequency response)

**Group B: Perform any Five experiments from the following optional courses:**

**A) Technical Electronics:**

1. To study characteristics of LDR.
2. Study of P. A. system (series and parallel connection of two speakers) and measurement of equivalence resistance.
3. Use of C.R.O as a measurement tool for different electrical parameters (frequency, a. c. / d. c. voltage, pulse height, pulse width, rise time and fall time)
4. Use of thermocouple for measurement of temperature.
5. Study of OP AMP as subtractor.
6. Study of OP- AMP as a differentiator.
7. Study of OP- AMP as an integrator.
8. Displacement measurement using LVDT.
9. Frequency response of loudspeaker (twitter, woofer, mid-range).
10. Study of E.C.G .
11. Thermistor as a thermometer using IC 74].
12. Half wave precision rectifier using OP AMP.
13. Full wave precision rectifier using OP AMP.

**B) Refrigeration and Air conditioning:**

1. To find the COP of a domestic refrigeration system.
2. Detection of trouble/ faults in a refrigerator and window air conditioner.
3. Dismantling of Window type A.C. and testing after assembly.
4. Visit to a cold storage plant.
5. Visit to a centrally air conditioned building.
6. Visit to a Ice plant.

**C) Vacuum technology:**

1. To measure the pumping speed of vacuum system (use of Gaedes equation).
2. Demonstration of oil diffusion pump & to evacuate the system & to measure the ultimate vacuum.
3. To study the effects of conductance of pumping speed of oil diffusion pumping module.
4. Deposition of metallic thin film.
5. To investigate the variation of pumping speed of vapour diffusion pumping module with the pressure in vacuum system.
6. Pumping speed measurements using the constant volume method.

**D) Microprocessor:**

1. Find square root/square of number using look up table.
2. 8-bit decimal addition/subtraction.
3. Find largest/smallest number from series of 8-bit numbers.
4. Conversion of Hexadecimal to ASCII code.
5. 8-bit binary multiplication.
6. LED interface (Time delay generation).
7. Interfacing of thumbwheel switch.
8. Conversion of 8-bit Hexadecimal number to binary number.



**E) Programming in C++:**

1. Write a C++ program to implement string operations i) strlen ( ) ii) strcat ( ) as class members. Write a C++ program to display the string "T. Y. B. Sc. Physics"
2. Write a C++ program to swap two integers, two floats and two-character variables using function overloading.
3. Write a C++ program to demonstrate the use of constructors and destructors.
4. Write a C++ program to overload + operator to add two complex nos.
5. Write a C++ program to implement hierarchical inheritance.
6. Write a C++ program to implement multiple inheritances.
7. Write a C++ program to implement virtual functions.
8. Write a C++ program to demonstrate the use of function templates

**Semester VI: (LAB): Physics paper VIII**  
**PHY 609: Project II**  
**(Credits: 02): (60 L, 100M (40 Internal + 60 External))**



**ASSESSMENT OF PROJECT- SECOND TERM:**

Student should submit a Final Project Report on the work done by him/her during the First and Second Phase of the Project i.e. on the topics:

1. Experimental work. (remaining further work in continuation with the work in the first term)
2. Characterize the samples, if any.
3. Discussion of the results.
4. Conclusions.

**Instructions:**

1. The topic of project of the first term must be continued in the second term.
2. The project report of first term should be maintained and should be produced to examiner of second term.
3. The student will have to give a seminar on the project topic in the practical exam.
4. The student must perform his project presentation by PPT on LCD projector.



## CAREER OPPORTUNITIES FOR B. Sc. PHYSICS STUDENTS

B.Sc. Physics students can find jobs in public as well as in private sectors. There are many opportunities available for B. Sc Physics students in technical as well as scientific fields. They can work as Science and Mathematics Teachers, Quality Control Manager, Laboratory assistant, Laboratory Technician, School Science Technician in any government or private organization.

### Private Sector:

There are many opportunities available in IT field for B. Sc (Physics) graduates. Many IT companies such as Infosys, Wipro and TCS are recruiting B. Sc. Physics graduates for software jobs. They can also get jobs in Energy Plants. Another jobs available for these graduates is Technician in Electronic Industry. They can apply for jobs in many companies in automobile industry. Some of those companies are Maruti Udyog, TATA Motors and Tech Mahindra. The B. Sc. (Physics) graduates can apply and secure their job in Solar devices production industries, electrical or electronic industries with their skills developed while studying.

### Government Sector:

There are vast opportunities available for B. Sc graduates in Government sector. They can apply for jobs in Scientific Research and Development Organizations such as The Defense Research and Development Organization (DRDO), CSIR, Physical Research Laboratory (PRL) Ahmedabad, Saha Institute of Nuclear Physics Kolkata and Nuclear Science Centre New Delhi. They can also apply for various jobs in popular government organizations such as Bhabha Atomic Research Centre (BARC), Atomic Energy Regulatory Board (AERB), Oil and Natural Gas Corporation (ONGC), Bharat Heavy Electricals Limited (BHEL), National Thermal Power Corporation (NTPC).

They can also apply for the various competitive exams conducted by Union Public Service Commission such as IFS, IPS and IAS. Several other government exams conducted for recruiting B. Sc Physics graduates are Tax Assistant Exam, Statistical Investigator Exam, Combined Graduate Level Exam.

Another option available for B. Sc Physics graduate is to apply for jobs in public sector banking. Several banks are conducting exam every year for recruiting graduates to the post of Probationary Officers. They can also find many jobs in Railway sector. They should qualify the exams conducted by Railway Recruitment Board to get a job in Railway sector. These graduates can also apply for Combined Defense Services Exams conducted for recruiting candidates to various posts in Defense Department.

**KAVAYITRI BAHINABAI CHAUDHARI NORTH  
MAHARASHTRA UNIVERSITY, JALGAON**

**Faculty of Science and Technology**



**F. Y. B. Sc. BOTANY**

**Theory and Practical Syllabus**

**(CBCS Pattern)**

**As Per U. G. C. Guidelines**

**Semester – I**

**To Be Implemented From**

**Academic – Year 2022 - 2023**

**BOT. – 101: Diversity of Lower Cryptogams**

**BOT. – 102: Morphology of Angiosperms**

**BOT. – 103: Practical Based on BOT.-101 and BOT.-102**

F.Y. B.Sc. Semester: I



**Paper: I**  
**BOT. 101: Diversity of Lower Cryptogams**

Lecture  
30

**Aims and Objectives:**

1. To study the diversity among microbes.
2. To study systematic, morphology and structure of Bacteria, Viruses, Algae and Fungi.
3. To study the life cycle pattern of Bacteria, Viruses, Algae and Fungi.
4. To study the useful and harmful activities of Bacteria, Viruses, Algae and Fungi.

**Course outcomes:**

1. Provide identification technique of microbes, Viruses, Bacteria, Algae and Fungi.
2. Understand the systems of classification of Microbes, Viruses, Bacteria, Algae and Fungi, and its interdisciplinary approaches.
3. Provide lab-based training in writing short species descriptions and illustration.
4. Recognise members of the major microbes, Viruses, Bacteria, Algae, Fungi and their medicinal, economic importance for human welfare.

<b>Unit 1</b>	<p><b>Microbes:</b></p> <p>1.1: Introduction and main groups of microbes: Prions, Viroids, Viruses, Rickettsias, Mycoplasmas, Bacteria, Cyanobacteria.</p> <p>1.2: Classification of microorganisms – R.H. Whittaker's (1969) five kingdom concept.</p>	<b>02 L</b>
<b>Unit 2</b>	<p><b>Viruses:</b></p> <p>2.1: Introduction, discovery and characteristics of Viruses.</p> <p>2.2: General morphology of viruses: Helical, Polyhedral, Enveloped and Complex viruses.</p> <p>2.3: Nature of viruses (living and non-living)</p> <p>2.4: Ultra structure of viruses</p> <p>2.5: DNA Virus (T-Phase) and RNA, Virus (TMV)</p> <p>2.6: Reproduction of Bacteriophage: Lytic and Lysogenic cycle.</p> <p>2.7: Economic importance</p> <p>2.8: Plant diseases caused by viruses w.r.t. causal organism, symptoms and control measures of.</p> <p style="padding-left: 20px;">i. Yellow vein mosaic disease of Lady's finger.</p> <p style="padding-left: 20px;">ii. Bunchy top of Banana.</p>	<b>06 L</b>
<b>Unit 3</b>	<p><b>Bacteria:</b></p> <p>3.1: Introduction, discovery and general characters.</p> <p>3.2: Classification of Bacteria on the basis of morphology.</p> <p>3.3: Ultrastructure of Bacterial Cell</p> <p>3.4: Gram positive and Gram negative Bacteria</p>	<b>06 L</b>





	<p>3.5: Reproduction - Asexual and Sexual (Conjugation)</p> <p>3.6: Economic importance of Bacteria - useful and harmful activities</p> <p>3.7: Study of Bacterial diseases w.r.t. causal organism, symptoms and control measures of i) Citrus canker ii) Black arm of Cotton.</p>	
<b>Unit 4</b>	<p><b>Algae:</b></p> <p>4.1: Introduction, definition and general characters of algae</p> <p>4.2: Habitats of algae: aquatic, terrestrial and algae unusual habitats</p> <p>4.3: Thallus structure in algae.</p> <p>4.4: Reproduction: vegetative, asexual and sexual</p> <p>4.5: Classification of algae according to G. M. Smith (1955) up to classes with reasons giving at least two examples from each class.</p> <p>4.6: Economic importance of algae in;</p> <p>i) Agriculture</p> <p>ii) Food</p> <p>iii) Industries</p> <p>iv) Medicine</p> <p>4.7: A] Study of life cycle of <i>Nostoc</i> w.r.t. Systematic position Occurrence, structure of colony and filament, ultrastructure of <i>Nostoc</i> cell and reproduction</p> <p>B] Study of life cycle of <i>Sargassum</i> w.r.t. Systematic position, occurrence, external and internal structure of thallus, reproduction and alternation of generation.</p>	<b>07 L</b>
<b>Unit 5</b>	<p><b>Fungi:</b></p> <p>5.1: Introduction, definition and general characters</p> <p>5.2: Thallus structure, reproduction and mode of nutrition</p> <p>5.3: Classification of Fungi, according to G.M. Smith up to classes with reasons giving at least two example of each class.</p> <p>5.4: Economic importance of Fungi</p> <p>i) Agriculture</p> <p>ii) Food</p> <p>iii) Industries</p> <p>iv) Medicine</p> <p>5.5: A] Study of life cycle <i>Agaricus</i> w. r. t. Systematic position, structure of mycelium, internal structure, (T.S. of gills) and reproduction.</p> <p>B] Study of life cycle <i>Aspergillus</i>. w. r. t. Systematic position, structure of mycelium and reproduction.</p>	<b>07 L</b>
<b>Unit 6</b>	<p><b>Lichens and Mycorrhiza:</b></p> <p>6.1 Lichens: definition, characters, types - Crustose, Foliose, Fruticose and economics importance.</p> <p>6.2 Definition, general account, significance of Mycorrhiza,</p> <p>6.3 Types: Ectomycorrhiza and Endomycorrhiza.</p>	<b>02 L</b>
<b>Suggested readings:</b>		

**KAVAYITRI BAHINABAI CHAUDHARI NORTH MAHARASHTRA  
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**Faculty of Science and Technology**

**SYLLABUS FOR CORE AND SKILL ENHANCEMENT COUESES IN BOTANY**

**As Per U. G. C. Guidelines**

**Based on**

**Choice Based Credit System (CBCS)**

**S. Y. B. Sc. BOTANY SEMESTER-WISE SYLLABUS**

**(Theory and Practicals)**

**Semester-III**

**Bot. 301: Plant Anatomy**

**Bot. 302: Plant Physiology**

**Bot. 303: Practical Based on Bot: 301 and Bot: 302**

**Bot. 304: Mushroom Culture Technology**

**Semester-IV**

**Bot. 401: Plant Embryology**

**Bot. 402: Plant Metabolism**

**Bot. 403: Practical Based on Bot: 401 and Bot: 402**

**Bot. 404: Nursery and Gardening**

**w. e. f. June, 2019**

**KAVAYITRI BAHINABAI CHAUDHARI NORTH MAHARASHTRA  
UNIVERSITY, JALGAON**

**Structure of S.Y. B.Sc. Botany Syllabus under CBCS Pattern  
w.e.f. June, 2019**



Year	Sem.	Paper	Code	Title of Course	Marks		Credits
					Int.(CA)	Ext.(UA)	
II	III	I	Bot. 301	Plant Anatomy	40	60	2
		II	Bot. 302	Plant Physiology	40	60	2
		III	Bot. 303	Practical ( LAB - I)	40	60	2
		IV	Bot. 304	Mushroom Culture Technology (SEC)	40	60	2
	IV	I	Bot. 401	Plant Embryology	40	60	2
		II	Bot. 402	Plant Metabolism	40	60	2
		III	Bot. 403	Practical ( LAB - I)	40	60	2
		IV	Bot. 404	Nursery and Gardening (SEC)	40	60	2





**PAPER – IV**  
**SKILL ENHANCEMENT COURSE (SEC)**  
**BOT. 304: MUSHROOM CULTURE TECHNOLOGY**

**Lectures: 30**

**AIMS AND OBJECTIVES**

1. To learn the history, scope and importance of mushroom technology
2. To understand nutritional and medicinal values of edible mushrooms
3. To know about the storage, marketing and various food preparations of mushrooms.
4. To understand the economics of mushroom cultivation.

**Unit 1: Introduction**

**05 L**

- 1.1: Scope and importance.
- 1.2: Nutritional and medicinal value of edible mushrooms.
- 1.3: Edible and non-edible mushrooms.
- 1.4: Morphology and distinguishing characteristics of following mushrooms:
  - a. Button (*Agaricus bisporus*)
  - b. Oyster (*Lentinus sajor-caju*, Syn. *Pleurotus sajor-caju*)
  - c. Paddy straw (*Volvariella volvacea*)

**Unit 2: Cultivation Technology**

**15 L**

- 2.1: Mushroom farm layout and requirements
- 2.2. Materials for compost preparation, Different formulations, Selection of composting materials, Commonly used formulations, Synthetic compost and its advantages,
- 2.3: Spore culture and preparation of spawn.
- 2.4: Casing and its Importance, Quality parameters of casing mixture and commonly used materials for casing.
- 2.5: Cultivation procedure of: a. *Agaricus bisporus* b. *Pleurotus sajor-caju*.

**Unit 3: Storage**

**04 L**

- 3.1: Short-term storage (Refrigeration - upto 24 hours)
- 3.2: Long term storage (canning, pickling). Drying, storage in salt solutions.
- 3.3: Marketing



**PAPER – IV**  
**SKILL ENHANCEMENT COURSE (SEC)**  
**BOT.404: NURSERY AND GARDENING**

**Lectures: 30**

**AIMS AND OBJECTIVES**

1. To know the concept of nursery and Gardening.
2. To improve the skills for growing fresh and safe vegetables.
3. To create awareness about home gardening.
4. To develop different skills regarding the gardening operations among the students

**Unit 1. Nursery**

**04 L**

Definition, objectives and scope, building up of infrastructure for nursery, planning and seasonal activities. Planting :direct seedling and transplant.

**Unit 2. Seed structures and types**

**04 L**

Seed dormancy, causes and methods of breaking dormancy, Seed storage: Seed banks, factors affecting seed viability and genetic erosions.

**Unit 3. Vegetative propagation**

**05 L**

Cutting and Air-layering: selection, techniques of cutting, rooting medium, planting and hardening of plants in green house or glass house.

Harvesting, Packing, Storage and Marketing of Nursery stock.

**Unit 4. Gardening**

**07 L**

Definition, objectives and scope,. Different types of gardening: Landscape, home gardening and park, and its Components, suitable plants, soil, manuring and watering.

**Unit 5. Indoor Gardening**

**04 L**

Definition, characters of indoor plants, containers, selection of indoor plants, Potting media, watering tips.

Botanical name, cultivation practices, Ornamental value, maintenance and care of Cycads and Pothos (Two examples each)



**KAVAYITRI BAHINABAI CHAUDHARI NORTH  
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**Faculty of Science and Technology**



**SYLLABUS FOR CORE AND SKILL ENHANCEMENT  
COURSES IN BOTANY**

**As Per U. G. C. Guidelines**

**Based on**

**Choice Based Credit System (CBCS)**

**T. Y. B. Sc. BOTANY SEMESTER - WISE SYLLABUS**

**(Theory and Practicals)**

**To Be Implemented From  
Academic Year 2020 - 2021**





**KAVAYITRI BAHINABAI CHAUDHARI NORTH MAHARASHTRA  
UNIVERSITY, JALGAON**

**Faculty of Science and Technology**

**SYLLABUS FOR CORE AND SKILL ENHANCEMENT COUESES IN  
BOTANY**

**As Per U. G. C. Guidelines**

**Based on**

**Choice Based Credit System (CBCS)**

**T. Y. B. Sc. BOTANY SEMESTER - WISE SYLLABUS  
(Theory and Practicals)**

**SEMESTER - V**

**DISCIPLINE SPECIFIC COURSES**

**Bot. 501: Lower Cryptogams**

**Bot. 502: Morphology and Systematics of Angiosperms**

**Bot. 503: Cell biology and Genetics**

**Bot. 504: Plant Physiology and Biochemistry**

**SKILL ENHANCEMENT COURSE**

**Bot. 505: Biofertilizers**

**ELECTIVE COURSES**

**Bot. 506A: Analytical Techniques in Plant Sciences**

**Bot. 506B: Horticulture**

**PRACTICAL COURSES**

**Bot. 507: Practical - I: Based on BOT. 501 & BOT. 505**

**Bot. 508: Practical - II: Based on BOT. 502 & BOT. 506 A & BOT. 506B**

**Bot. 509: Practical - III: Based on BOT. 503 & BOT. 504**

**W. E. F. JUNE. 2020**



## SEMESTER - V

Discipline	Core Course Type	Course Code	Course Title	Credits	Total Hrs./ Week	Total Teaching Hrs.	Total Mark (100)	
							CA	UA
Discipline Specific Course (DSC)	Paper - I	BOT.501	Lower Cryptogams	3	3	45	40	60
	Paper - II	BOT.502	Morphology and Systematics of Angiosperms	3	3	45	40	60
	Paper -III	BOT.503	Cell Biology and Genetics	3	3	45	40	60
	Paper -IV	BOT.504	Plant Physiology and Biochemistry	3	3	45	40	60
DSC Skill Enhancement Course	Paper - V	BOT.505	Biofertilizer	3	3	45	40	60
DSC Elective Course (Any one)	Paper -VI	BOT.506 A	Analytical Techniques in Plant Sciences	3	3	45	40	60
		BOT.506 B	Horticulture	3	3	45	40	60
DSC Core Practicals	Practical I	BOT.507	Practicals Based on BOT.501 and BOT.505	4	4/Batch	60	40	60
	Practical II	BOT.508	Practicals Based on BOT.502 and BOT.506A or Bot.506B	4	4/Batch	60	40	60
	Practical III	BOT.509	Practicals Based on BOT.503 and BOT.504	4	4/Batch	60	40	60
Non-Credit Audit Course (Any One)	Paper-VII	AC-510	NSS	No Credit	2	30	100	--
		AC-511	NCC					
		AC-512	Sports					

DISCIPLINE SPECIFIC COURSE (DSC)

SEMESTER - V

PAPER - IV

**BOT. 504: PLANT PHYSIOLOGY AND BIOCHEMISTRY (Lectures: 45)**



**AIMS AND OBJECTIVES:**

1. To study the growth pattern of plant
2. To know the phenomenon of photoperiodism and effect of phytochrome on flowering
3. To study the vernalization process
4. To know the path of translocation
5. To study the biomolecules in plants
6. To study secondary metabolites and their role in plants

**Plant Physiology**

**(09 Lectures)**

**Unit 1: Plant growth and Movement**

1.1. Plant growth: Introduction and Definition

1.2. Phases of growth

1.3. Growth curve

1.4. Factors affecting growth

1.5. Plant movement: Introduction and Definition

1.6. Types of plant movement: i) Tropic      ii) Tactic      iii) Nastic

**(09 Lectures)**

**Unit 2: Physiology of flowering**

2.1. Photoperiodism:

a) Introduction, Definition

b) Classification of plants: SDP, LDP, DNP

c) Photoperiodic induction

d) Phytochrome and role of phytochrome in flowering

2.2. Vernalisation:

a) Introduction and Definition

b) Mechanism of vernalization, hypothesis of phasic development and hypothesis of hormonal involvement

c) Devernalization

**(09 Lectures)**

**Unit 3: Translocation of organic solutes**

3.1. Definition

3.2. Path of translocation

3.3. Evidences for phloem transport

3.4. Mechanism of translocation: Pressure flow theory, Diffusion

3.5. Source to sink relationship

3.5. Phloem loading and unloading

3.6. Factors affecting phloem translocation i) External: temperature, light

ii) Internal: Hormonal and metabolic inhibition



## Biochemistry

### Unit 4: Biomolecules

(09 Lectures)

- 4.1. Introduction
- 4.2. Carbohydrates: Introduction, definition, classification, properties and functions of carbohydrates
- 4.3. Amino acids and proteins: Introduction, definition, properties of amino acids. Role of amino acids in plants. Classification of proteins (Primary and secondary proteins), properties and functions of proteins
- 4.4. Lipids: Introduction, definition, classification, properties and functions of lipids

### Unit 5: Secondary Metabolites

(09 Lectures)

- 5.1. Introduction, Definition
- 5.2. Distribution of Secondary metabolites
- 5.2. Brief account of sec. metabolites w. r. t. occurrence in plants, and function of a) alkaloids, b) flavonoids c) Terpenes.
- 5.6. Role of Secondary metabolites in plants

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2. Buchanan B. B., Gruissem, W. and Jones, R. L. (2000). Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists Maryland, U.S.A.
3. Dennis, D. T., Turpin, D. H., Lefebvre D. D. and Layzell D. B. (eds) (1997). Plant Metabolism, 2<sup>nd</sup> Ed. Longman, Essex, England.
4. Galstone, A. W. (1989). Life processes in Plants. Scientific American Library, Springer Verlag, New York, U.S.A.
5. Leninger, A. C. (1987). Principles of Biochemistry. CBS Publishers and Distributers (Indian Reprint)
6. Lincoln, Taiz and Eduardo, Zeiger (2003). Plant Physiology, 3<sup>rd</sup> Ed. Published by Panima Publishing Corporation
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9. Pandey, S. N. and Sinha, B. K. (2014). Plant Physiology. Vikas Publishing House Pvt. Ltd. India.
10. Salisbury, F. B. and Ross, C. W. (1992). Plant physiology, 4<sup>th</sup> Ed. Wadsworth Publishing Company, California, U.S.A.
11. Taiz, L. and Zeiger, E. (1998). Plant Physiology, 2<sup>nd</sup> Ed. Sinauer Associates, Inc. Publishes, Massachusetts, USA.



DSC SKILL ENHANCEMENT COURSE  
SEMESTER - V  
PAPER - V

**BOT. 505: BIOFERTILIZERS**

(Lectures: 45)



**AIMS AND OBJECTIVES:**

1. To introduce application of Biofertilizer technology in Agriculture
2. To familiarize students with microbes used as biofertilizers
3. To demonstrate the low cost media preparation and cultural practices in biofertilizers
4. To aware the students about benefits of applications of biofertilizers
5. To create self employment opportunities among the students

**Unit 1: Introduction**

(09 Lectures)

- 1.1. Introduction, Scope and importance of Biofertilizers
- 1.2. General account of the microbes used as Biofertilizers
- 1.3. Isolation of *Rhizobium*, Identification, Mass multiplication, Carrier based inoculants

**Unit 2: Bacterial Biofertilizers**

(09 Lectures)

- 2.1. *Azospirillum* isolation and mass multiplication, carrier based inoculants and associative effect of different organisms
- 2.2. *Azotobacter*, classification and characteristics
- 2.3. Crop response to *Azotobacter* inoculums, Mass multiplication of *Azotobacter*
- 2.4. Applications of *Azospirillum*

**Unit 3: Algal Biofertilizers**

(09 Lectures)

- 3.1. Cyanobacteria (Blue Green Algae): Isolation of *Anabaena* from *Azolla*, Mass Multiplication of *Anabaena*
- 3.2. *Azolla* - *Anabaena* relationship
- 3.3. Biological Nitrogen fixation
- 3.4. Blue Green algae in a rice cultivation.
- 3.5. Applications of BGA

**Unit 4: Fungal Biofertilizers**

(09 Lectures)

- 4.1. Introduction, Occurrence and Distribution of Mycorrhizal association.
- 4.2. Types of Mycorrhizal association, growth and yield - colonization of VAM - Vesicular Arbuscular Mycorrhiza
- 4.3. Mycorrhizal applications in agriculture

**Unit 5: Compost and Manure**

(09 Lectures)

- 5.1. Organic Farming, green manuring, organic manures and their uses
- 5.2. Recycling by composting method of biodegradable, municipal, agricultural and industrial wastes
- 5.3. Biocompost making methods, Types and methods of



DSC ELECTIVE COURSE  
SEMESTER - V

Paper - VI

**BOT. 506B: HORTICULTURE**

(Lectures: 45)



**AIMS AND OBJECTIVES:**

1. To know horticulture, its scope, disciplines and importance
2. To understand different horticultural practices and their methods
3. To study importance, principles and types of Bahar treatment
4. To study role played by green and poly houses in horticulture
5. To understand methods of preservations and preparations of preserved products prevailing especially in this part of the state

**Unit: 1 Introduction**

(04 Lectures)

- 1.1. Definition, Scope and importance of Horticulture
- 1.2. Disciplines of Horticulture
  - i) Pomology
  - ii) Olericulture
  - iii) Floriculture
  - iv) Ornamental horticulture
  - v) Landscape horticulture
- 1.3. Nutritive value of Fruits and Vegetables

**Unit2: Propagation of Horticultural plants**

(10 Lectures)

- 2.1. Sexual Propagation: Advantages and Disadvantages
- 2.2. Asexual /Vegetative Propagation: Advantages and Disadvantages
- 2.3. Natural methods of vegetative propagation:  
Bulb, Corm, Tuber, Rhizome, Runner, Offset, Sucker
- 2.4. Artificial methods of vegetative propagation
  - A) Cutting:
    - a) Definition
    - b) Types of Cutting:
      - i) Stem cutting - Soft wood cutting and Hard wood Cutting
      - ii) Leaf Cutting
      - iii) Root Cutting
  - B) Layering:
    - a) Definition
    - b) Types of Layering:
      - i) Simple layering
      - ii) Compound layering
      - iii) Air layering/Gootee
  - C) Budding:
    - a) Definition
    - b) Types of Budding - i) Shield/T - Budding      ii) Patch Budding
  - D) Grafting:
    - a) Definition
    - b) Types of Grafting - i) Whip grafting      ii) Tongue grafting

**Unit3: Special Horticultural Practices**

(12 Lectures)





### 3.1. Training and pruning of Plants:

- Definition
- Objectives of Training and Pruning
- Advantages of Training and Pruning
- Difference between Training and Pruning
- Methods of Training: i) Central leader system ii) Open centre system  
iii) Modified leaders
- Methods of Pruning: i) Heading back ii) Thinning out

### 3.2. Bahar Treatment:

- Definition, Principles and Importance
- Types of Bahar: i) Ambe Bahar ii) Mrig Bahar  
iii) Hasta Bahar

### 3.3. Cultural practices:

- Definition
- Types of cultural practices: i) Ringing ii) Girdling  
iii) Notching iv) Bending

### **Unit 4: A) Fruits (Grapes) and vegetables (Tomato) production technology**

**(09 Lectures)**

- Introduction
- Soil and climate requirement
- Commercial varieties
- Pest and disease management
- Harvesting and post harvest management

#### **B) Polyhouse, Green house and Glass house technology with reference to Ornamental Horticulture, Scope and importance**

### **Unit5: Preservation of Fruits and Vegetables**

**(10 Lectures)**

#### 5.1. Introduction, scope and importance of fruits and vegetables preservation

#### 5.2. Methods of preservation:

##### a) Temporary preservation:

- Asepsis ii) Exclusion of moisture  
i. e. Drying of vegetables e. g. Potato, Cabbage, Onions,  
Bitter Gourd, Green Pea, Spinach
- Use of mild antiseptic iv) Pasteurization
- Low temperature

##### b) Permanent preservation:

- Sterilization and Processing: Use of sugar, salts, vinegar or preservation by food additives i. e. Chemical preservatives: citric acid. Potassium meta-bisulphite, sodium benzoate, Sulphur-dioxide
- Drying, Dehydration and concentration of fruits and vegetables
- Ionizing radiation

#### 5.3. Preparation of preserved products:

- Mix fruit Jam



## SEMESTER - VI

Discipline	Core Course Type	Course Code	Course Title	Credits	Total Hrs./ Week	Total Teaching Hrs.	Total Marks (100)	
							CA	UA
Discipline Specific Course (DSC)	Paper-I	BOT.601	Higher Cryptogams	3	3	45	40	60
	Paper-II	BOT.602	Gymnosperms and Paleobotany	3	3	45	40	60
	Paper-III	BOT.603	Molecular Biology	3	3	45	40	60
	Paper-IV	BOT.604	Economic Botany	3	3	45	40	60
DSC Skill Enhancement Course	Paper- V	BOT.605	Floriculture	3	3	45	40	60
DSC Elective Course (Any one)		BOT.606 A	Herbal Technology	3	3	45	40	60
	Paper-VI	BOT.606 B	Plant Breeding	3	3	45	40	60
DSC Core Practicals	Practical I	BOT.607	Practicals Based on BOT.601 and BOT.605	4	4 /Batch	60	40	60
	Practical II	BOT.608	Practicals Based on BOT.602 and BOT.606A/Bot.566B	4	4/Batch	60	40	60
	Practical III	BOT.609	Practicals Based on BOT.603 and BOT.604	4	4/Batch	60	40	60
Non-Credit Audit Course (Any One)	Paper-VII	AC-610	Soft Skill	No Credit	2	30	100	--
		AC-611	Yoga					
		AC-612	Practicing Cleanliness					



DISCIPLINE SPECIFIC COURSE (DSC)  
SEMESTER - VI  
PAPER - IV

**BOT. 604: ECONOMIC BOTANY**

(Lectures: 45)



**AIMS AND OBJECTIVES:**

1. To know useful bio resources of prime importance to mankind.
2. To acknowledge students about various groups of plants of the world as well of India.
3. To know botanical, chemical and nutritional values and value additions of food grains, legumes, sugars, vegetable, fruits, spices, etc.
- 3) To reveal new *vis-a-vis* forgotten food sources and their current practices.
- 4) To know the general account and uses of rubber, fiber and Timber.

**Unit 1: Introduction and Origin of Cultivated Plants**

(09 Lectures)

- 1.1. Scope and Importance
- 1.2. Green Evolution in Indian context
- 1.3. Concept of Centers of Origin, their importance with reference to Vavilov's work
- 1.4. Examples of major plant introductions
- 1.5. Crop domestication and loss of genetic diversity
- 1.6. Evolution of new crops/varieties,
- 1.7. Importance of germplasm diversity

**Unit 2: Cereals, Legumes and Millets, Sources of Sugars and Starches**

(09 Lectures)

- 2.1. Origin, morphology, processing and uses of Wheat and Rice
- 2.2. Origin, morphology and uses of Chick pea and Pigeon Pea
- 2.3. Origin, morphology, processing and uses of Pearl millet and Sorghum
- 2.4. Sources of Sugars, Morphology and processing of sugarcane
- 2.5. Products and byproducts of sugarcane industry
- 2.6. Morphology, propagation and uses of Potato

**Unit 3: Spices, Beverages and Drugs**

(09 Lectures)

- 3.1. Spices: Listing of important spices, their family and part used
- 3.2. Economic importance with special reference to clove and black pepper
- 3.3. Beverages: Morphology, processing and uses of Tea and Coffee
- 3.4. Drugs: Morphology, processing, uses and health hazards of *Cinchona* and *Papaver*

**Unit 4: Oils and Fats**

(09 Lectures)

- 4.1. General description, classification of oils
- 4.2. Extraction, their uses and health implications of groundnut and Soybean (Botanical name, family & uses)
- 4.3. Essential Oils: General account, extraction methods of *Eucalyptus* oil comparison with fatty oils and their uses

**Unit 5: Rubber, Fiber and Timber yielding plants**

(09 Lectures)

- 5.1. Para rubber: tapping, Industrial processing and uses





DSC SKILL ENHANCEMENT COURSE  
SEMESTER - VI  
PAPER - V

**BOT. 605: FLORICULTURE**

(Lectures: 45)

**AIMS AND OBJECTIVES:**

1. To know floriculture, its scope and importance.
2. To know the commercial floriculture.
3. To study the different features of garden.
4. To study methods of propagation.
5. To study diseases and pests of ornamental Plants.

**Unit 1: Introduction:**

(09 Lectures)

- 1.1. History of gardening
- 1.2. Importance and scope of floriculture
- 1.3. Landscape gardening
- 1.4. Some Famous gardens of India
- 1.5. Landscaping Places of Public Importance
  - a. Landscaping highways
  - b. Landscaping of Educational institutions

**Unit 2: Nursery Management and Routine Garden Operations:**

(09 Lectures)

- 2.1. Sexual and vegetative methods of propagation
- 2.2. Soil sterilization
- 2.3. Seed sowing: i) Pricking      ii) Planting and transplanting  
                            iii) Shading      iv) Stopping or pinching  
                            v) Defoliation    vi) Wintering  
                            vii) Mulching
- 2.4. Topiary
- 2.5. Role of plant growth regulators

**Unit 3: Study of Ornamental Plants w.r.t. list of plants, description and cultivation method of at least two examples of each:**

(09 Lectures)

- 3.1. Flowering annuals
- 3.2. Herbaceous perennials
- 3.3. Climbers
- 3.4. Shade and ornamental trees
- 3.5. Ornamental bulbous and foliage plants
- 3.6. Cacti and succulents
- 3.7. Palms and Cycads
- 3.8. Ferns and Selaginellas
- 3.9. Bonsai

**Unit 4: Principles of Garden Designs:**

(09 Lectures)

- 4.1. i) English      ii) Italian      iii) French  
      iv) Persian     v) Mughal     vi) Japanese gardens.
- 4.2. Features of a garden



- |                   |                        |                     |
|-------------------|------------------------|---------------------|
| i) Garden wall    | ii) Fencing            | iii) Path and roads |
| iv) Hedge         | v) Edging              | vi) Lawn            |
| vi) Flower beds   | vii) Shrubbery         | viii) Borders       |
| ix) Water garden. | x) Arches and Pergolas |                     |

**Unit 5: Commercial Floriculture:**

**(09Lectures)**

- 5.1. Factors affecting flower production
- 5.2. Production and packaging of cut flowers
- 5.3. Flower arrangements
- 5.4. Methods to prolong vase life
- 5.5. Cultivation of Important cut flowers
  - i) Carnation
  - ii) Aster
  - iii) Chrysanthemum
  - iv) Gerbera
  - v) Gladiolous
  - vi) Marigold
  - vii) Rose
  - viii) Lilium
- 5.6. Diseases and Pests of Ornamental Plants: Rose and Gladiolus

**REFERENCE BOOKS**

1. Arora J. S. (1998). Introductory Ornamental Horticulture. Kalyani Publishers Pvt. Ltd., W. Bengal.
2. Bhattacharjee S. K. (2004). Landscape gardening and design with plants. Pointer Publishers Pvt. Ltd., Jaipur.
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DSC ELECTIVE COURSE  
SEMESTER - VI  
PAPER - VI

**BOT. 606.A: HERBAL TECHNOLOGY**

(Lectures: 45)



**AIMS AND OBJECTIVES:**

1. To create optimum awareness and interest amongst the students about Medicinal Plants.
2. To conserve the biodiversity of Medicinal Plants in Maharashtra.
3. To strengthen the educational system and research on Medicinal Plants.
4. To increase students awareness about the efficacies of herbal drugs.
5. To develop awareness for utilization of herbal medicines for home remedies.

**Unit 1: Herbal medicines**

(06 Lectures)

- 1.1. History, scope and importance
- 1.2. Definition of herbal medicines
- 1.3. Role of medicinal plants in Siddha systems of medicine
- 1.4. Herbal foods : future of pharmacognosy

**Unit 2: Pharmacognosy**

(09 Lectures)

- 2.1 Systematic position and medicinal uses of the following herbs in curing various ailments -
  - i) Tulsi,
  - ii) Ginger,
  - iii) Fenugreek,
  - iv) Amla
  - v) Ashoka (*Saraca indica*)

**Unit 3: Herbal phytochemistry**

(10 Lectures)

- 3.1 Active principles and methods of their testing, identification and utilization of the medicinal herbs -
  - i) *Catharanthus roseus* (cardiotonic)
  - ii) *Withania somnifera* (drugs acting on nervous system)
  - iii) *Clerodendron phlomoides* (antirheumatic)
  - iv) *Centella asiatica* (memory booster).

**Unit 4: Analytical pharmacognosy**

(10 Lectures)

- 4.1. Drug adulteration
- 4.2. Types and methods of drug evaluation
- 4.3. Biological testing of herbal drugs
- 4.4. Phytochemical screening tests for secondary metabolites
  - i) Alkaloids,
  - ii) Phenolic compounds

**Unit 5: Cultivation, harvesting, processing, storage, marketing and utilization of following medicinal plants**

(10 Lectures)

- 5.1. *Aloe vera*
- 5.2. *Mentha*



DSC ELECTIVE COURSE  
SEMESTER - VI  
PAPER - VI  
**BOT. 606.B: PLANT BREEDING**

(Lectures: 45)



**AIMS AND OBJECTIVES:**

1. To introduce the student with science of plant breeding
2. To introduce the student with branch of plant breeding for the survival of human being from starvation.
3. To study the techniques of production of new superior crop varieties.

**Unit 1: Plant breeding**

(08 Lectures)

- 1.1. Introduction, Scope and objectives
- 1.2. Breeding systems: Inbreeding and outbreedings
- 1.3. Modes of reproductions in crop plants,  
Self pollination, Cross pollination and Geitonogamy
- 1.4. Important achievements and undesirable consequences of  
Plant breeding

**Unit 2: Methods of Crop Improvements**

(14 Lectures)

- 2.1. Introduction
- 2.2. Centre of origin and domestication of crop plants
- 2.3. Plant genetic resources of wild relatives of domesticated crops
- 2.4. Procedure, advantages and limitations of
  - i) Plant introduction and Acclimatization
  - ii) Selection: Pure line selection, Mass selection and clonal selection
  - iii) Hybridization: Bulk method, Single cross and double cross methodInterspecific hybridization for improvement of clonal crops
- 2.7. Procedure, advantages and limitations

**Unit 3: Male Sterility**

(08 Lectures)

- 3.1. Genetic male sterility
- 3.2. Cytoplasmic male sterility
- 3.3. Genetic Cytoplasmic male sterility
- 3.4. Use of male sterility in hybrid seed production

**Unit 4: Inbreeding depression and heterosis**

(07 Lectures)

- 4.1. History
- 4.2. Genetic basis inbreeding depression and heterosis
- 4.3. Applications

**Unit 5: Crop improvement and breeding**

(08 Lectures)

- 5.1. Role of followings in crop improvement with suitable examples one from each
  - a) Mutation breeding
  - b) Polyploidy breeding
  - c) Distant hybridization
  - d) Genetically modified crops



**NORTH MAHARASHTRA UNIVERSITY,**

**JALGAON**

**SYLLABUS FOR**

**F.Y.B.Sc.**

**ZOOLOGY**

**(With effect from June 2015)**

North Maharashtra University, Jalgaon.

Syllabus (with effect from June 2015)

F.Y.B.Sc. (Zoology) Paper I- Semester I

**ZOO 112: Cell Biology**



Total Marks- 60

Total Periods- 45

Unit	Particulars	Lectures	Marks
1.	Introduction and scope of cell biology	04	06
	1.1 General structure of animal cell		
	1.2 Prokaryotic, eukaryotic cell and archaeo bacteria structure.		
2.	Structure and functions of Plasma membrane -Unit membrane- Daniellii- Davson and Singer-Nicolson model. Osmosis and Diffusion- Biological importance.	04	08
3.	Study of cell organelles w. r. t. structure and functions.	15	20
	3.1 Nucleus		
	3.2 Mitochondria		
	3.3 Endoplasmic reticulum		
	3.4 Golgi complex		
	3.5 Ribosome		
	3.6 Lysosomes		
4.	4.1 Cell division - Mitosis, Meiosis	12	14
	4.2 Cell cycle - G1,S,G2,M phase		
5.	5.1 Cell aging	10	12
	5.2 Cell death		
	5.3 Biology of cancer – definition – virulent, malignant and benign tumor		
		45	60

**Reference Books**

- 1) Lodish et al: Molecular and Cell Biology (Scientific American Book)
- 2) De Roberties and De Roberties: Cell and Molecular Biology (Saunders College)
- 3) A C Giese: Cell Physiology
- 4) Prescott, DM: Reproduction in eukaryotic cells (Academic Press)
- 5) Wilson, EB: Cell in Development and Inheritance (MacMillan)
- 6) Edward Gasque: Manual of Laboratory Exp. in Cell Biology (W.C. Brown Publishers)
- 7) Stryer, L: Biochemistry (Freeman)
- 8) Conn et al: Outline of Biochemistry (Wiley)
- 9) Watson J. D. et al: Molecular Biology of Gene (Benzamin/ Cummings)



North Maharashtra University, Jalgaon.

Syllabus (with effect from June 2015)

F.Y. B. Sc. (Zoology) Paper II- Semester II

**ZOO 122: Applied Zoology I: (Goatary and Lac Culture)**

Total Marks- 60

Total Periods- 45

Unit	Particulars	Lectures	Marks
1.	<b>Goatary</b>		
1.1	Introduction and scope of Goatary.	01	02
1.2	Indian breeds, distribution and characteristics A) North – west and Central region. i. Jamunapari ii. Barbari iii. Beetal (Anritsari) iv. Surti v. Marwari vi. Mehsana vii. Jhakrana. B) South Peninsular region- i. Osmanabadi ii. Malbari iii. Sangamneri C) Eastern region - i. Bengal ii. Ganjam D) Northern – temperate region- i. Gaddi. ii. Chigu	10	12
1.3	Reproductive performance a. Reproductive system of Male and female goat; b. Feeding habits of goat; c. Nutrient requirement of goat; d. Feeding of pregnant goat f. Feeding of lactating goat; e. Feeding of kids	08	10
1.4	Handling of Goats a. Castration, its advantages; b. Dehorning; c. Care of feet ; d. Housing / Goat shelter; e. Care of kids.	06	10
1.5	Diseases and treatment - a. Mastitis; b. Foot rot; c. Brucellosis; d. Internal and External parasites; e. Bloat.	03	04
1.6	Economics of Goatary.	02	02
2.	<b>Lac culture</b>		
2.1	a) Introduction; b) Distribution and morphology of Lac insect; c) Life cycle of Lac insect; d) Host plants; e) Enemies of Lac	08	10
2.2	Cultivation of Lac - Inoculation period; Inoculation- Natural and Artificial; Swarming ; Harvesting period ; Harvesting of lac	03	04
2.3	a) Enemies of Lac cultivation; b) Composition and Properties of Lac; c) Lac industry in India; d) Economic importance	04	06
		45	60

**REFERENCES BOOKS ON ECONOMIC ZOOLOGY**

1. A textbook of Animal Husbandry – G. C. Banerjee. Oxford and IBH publishing Co. Pvt. Ltd. New Delhi.
2. Economic Zoology- Manju Yadav. Discovery publishing house, New Delhi
3. Applied Entomology- Manju Yadav. Discovery publishing house, New Delhi
4. Economic Zoology– Shukla and Upadhyay, Rastogi publication.
5. Economic Zoology vol. I & II - P. D. Srivastava and N. C. Pant. Commercial Publication Bureau, New Delhi.

## Practicals on ZOO 121: Chordate – I - Sem- II

Practical -1: Systematic position and external morphology of *Calotes versicolor*

Practical - 2 (with the help of models / charts / pictures / simulations) (D)

- a. Digestive system - Alimentary canal.
- b. Respiratory system (Trachea and lung)
- c. Circulatory system – Arterial and venous
- d. Nervous system- Brain (Dorsal and ventral view)
- e. Male urinogenital system
- f. Female reproductive system

Practical -3: Study on general topics-

- i. Body wall- *Calotes*- (D)
- ii. Scales- placoid and cycloid (E)
- iii. Fins- Homocercal and heterocercal (D)
- iv. Aerial adaption Pigeon (D)
- v. Dental formula Rat, Cat, Dog, Camel and Human (D)

Practical -4: Classification of chordate animals Super class- Pisces:

- a) Chondrichthys- Scoliodon/ Saw fish/ Ray fish (Any two)
- b) Osteichthys- Labeo/Catla/ Cyprinus/ Cirrhina (Any two)

Practical-5: Classification of Amphibians -

- i. Apoda- Ichthyophis, ii. Anura- Rana and Toad, iii. Urodela- Salamander.

Practical-6: Classification of Reptiles Wall lizard, Chelone, Cobra, Rat snake

Practical -7: Classification on Aves- Sparrow, Parrot, Crow, King fisher.

Practical-8: Classification on Mammals- Echidna, Rat, Bat, Kangaroo.

Practical-9: Compulsory visit to any ecosystem/ forest/ museum/ sea shore etc.

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## Practicals on ZOO 122: APPLIED ZOOLOGY – I - Sem- II

1. Identification of at least any four Indian Goatary breed with reference to their distribution and breed characteristics (D).
2. Diseases and treatment of Goats.
3. Observation of Lac insect life cycle (with adult Male and female) (D).
4. Scrapping of raw Lac from branches (D).
5. Isolation of seed lac from raw lac (Scrapped) (D).
6. Compulsory Visit to Goatary / Lac industry and submission of report.

### Achievements:

**Knowledge** – Fundamental of cell biology for animal tissue culture technique.

**Skill** – 1) Microscope handling & care.

**Applications**- 1) Importance and biology of various biological fields.

- 2) Pathology
- 3) Research in oncology
- 4) Pharmacological approach



NORTH MAHARSHTRA UNIVERSITY, JALGAON

Syllabus for FYBSc ZOOLOGY under CBCS Pattern

(wef June 2018)

Examination Pattern 60:40

Semester	Core Course	Structure	Code & Title of the paper	Credit
I	CC A-I	Theory	ZOO 101 Animal Diversity I	02
		Theory	ZOO 102 Animal Diversity II	02
		Practical	ZOO 103 Animal Diversity I & II	02
II	CC A-II	Theory	ZOO 201 Comparative Anatomy of Vertebrates	02
		Theory	ZOO 202 Developmental Biology of Vertebrates	02
		Practical	ZOO 203 Comparative Anatomy & Developmental Biology of Vertebrates	02
Total Credits Sem I & II= 12				

1 Credit = 15 Periods = 25 Marks





# FYBSc Zoology Semester I

## Core Course A-I

### ZOO 102 : ANIMAL DIVERSITY II

CREDITS 2



<b>Unit 1: Protochordates</b> General features and Phylogeny of Protochordata	3
<b>Unit 2: Agnatha</b> General features of Agnatha and classification of cyclostomes up to classes	3
<b>Unit 3: Pisces</b> General features and Classification up to orders: Osmoregulation in Fishes	4
<b>Unit 4: Amphibia</b> General features and Classification up to orders: Metamorphosis in frog, Parental care.	5
<b>Unit 5: Reptiles</b> General features and Classification up to orders: Extinct reptiles, Poisonous and non-poisonous snakes, Biting mechanism in snakes	5
<b>Unit 6: Aves</b> General features and Classification up to orders: Flight adaptations in birds	5
<b>Unit 7: Mammals</b> Classification up to orders: Origin of mammals	5

#### SUGGESTED READINGS

- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Kotpal R.L (2009): *Modern textbook of Zoology Vertebrates*, Rastogi Publication.
- Hall B.K. and Hallgrímsson B. (2008). *Strickberger's Evolution*, IV Edition. Jones and Bartlett Publishers Inc.
- Lal S.S. (1996): *Textbook of Practical Zoology Vertebrates*. Rastogi Publications

## FYBSc Zoology Semester II

### Core Course A-II

#### ZOO201: COMPARATIVE ANATOMY OF VERTEBRATES

CREDITS



<b>Unit 1: Integumentary System</b> Derivatives of integument w.r.t. glands and digital tips	4
<b>Unit 2: Skeletal System</b> Evolution of visceral arches	3
<b>Unit 3: Digestive System</b> Brief account of alimentary canal and digestive glands	4
<b>Unit 4: Respiratory System</b> Brief account of Gills, lungs, air sacs and swim bladder	5
<b>Unit 5: Circulatory System</b> Evolution of heart and aortic arches	4
<b>Unit 6: Urinogenital System</b> Succession of kidney, Evolution of urinogenital ducts	4
<b>Unit 7: Nervous System</b> Comparative account of brain	3
<b>Unit 8: Sense Organs</b> Types of receptors	3

#### SUGGESTED READINGS

- Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*, IV Edition, McGraw-Hill Higher Education.
- Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*, IX Edition, The McGraw-Hill Companies.
- Hilderbrand, M. and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
- Walter, H.E. and Sayles, L.P. *Biology of Vertebrates*, Khosla Publishing House.

## FYBSc Zoology Semester II

Core Course A-II

Practical: ZOO 203

### COMPARATIVE ANATOMY & DEVELOPMENTAL BIOLOGY OF VERTEBRATES



CREDITS 2

1. **Study of bones (Osteology):**
  - a) Disarticulated skeleton of fowl and rabbit
  - b) Carapace and plastron of turtle /tortoise
  - c) Mammalian skulls: One herbivorous and one carnivorous animal.
2. **Frog Embryology** - Study of developmental stages - whole mounts and sections through permanent slides – cleavage stages, blastula, gastrula, neurula, tail bud stage, tadpole external and internal gill stages.
3. **Study of the different types of placenta:** histological sections through permanent slides or photomicrographs.
4. **Examination of gametes** - frog/rat - sperm and ova through permanent slides or photomicrographs.



**NORTH MAHARASHTRA UNIVERSITY,  
JALGAON**



(NAAC Re-Accredited)  
"A" Grade

**FACULTY OF SCIENCE**

**SYLLABUS FOR**

**S.Y.B.Sc.  
(ZOOLOGY)**

**To Be Implemented From**

**Academic Year 2016-17**

**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc. Zoology Syllabus w.e.f. June 2016**  
**Sem – I Paper –I – ZOO 231: Non Chordates –II**



Unit	Topic	Period	Marks
<b>Animal Type Study: Asterias –A Sea star w.r.t. following</b>			
1	Introduction, Systematic Position Habit and Habitat (Ecology) External Characters - Shape, Size and Colour, Symmetry Oral Surface, Aboral Surface Pedicellariae – Straight and Cross type Body Wall, Endoskeleton, Coelom	6	6
2	Digestive System – Alimentary canal Food and Feeding Mechanism Digestion, Absorption and Egestion	6	6
3	Locomotion; Water Vascular or Ambulacral System Structure, Function and Significance.	5	5
4	Circulatory System – Haemal and Perahaemal System	3	3
5	Respiratory System	2	2
6	Excretion	1	1
7	Nervous System- A] Superficial or ectoneural nervous system B] Hyponeural nervous system C] Aboral or coelomic nervous system D] Visceral nervous system Sense organs- Neurosensory cells, Eyes	6	6
8	Reproductive System- Gonads Life History and Development- Fertilization, Embryogeny Structure of Dipleurula larva or Early bipinnaria, Bipinnaria larva and Brachiolaria larva Metamorphosis, Regeneration and Autotomy	7	7
<b>General Topics</b>			
9	i] <b>Mouth parts in Insects</b> a] Biting and Chewing type b] Piercing and Sucking type c] Siphoning type d] Chewing and Lapping type	6	6
10	ii] <b>Canal System in Sponges</b> a) Ascon type, b) Sycon type, c) Leucon type and d) Rhagon type	6	6
11	iii] <b>Locomotion in Protozoa</b> Locomotory organelles- Pseudopodia, Flagella & Cilia Amoeboid movement, Flagellar movement, Ciliary movement	6	6
12	iv] <b>Foot in Mollusca</b> Amphineura, Scaphopoda, Gastropoda, Pelecypoda and Cephalopoda	6	6
<b>Total</b>		<b>60</b>	<b>60</b>



**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc. Zoology Syllabus w.e.f. June 2016**  
**Sem - I Paper -II - ZOO 232: Medical Zoology**

Units	Topic	Periods	Marks
1	Introduction, Scope and branches of Medical Zoology: Medical Protozoology, Medical helminthology, Medical Entomology, Forensic Entomology.	3	3
2	<b>Parasites and Host</b> 2.1 Definition 2.2 Types of parasites 2.2.1 Ectoparasite 2.2.2 Endoparasite - Gut parasite, Haemoparasites, Tissue parasites and Lymph parasite 2.3 Types of host: Definitive, Intermediate, Paratenic or carrier, reservoir host and vectors. 2.4 Sources of infection: Soil, water, air, food, insect vectors, domestic and wild animals 2.5 Mode of Transmission: Oral, Skin, Vector	10	10
3	<b>Health and Diseases</b> Brief account of life cycle, mode of transmission pathogenicity, prevention and control w.r.t. Human 3.1 Viral diseases : Swine flu and Chikungunya 3.2 Bacterial diseases : Anthrax and tetanus 3.3 Protozoon diseases: Amoebiasis and Malaria 3.4 Helminthes diseases: Ascariasis and Taeniasis	12	12
4	<b>Major insect vectors of public health importance</b> 4.1 House fly, 4.2 Flea, 4.3 Bed bug, 4.4 Head louse	6	6
5	<b>Insect vectors of medical importance</b> 5.1 <i>Culex</i> - Filariasis 5.2 <i>Anopheles</i> - Malaria 5.3 <i>Aedes</i> - Dengue w.r.t. their distinguishing characters, mode of transmission of pathogen, sign and symptoms, prevention and control of diseases. 5.4 Biological and chemical control of mosquitoes	8	8
6	<b>Epidemic diseases</b> Source of infection, sign and symptoms, prevention and control of - 6.1 Typhoid and 6.2 Cholera	8	8
7	<b>Introduction and importance of medical diagnostics</b> 7.1 Hb estimation, 7.2 Cholesterol level, 7.3 Blood and Urine sugar level, 7.4 Sonography, 7.5 Angiography, 7.6 CT scan, 7.7 M.R. I.	8	8
8	<b>Forensic Entomology</b> 8.1 Introduction and importance 8.2 Post mortem changes 8.3 Role of Insects	5	5
<b>Total</b>		<b>60</b>	<b>60</b>



**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc. Zoology Syllabus w.e.f. June 2016**  
**Sem - I Paper -I - ZOO 241: Chordates-II**



Units	Topic	Periods	Marks
<b>Animal Type: <i>Columba livia domestica</i></b>			
1	I) Introduction: <i>Columba livia</i> II) a) Systematic position, b) Habits and Habitat; c) distribution.	2	2
2	External Morphology: a) Shape & Size; b) Colouration; c) Body division- Head, Neck, Trunk and Tail d) Skin: Histology of skin.	4	4
3	Exoskeleton: a) claws and Beak; b) Feathers-Structure of a Typical feather and Types	4	4
4	<b>Internal Anatomy:</b> A) Digestive system: i) Alimentary canal and Digestive glands; ii) Food, Feeding and digestion	6	6
	B) Respiratory system: i) Respiratory tract ii) Respiratory organs: Lungs and Air sacs, functions of air sacs.	6	6
	C) Circulatory system: i) Heart: External and Internal structure; ii) Working of heart; iii) Arterial system; iv) Venous system; vi) Blood, v) Mechanism of blood circulation (double circulation)	6	6
	D) Nervous system: i) Central nervous system : Brain (Dorsal & ventral view), ventricles of brain and Spinal cord; ii) Peripheral Nervous system: Cranial nerves (Mention only names, types, origin, insertion, function) iii) Autonomous nervous system; iv) Spinal nerves; v) Sense organ, Ear and Eye.	6	6
	E) Urinogenital system: i) Male urinogenital system; ii) Female Urinogenital system, iii) Significance of one ovary iv) Copulation.	6	6
	F) Economic Importance of <i>Columba livia domestica</i>	2	2
<b>General topics</b>			
5	1) Accessory respiratory organs in fishes: a) Air bladder, b) Air Chambers, c) Bucco-pharyngeal epithelium, d) Alimentary canal, e) Saccular organs, f) Labyrinthine organs, g) Arborescent organ, h) Branchial chamber. 2) Reptiles of Mesozoic era. 3) Adaptations in aquatic Mammals , Ex. Whale and Seal	18	18
<b>Total</b>		<b>60</b>	<b>60</b>



**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc. Zoology Syllabus w.e.f. June 2016**  
**Sem – I Paper –II – ZOO 242: Applied Zoology-II**

Units	Topic	Periods	Marks
1	<b>Introduction to apiculture</b> 1.1. Introduction and Scope 1.2. History of bee keeping- a) Bee keeping in India b) Bee keeping in Maharashtra	2	2
2	<b>Systematic Position of bee species</b> 2.1. Classification of honey bee 2.2. Habit and habitat 2.3. Honey bee species and their distribution- a) <i>Apis dorsata</i> , b) <i>Apis florea</i> , c) <i>Apis cerana indica</i> , d) <i>Apis mellifera</i> , e) Dammer bees f) Wild bees	3	3
3	<b>Morphology of worker bee</b> 3.1. Head – Eyes, antennae, mouth parts and salivary gland 3.2. Thorax – Legs and wings 3.3. Abdomen- sting apparatus and Wax gland	8	8
4	<b>Anatomy of bee</b> 4.1. Digestive system 4.2. Circulatory system 4.3. Respiratory system 4.4. Nervous system 4.5. Reproductive system – a) Reproductive organs of male (Drone) bee, b) Reproductive organs of female (Queen) bee.	12	12
5	<b>Colony organization and life cycle</b> 5.1. Colony organization and polymorphism – a) the queen b) the drone and c) the worker (division of labour) 5.2. Life cycle of honey bee- a) nuptial flight b) metamorphosis and caste determination	6	6
6	<b>Bee behavior and communications</b> 6.1. Nesting behavior and nest architecture 6.2. Communication in bees- a) Round dance b) Wagtail dance c) Cleaning dance d) DVAV (Joy dance) e) Massage dance f) Alarm dance	6	6
7	<b>Bee keeping equipments and apiary management</b> 7.1. Introduction 7.2. Bee hive (box)- a) Langstroth hive b) Newton hive c) I.S. I. (A and B) type hive 7.3. Bee keeping equipments – a) the bee veil b) the smoker c) the hive tool d) Gloves e) queen cage f) Comb foundation sheet g) the queen excluder h) wire entrance guard i) the queen cell protector j) dummy board k) the feeder l) the uncapping knife m) the honey extractor n) the bee brush o) Overall p) ant barrier q) the honey tank r) the drone trap. 7.4. Procurement and hiving of colonies. 7.5. Routine management – a) Cleaning, b) feeding and c) watering	10	10



5. Bee-Keeping and Man. T. B. Nikam and B. M. Deoray., Nirali Prakashan, Pune.
6. Applied Entomology. Manju Yadav., Discovery publishing house, New Delhi.
7. A text book of Applied Entomology, Vol. II, K. P. Srivastava., Kalyani Publishers, Ludhiana, New Delhi, Hyderabad, Chennai, Culeutta.
8. Economic Zoology, 4<sup>th</sup> Edition, Dr. G. S. Shukla and Dr. V. B. Upadhyay., Rastogi Publication, Meerut.
9. Honey: The most nutritious food. Dr. O. P. Chaudhari, Central Bee Research and Training Institute, Pune.

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Sl. No.	Name of the Candidate	Roll No.	Grade	Percentage
1	P. Chaudhary	101	B	65.00
2	H. Chaudhary	102	B	65.00
3	H. Chaudhary	103	B	65.00
4	H. Chaudhary	104	B	65.00
5	H. Chaudhary	105	B	65.00
6	H. Chaudhary	106	B	65.00
7	H. Chaudhary	107	B	65.00
8	H. Chaudhary	108	B	65.00
9	H. Chaudhary	109	B	65.00
10	H. Chaudhary	110	B	65.00





North Maharashtra University, Jalgaon  
S. Y. B. Sc. Zoology Syllabus w.e.f. June 2016  
Sem - I Paper -II - ZOO 243; PRACTICAL

ZOO 243 Practicals corresponding to ZOO 241

To study the following with the help of charts/ models/ diagrams/ specimens:

- External characters of *Columba livia* and Study of exoskeleton: a) Claws and Beak; b) Study of a structure of typical feather (paste a feather in journal of any bird) & Types (D).
- Study of internal anatomy
  - Digestive system of *Columba livia* (D)
  - Respiratory system of *Columba livia* (D)
  - Arterial system of *Columba livia* (D)
  - Venous system of *Columba livia* (D)
- Study of internal anatomy
  - Nervous system: Brain (Dorsal and Ventral view) *Columba livia* (D)
  - Excretory system of *Columba livia* (D)
  - Male reproductive system of *Columba livia* (D)
  - Female reproductive system of *Columba livia* (D)
- Temporary mountings of scales: Placoid and Ctenoid scales (E).
- Study of Fins : Scoliodon and Anabas (E)
- Study of dinosaurs *Brontosaurus*, *Tyranosaurus*, *Stegosaurus*, *Triceratops*, *Pteranodon*. (D)
- Adaptations in aquatic Mammals. Ex. Whale and Seal (D).

ZOO 243 - Practicals corresponding to ZOO 242

- Study of systematic position and external morphology of honey bee (D)
- Study of *Apis* species of honey bee and Study of life cycle of honey bee. (D)
- Temporary mountings of pollen basket, sting apparatus and mouth parts. (E)
- Study of architecture of honey comb and Study of bee box (Langstroth hive) (D)
- Study of diseases, pests, parasites and predators of honey bee (D)
- Study of bee keeping equipments and their uses (D)
- Study of honey bee products and their uses (D)
- Study of honey adulteration detection test (E)
- Compulsory visit to an apiary

**Kavayitri Bahinabai Chaudhari**

**NORTH MAHARASHTRA UNIVERSITY**

**JALGAON 425001, INDIA**



**SYLLABUS UNDER**

**FACULTY OF SCIENCE & TECHNOLOGY**

**UNDER CBCS**

**FOR COURSES RELATED TO SUBJECT**

**ZOOLOGY**

**S.Y.B.Sc. (Semester I and II)**

**WITH EFFECT FROM**

**ACADEMIC YEAR 2019-2020**



CORE COURSE III



SYBSc Zoology Semester III

ZOO 301 PHYSIOLOGY

**THEORY**

(CREDITS 2)

**Unit 1: Nerve and muscle**

(5)

Structure of a neuron, Resting membrane potential, Graded potential, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres. Ultra-structure of skeletal muscle. Molecular and chemical basis of muscle contraction

**Unit 2: Digestion**

(3)

Physiology of digestion in the alimentary canal: Absorption of carbohydrates, proteins, lipids

**Unit 3: Respiration**

(5)

Pulmonary ventilation, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood

**Unit 4: Excretion**

(4)

Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism

**Unit 5: Cardiovascular system**

(5)

Composition of blood, Hemostasis, Structure of Heart, Origin and conduction of the cardiac impulse, Cardiac cycle

**Unit 6: Reproduction and Endocrine Glands**

(8)

Physiology of male reproduction: hormonal control of spermatogenesis; Physiology of female reproduction: hormonal control of menstrual cycle, Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal

ZOO 302 BIOCHEMISTRY

**THEORY**

(CREDITS 2)

**Unit 1: Carbohydrate Metabolism**

(8)

Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism, Review of electron transport chain

**Unit 2: Lipid Metabolism**

(6)

Biosynthesis and  $\beta$  oxidation of palmitic acid, Lipogenesis, Lipolysis

**Unit 3: Protein metabolism**

(8)

Biosynthesis of amino acid, Transamination, Deamination, Decarboxylation and Urea Cycle

**Unit 4: Enzymes**

(8)

Introduction, Classification of Enzymes, Mechanism of action, Enzyme Kinetics, Factors affecting rate of enzyme mediated reactions, Inhibition and Regulation



## Skill Enhancement Course I (Section I)



### SEC I

### Apiculture

#### **Unit 1: Biology of Bees**

(4)

History, Classification and Biology of Honey Bees, Social Organization of Bee Colony

#### **Unit 2: Rearing of Bees**

(12)

Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth Bee Pasturage Selection of Bee Species for Apiculture, Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern)

#### **Unit 3: Diseases and Enemies**

(5)

Bee Diseases and Enemies Control and Preventive measures

#### **Unit 4: Bee Economy**

(4)

Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis, Pollen, etc)

#### **Unit 5: Entrepreneurship in Apiculture**

(5)

Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens

### **SUGGESTED READINGS**

- Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
- Bisht D.S., Apiculture, ICAR Publication.
- Singh S., Beekeeping in India, Indian council of Agricultural Research, NewDelhi.

## ZOO 403 GENETICS AND EVOLUTIONARY BIOLOGY

### PRACTICAL

(CREDITS 2)



1. Study of Mendelian Inheritance and gene interactions (Non Mendelian Inheritance) using suitable examples. Verify the results using Chi-square test.
2. Study of Linkage, recombination, gene mapping using the data.
3. Study of Human Karyotypes (normal and abnormal).
4. Study of fossil evidences from plaster cast models and pictures
5. Study of homology and analogy from suitable specimens/ pictures
6. Study of Picture/Charts with reference to:
  - a) Phylogeny of horse with diagrams/ cut outs of limbs and teeth of horse ancestors
  - b) Darwin's Finches with diagrams/ cut outs of beaks of different species
7. Visit to Natural History Museum and submission of report

### SUGGESTED READINGS

- Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). *Principles of Genetics*. VIII Edition. Wiley India.
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- Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates

## Skill Enhancement Course II ( Section II)

### SEC II

### Medical Diagnostics

#### **THEORY**

Credit 2

Unit 1: **Introduction to Medical Diagnostics and its Importance**

(2)

Unit 2: **Diagnostics Methods Used for Analysis of Blood**

(10)

Blood composition, Preparation of blood smear and Differential Leucocyte Count (D.L.C) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.)

Unit 3: **Diagnostic Methods Used for Urine Analysis**

(6)

Urine Analysis: Physical characteristics, normal and abnormal constituents

Unit 4: **Non-infectious Diseases**

(6)

Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Testing of blood glucose using Glucometer/ diagnostic kit

Unit 5: **Infectious Diseases**

(3)

Causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis

Unit 6: **Tumours**

(3)

Types (Benign/Malignant), Detection and metastasis; Medical imaging: X-Ray of Bone fracture, PET, MRI and CT Scan (using photographs).

#### **SUGGESTED READINGS**

- Park, K. (2007), Preventive and Social Medicine, B.B. Publishers
- Godkar P.B. and Godkar D.P. Textbook of Medical Laboratory Technology
- Edition, Bhalani Publishing House Cheesbrough M., A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses
- Guyton A.C. and Hall J.E. Textbook of Medical Physiology, Saunders
- Robbins and Cortan, Pathologic Basis of Disease, VIII Edition, Saunders
- Prakash, G. (2012), Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd.





**SSPM's Rani Laxmibai Mahavidyalaya, Parola**  
**Tal: Parola Dist : Jalgaon (M.S.)**



**Department of Computer Science**

<b>Cross Cutting Issue</b>	<b>Class</b>	<b>Course / Paper Name</b>	<b>Unit Description</b>	<b>Activities</b>
Professional Ethics	B.Sc.	ASP. NET	Server Controls	Practical
Professional Ethics	B.Sc.	PHP & MySQL	HTML forms & MySql connectivity	Practical
Human Values	B.Sc.	ASP.NET	Website Design	Practical
Human Values	B.Sc.	JAVA	Introduction JAVA Database Connectivity	Practical
Human Values	B.Sc.	Cyber Security	Email Security, Web Security, Database Security	Lecture
Sustainability	B.Sc.	PHP & MySql	MySql database	Practical
Environment	B.Sc.	Cyber Security	Types of Attacks	Lecture

**SSPM's Rani Laxmibai Mahavidyalaya, Parola**  
**Tal: Parola Dist: Jalgaon (M.S.)**



**Department of chemistry**

Institutional integrated cross cutting issues relevant to professional ethics, Gender, Human values, Environment and sustainability in the curriculum

**Name of Department -Chemistry**

<b>Cross Cutting Issue</b>	<b>Class</b>	<b>Course / Paper name</b>	<b>Unit Description</b>	<b>Activities</b>
Water pollution prevention	B.Sc.	TOC	Green Chemistry	Water Solvent reaction
Prevention of soil erosion	B.Sc.	Org. Ind. Chemistry	Agrochemical	Avoid excess use
Saving of water	B.Sc.	COC Course Soil and water analysis	Water Sources	Advantage of irrigation system
Fertilizer Analysis	B.Sc.	STC Course	Elemental	N. P. and K. Analysis of fertilizer
Water Analysis	B.Sc.	Practical Course	Hardness of water	Hardness calculations
Industrial Pollution	B.Sc.	Industrial Chemistry	Sugar Industry and Soap and detergent	Sugar and Soap impact on body
Soil Micro Analysis	B.Sc.	Inorganic Chemistry	Bio Inorganic Chemistry	Analysis of soil nutrient

**Head**

**Dept. of Chemistry**  
**Rani Laxmibai Mahavidyalaya**  
**Parola, Tal. Parola Dist. Jalgaon**





॥ अंतरी पेटवू ज्ञानज्योत ॥

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

अभ्यास मंडळ विभाग

जा.क्र. : उमावि/२१/Environmental Studies/६२७/२०१८

दिनांक :- २२/११/२०१८



प्रति,

क.ब.चौ.उमाविशी संलग्न सर्व महाविद्यालयांचे मा.प्रचार्य  
व मान्यता प्राप्त परिसंस्थांचे मा. संचालक आणि  
मा.विभाग प्रमुख विद्यापीठ शैक्षणिक प्रशाळा / विभाग यांना...

विषय :- Environmental Studies या विषयाचे अभ्यासक्रमा संदर्भात.

महोदय / महोदया,

उपरोक्त विषयास अनुसरून आपणांस कळविण्यात येते की, मा.सर्वाच्च न्यायालयाचे निर्णयानुसार पर्यावरण संतुलन राखण्यासाठी प्रथम वर्षास प्रवेशित विद्यार्थ्यांसाठी सहा महिन्यांचा पर्यावरणशास्त्र विषयाचा अभ्यासक्रम जून, २००४ पासून सर्व विद्याशाखांमध्ये समाविष्ट करण्यात आलेला आहे.

शैक्षणिक वर्ष २०१८-१९ पासून प्रथम वर्ष कला विज्ञान व वाणिज्य वर्गांना Choice Based Credit System लागू करण्यात आलेली असल्याने Environmental Studies या विषयाचा अभ्यासक्रम Ability Enhancement Course अंतर्गत Choice Based Credit System प्रमाणे तयार करणांसाठी नियुक्त समितीच्या सभेत Environmental Studies विषयाच्या गुणांची विभागणी (Marks Pattern) देखील ६०:४० प्रमाणे करण्यात यावी, व गुणांकन (Marks Pattern) पुढील प्रमाणे करण्यात यावे, असे ठरले आहे.

लेखी परीक्षा (Theory)	६० गुण
अंतर्गत (Internal) परीक्षा फिल्ड वर्क / व्हायवा	४० गुण
	एकूण १०० गुण

अंतर्गत ४० गुणांची विभागणी पुढील प्रमाणे करण्यात यावी.

उपस्थिती (Attendance)	०५ गुण
वर्तणूक (Behaviour)	०५ गुण
व्हायवा (Viva-voce)	१० गुण
फिल्ड वर्क (Report of field Work)	२० गुण
	४० गुण

त्या अनुषंगाने Environmental Studies या विषयाचा अभ्यासक्रम विद्यापीठ अनुदान आयोगाने दिलेला असून तो जसाच तसा लागू करण्यात आलेला असल्याने अभ्यासक्रमात बदल न करता अभ्यासक्रम तोच ठेवण्यात आला आहे. सदरचा अभ्यासक्रम उमाविच्या संकेत स्थळावर अपलोड करण्यात आला आहे. तरी वरील आशय सर्व संबंधित प्राध्यापक व विद्यार्थी यांचे निदर्शनास आणून देवून पुढील योग्य ती कार्यवाही करून विद्यापीठास सहकार्य करावे, ही विनंती.

म.फळावे,

आपला विश्वासू,

(*Signature*)  
(**ए.सी.ममीर**)

उपकुलसचिव  
अभ्यास मंडळ विभाग

☎ : (९१) ०२५७-२२५७२९४, २९७

फॅक्स : (९१) ०२५७-२२५८४०६

वेबसाईट : [www.nmu.ac.in](http://www.nmu.ac.in)

ई-मेल : [acmanore@nmu.ac.in](mailto:acmanore@nmu.ac.in)



**Six Months Module Syllabus  
for  
Environmental Studies  
for  
Under Graduate Courses**



**UNIVERSITY GRANTS COMMISSION  
BAHADURSHAH ZAFAR MARG  
NEW DELHI- 110 002**

**2003**



CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES  
FOR UNDER GRADUATE COURSES OF ALL BRANCHES  
OF HIGHER EDUCATION



Vision

The importance of environmental science and environmental studies cannot be disputed. The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues. The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and World Summit on Sustainable Development at Johannesburg in 2002 have drawn the attention of people around the globe to the deteriorating condition of our environment. It is clear that no citizen of the earth can afford to be ignorant of environment issues. Environmental management has captured the attention of health care managers. Managing environmental hazards has become very important.

Human beings have been interested in ecology since the beginning of civilization. Even our ancient scriptures have emphasized about practices and values of environmental conservation. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices.

India is rich in biodiversity which provides various resources for people. It is also basis for biotechnology.

Only about 1.7 million living organisms have been described and named globally. Still many more remain to be identified and described. Attempts are made to





conserve them in ex-situ and in-situ situations. Intellectual property rights (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plants and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution have been found to be responsible for the loss of a large number of life-forms. It is feared that a large proportion of life on earth may get wiped out in the near future.

In spite of the deteriorating status of the environment, study of environment has so far not received adequate attention in our academic programmes. Recognizing this, the Hon'ble Supreme Court directed the UGC to introduce a basic course on environment at every level in college education. Accordingly, the matter was considered by UGC and it was decided that a six months compulsory core module course in environmental studies may be prepared and compulsorily implemented in all the University/Colleges of India.

The experts committee appointed by the UGC has looked into all the pertinent questions, issues and other relevant matters. This was followed by framing of the core module syllabus for environmental studies for undergraduate courses of all branches of Higher Education. We are deeply conscious that there are bound to be gaps between the ideal and real. Genuine endeavour is required to minimize the gaps by intellectual and material inputs. The success of this course will depend on the initiative and drive of the teachers and the receptive students.

## SYLLABUS

### **Unit I : Multidisciplinary nature of environmental studies**

Definition, scope and importance

(2 lectures)

Need for public awareness.





## Unit 2 : Natural Resources :

### Renewable and non-renewable resources :

Natural resources and associated problems.

- a) Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
  - b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
  - c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
  - d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
  - e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
  - f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
  - Equitable use of resources for sustainable lifestyles.

(8 lectures)

## Unit 3 : Ecosystems

- Concept of an ecosystem.





- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem :-
  - a. Forest ecosystem
  - b. Grassland ecosystem
  - c. Desert ecosystem
  - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

#### Unit 4 : Biodiversity and its conservation

- Introduction - Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation





- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

(8 lectures)

### Unit 5 : Environmental Pollution

#### Definition

- Cause, effects and control measures of :-
  - a. Air pollution
  - b. Water pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  - f. Thermal pollution
  - g. Nuclear hazards
- Solid waste Management : Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management : floods, earthquake, cyclone and landslides.

(8 lectures)





#### **Unit 6 : Social Issues and the Environment**

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

(7 lectures)

#### **Unit 7 : Human Population and the Environment**

- Population growth, variation among nations.
- Population explosion - Family Welfare Programme.





- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.

(6 lectures)

#### Unit 8 : Field work

- Visit to a local area to document environmental assets-  
river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5  
lecture hours)



SIX MONTHS COMPULSORY CORE MODULE COURSE IN  
ENVIRONMENTAL STUDIES : FOR UNDERGRADUATES



Teaching Methodologies

The core Module Syllabus for Environment Studies includes class room teaching and Field Work. The syllabus is divided into eight units covering 50 lectures. The first seven units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit eight is based on field activities which will be covered in five lecture hours and would provide student first hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environmental concerns. This moves out of the scope of the text book mode of teaching into the realm of real learning in the field, where the teacher merely acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Field studies are as essential as class work and form an irreplaceable synergistic tool in the entire learning process.

Course material provided by UGC for class room teaching and field activities be utilized.

The universities/colleges can also draw upon expertise of outside resource persons for teaching purpose.

Environmental Core Module shall be integrated into the teaching programmes of all undergraduate courses.

**Annual System :** The duration of the course will be 50 lectures. The exam will be conducted along with the Annual Examination.





**Semester System :** The Environment course of 50 lectures will be conducted in the second semester and the examination shall be conducted at the end of the second semester.

**Credit System :** The course will be awarded 4 credits.

**Exam Pattern :** In case of awarding the marks, the question paper should carry 100 marks. The structure of the question paper being :

Part-A, Short answer pattern	-	20 marks
Part-B, Essay type with inbuilt choice	-	40 marks
Part-C, Field Work	-	40 marks





## REFERENCE

- a) Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- b) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email:mapin@icenet.net (R)
- c) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- d) Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- e) Cunningham, W.P. Cooper, T.H, Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- f) De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- g) Down to Earth, Centre for Science and Environment (R)
- h) Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute Oxford Univ. Press. 473p
- i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- j) Heywood, V.H & Weston, R.T. 1995. Global Biodiversity Assessment, Cambridge Univ. Press 1140p.
- k) Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws, Himalaya Pub. House, Delhi 284 p.
- l) Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
- m) Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- n) Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- o) Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- p) Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- q) Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- r) Survey of the Environment, The Hindu (M)
- s) Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)





- i) Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- ii) Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- v) Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

(M) Magazine

(R) Reference

(TB) Textbook



### Mmbbers of the Expert Committee on Environmental Studies

1. Prof. Erach Bharucha  
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Institute of Environment Education &  
Research, Pune
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Department of Botany  
Osmania University  
Hyderabad
3. Prof. S. Thayumanavan  
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6. Dr. N. K. Jain  
Joint Secretary  
UGC, New Delhi







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Joint Secretary  
UGC, New Delhi



Outward No.

Date : / /20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

**3:- Vocational education and training degree program**  
(Addressed issues: - In certificate courses)





Outward No.

Date : / / 20




**1.3.1 : - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

**3.:- Vocational education and training degree program  
(Addressed issues: - In certificate courses.)**

Sr. No.	Name of the Certificate Course	Addressed Issue P. E., G., H.V. & E. S.
1	Soil & Water Analysis Training	Professional ethics, Human Value & Environmental Sustainability
2	High Performance Liquid Chromatography	Professional ethics & Human Value
3	Nursery Training and Plant Propagation	Professional ethics, Human Value & Environmental Sustainability
4	Basics of Computer	Professional ethics & Human Value

  
 IQAC Co-ordinator  
 Coordinator, IQAC  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Vice Principal  
 Rani Laxmibai Mahavidyalaya,  
 PAROLA Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal's  
**Rani Laxmibai Mahavidyalaya, Parola**  
Department of Chemistry

**Certificate Course in Soil and Water Analysis**

**Syllabus**

**Paper I (Theory)**

**Marks :20**

**Unit –I Study of Water (10)**

- Hydrosphere- Water resources.
- Properties of water- color, odor, turbidity, total salt content, total suspended water.
- Water pollution- Definition of water pollution, types of water pollutants, sources of water pollutants, trace element in water, water quality parameters and standards
- Purification of water- Treatment of domestic and industrial water.

**Unit –II Study of Soil (10)**

- The structure of earth, Elemental composition of earth crust, Definition of soil.
- Nature and classification of soil, important soil forming minerals, soil as eco system. soil fertility and productivity
- Properties of soil – Colour, temperature, pH, electrical conductance (EC), waterholding capacity, organic carbon, soil salinity, soil density.
- Soil erosion- Definition, Control of erosion, Soil conservation practices, Soil pollution causes and remedies.

**Paper II ( practical /work experience/ field work ) Marks :80**

- Collection of water samples (Field work)
- Determination of total hardness of water
- Determination of alkalinity of water
- Determination of pH of water
- Determination of conductivity of water
- Collection of soil samples from fields and study of soil sampling tools. (Field work)
- Soil sample preparation
- Determination of maximum water holding capacity of soil
- Determination of bulk density of soil
- Determination of pH of soil
- Determination of conductivity of soil

**References –**

- Laboratory Manual of Water and Wastewater Analysis, D.R. Khanna, R. Bhutiani, Daya Publishing House, Delhi, 2008
- Chemical and Biological Methods for Water Pollution Studies, R.K. Trivedy, P.K.Goel, Oriental Printing Press, Aligarh, 1986
- Practical Methods in Ecology and Environmental Science, R.K.Trivedy, P.K.Goel, C.L.Trishal, Environmental Publications,Karad (India) 1987
- Analytical Chemistry-Alka Gupta (PragatiPrakashan)
- Soil chemicals Analysis - P.R. Hesse
- Soil testing manual by department of agriculture and cooperation, India

**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





## Theory Syllabus of Certificate Course Nursery Training and Plant Propagation

Unit 1. Introduction	01 L
<ul style="list-style-type: none"> <li>• Definition, Objectives, Scope and Importance,</li> <li>• Building up of Infrastructure for Nursery,</li> <li>• Planning and Seasonal Activities.</li> </ul>	
Unit 2. Cultivation / Propagation of Nursery Plants: -	05 L
A) By seeds / Sexual Propagation	
i) Selection of Seeds	
ii) Pre-germination Treatment	
a) Seed dormancy, Causes and Methods of Breaking Dormancy	
b) Applications of Germicide, Insecticide, Pesticides, Fungicides etc.	
c) Seed Storage: Seed Banks, Factors Affecting Seed Viability	
iii) Maintain the Semi-shade condition	
iv) Preparation of Soil and Manures	
• Preparation of Soil Bads.	
• Filling of Polyethene Bags.	
• Sowing of Seeds	
• Watering Methods	
• Planting: Direct Seedling and Transplant.	
B. Vegetative Propagation	05 L
i) Cutting, ii) Air-layering, iii) Grafting, iv) Budding	
• Selection,	
• Techniques of cutting,	
• Rooting medium,	
• Planting and hardening of plants in green house or glass house.	
• Harvesting, Packing, Storage and Marketing of Nursery stock.	
Unit 3: Cultivation Practices of Fruits and Vegetables	04 L
• Introduction,	
• Study of Cultivation of	
• Some Fruits i.e., Mango, Papaya and	
• Vegetables: Brinjal and Tomato w.r.t.,	
i) Sowing	ii) Transplanting of Seedling
iii) Varieties	iv) Manuring and Irrigation
v) Control Measures of Pest and Diseases	vi) Harvesting
vii) Storage and Marketing	

Course  
Co-ordinator

Head  
Dept. of Botany  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

Principal  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist.



S. S. P. M's,



**Rani Laxmibai Mahavidyalaya, Parola**

**Certificate Course on Basics of Computer**

➤ **Objectives of the Course:**

- To give basic information about the computer system.
- To give knowledge about computer hardware and computer software.
- To familiarize students with the use of MS Windows, Internet and E-mail.
- To familiarize students with the use of MS Office-MS Word, MS Excel & MS PowerPoint.

➤ **Course Overview:**

Computer Proficiency is an inevitable part of every sector. The course is aiming to equip all the aspirants to have basic skills as well as hands on experience on word processing, for creating excel spreadsheets, for building databases and preparing presentations, through the use of Microsoft Office Word, Excel, and PowerPoint programmes.

**SYLLABUS**

**Module I:**

**05 L**

Introduction to Computer Fundamentals, Windows OS, Internet and Email Computer, Classification of computers, Parts of a computer, Operating System, Internet, Modem, Web browsers, E-mail, Establishing your e-mail account.

**Module II:**

**08 L**

Introduction to Microsoft Word Basic components of a Word window, Preparing a word document, editing a prepared document, Adjusting the margin settings, Additional formatting options, Header and Footer options, Border and Shading of page, drawing options, Inserting images, Mail merge options, saving a document, creating a new document, Inserting audio and video files.

**Module III:**

**08 L**

Introduction to Microsoft Excel Enter data in excel workbook, Formatting toolbar, Shortcut to fill a series, Mathematical functions, editing a data sheet, Format cell, Rename a sheet, Save, Open a workbook, arrange data in ascending or descending order, Insert new cell column or row, insert picture or clipart in excel sheet.




#### Module IV:

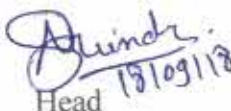
07 L

Introduction to Microsoft Power Point, how to create a new slide, how to apply animation to slides, Fill background with effects, how to apply sound to slides, how to save a presentation, Opening an existing presentation, insert new slides with different layout, Editing a slide, Inserting picture to a slide, Inserting media files to PowerPoint slides

#### Practical's of Certificate Course

1. Study of different parts of Computer System.
2. Use and searching contents in different Web Browsers.
3. Creating & sending E-Mails.
4. Preparing a word document, editing a prepared document, Adjusting the margin.
5. Inserting images, Audio & Video files, Mail merge options etc.
6. Introduction to Microsoft Excel, data entry in excel workbook
7. Formatting toolbars, Shortcut to fill a series, use of Mathematical functions etc.
8. Data entry in Excel workbook, formatting cells, Arranging data in order.
9. Inserting New Rows, Column's into workbook providing security to workbook.
10. Introduction to Microsoft Power Point. Creation of new slides etc.
11. Applying animation to slides, Fill background with effects etc.
12. Inserting picture to a slide, inserting media files to PowerPoint slides, Creating Presentations with effects.

  
Course  
Co-ordinator

  
Head  
Dept. of Computer Science

  
Vice Principal  
PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

Web : [www.ricollegeparola.org](http://www.ricollegeparola.org)  
Email : [principalrcparola@gmail.com](mailto:principalrcparola@gmail.com)

Outward No.

Date : / /20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

#### **4:- Credits Courses For U. C. Programs**





## 1.3.1 : - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 4.: - Credits Courses of U. G. Programs (Credit and Non-Credit Courses)

Sr. No.	Name of the Certificate Course	Credit and Non-Credit Courses	Addressed Issue P. E., G., H.V. & E. S.
1	Environmental Studies	Credit	Professional ethics, Human Value & Environmental Sustainability
2	Yoga	Non-Credit	Professional ethics & Human Value
3	N. S. S	Non-Credit	Professional ethics, Human Value & Environmental Sustainability
4	Sports	Non-Credit	Professional ethics & Human Value

  
 IQAC Coordinator  
 Coordinator, IQAC  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Vice Principal  
 Rani Laxmibai Mahavidyalaya,  
 PAROLA Dist. Jalgaon



॥ अंतरी पेटवु ज्ञानन्येत ॥

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

अभ्यास मंडळ विभाग

जा.क्र. : उमवि/२१/Environmental Studies/५२/२०१८



दिनांक:- २२/११/२०१८

प्रति,

क.ब.चौ.उमविशी संलग्न सर्व महाविद्यालयांचे मा.प्राचार्य  
व मान्यता प्राप्त परिसंस्थांचे मा. संचालक आणि  
मा.विभाग प्रमुख विद्यापीठ शैक्षणिक प्रशाळा / विभाग यांना...

**विषय :- Environmental Studies या विषयाचे अभ्यासक्रमा संदर्भात.**

महोदय / महोदया,

उपरोक्त विषयांस अनुसरून आपणांस कळविण्यात येते की, मा.सर्वांच्च न्यायालयाचे निर्णयानुसार पर्यावरण संतुलन राखण्यासाठी प्रथम वर्गास प्रवेशित विद्यार्थ्यांसाठी सहा महिन्यांचा पर्यावरणशास्त्र विषयाचा अभ्यासक्रम जून, २००४ पासून सर्व विद्याशाखांमध्ये समाविष्ट करण्यात आलेला आहे.

शैक्षणिक वर्ष २०१८-१९ पासून प्रथम वर्ष कला विज्ञान व वर्णन्य वगैरेना Choice Based Credit System लागू करण्यात आलेली असल्याने Environmental Studies या विषयाचा अभ्यासक्रम Ability Enhancement Course अंतर्गत Choice Based Credit System प्रमाणे तयार करणेसाठी नियुक्त समित्याच्या सभेत Environmental Studies विषयाच्या गुणांची विभागणी (Marks Pattern) देखील ६०:४० प्रमाणे करण्यात यावी, व गुणांकन (Marks Pattern) पुढील प्रमाणे करण्यात यावे, असे उरले आहे.

लेखी परीक्षा (Theory)

६० गुण

अंतर्गत (Internal) परीक्षा फिल्ड वर्क / व्हायवा

४० गुण

एकूण १०० गुण

अंतर्गत ४० गुणांची विभागणी पुढील प्रमाणे करण्यात यावी.

उपस्थिती (Attendance)	०५ गुण
वर्तणूक (Behaviour)	०५ गुण
व्हायवा (Viva-voce)	१० गुण
फिल्ड वर्क (Report of field Work)	२० गुण
	४० गुण

त्याअनुषंगाने Environmental Studies या विषयाचा अभ्यासक्रम विद्यापीठ अनुदान आयोगाने दिलेला असून तो जसाचे तसा लागू करण्यात आलेला असल्याने अभ्यासक्रमात बदल न करता अभ्यासक्रम तोच ठेवण्यात आला आहे. सदरचा अभ्यासक्रम उमविच्या संकेत स्थळावर अपलोड करण्यात आला आहे. तरी बरील आशय सर्व संबंधित प्राध्यापक व विद्यार्थी यांचे निदर्शनास आणून देवून पुढील योग्य ती कार्यवाही करून विद्यापीठास सहकार्य करावे, ही विनंती.

म.कळावे,

आपला विश्वास,

(ए.सी.पनीर)

उपकुलसचिव

अभ्यास मंडळ विभाग

☎ : (९१) ०२५७-२२५७२१४, २१७

फॅक्स : (९१) ०२५७-२२५८४०६

वेबसाईट : [www.nmu.ac.in](http://www.nmu.ac.in)

ई-मेल : [acmanore@nmu.ac.in](mailto:acmanore@nmu.ac.in)



॥ जलक कथं अभिव्यजत ॥

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव  
Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

अभ्यास मंडळ विभाग

क्र.सं. : उमांक/२१/Environmental Studies/१२७/२०१८

दिनांक :- २२/११/२०१८



प्रांत,  
क.व.स. उमांकशो सल्लम सर्व महाविद्यालयांचे मा. प्राचार्य  
व. जलगाव प्राणपारिस्थितीचे मा. संचालक कार्यालय  
मा. विभाग प्रमुख विद्यापीठ शैक्षणिक प्रशासक विभाग वाराणसी

**विषय :- Environmental Studies या विषयाचे अभ्यासक्रमाचे संदर्भित.**

**महोदय / महोदया,**

उपरोक्त विषयास अनुसरून आपणांस कळविण्यात येत की, मा.संवांचे न्यायालयाचे निर्णयानुसार पर्यावरण संतुलन राखण्यासाठी प्रथम वर्षास प्रवेशित विद्यार्थ्यांना सहा महिन्यांचा पर्यावरणशास्त्र विषयाचा अभ्यासक्रम जून, २००८ पासून सर्व विद्याशाखांमध्ये समाविष्ट करण्यात आलेला आहे.

शैक्षणिक वर्ष २०१८-१९ पासून प्रथम वर्ष कला विज्ञान व वाणिज्य वर्गांना Choice Based Credit System लागू करण्यात आलेली असल्याने Environmental Studies या विषयाचा अभ्यासक्रम Ability Enhancement Course अंतर्गत Choice Based Credit System प्रमाणे तयार करण्यासाठी नियुक्त सौमतीच्या सभेत Environmental Studies विषयाच्या गुणांची विभागणी (Marks Pattern) देखील ६०:४० प्रमाणे करण्यात आली. व गुणांकन (Marks Pattern) पुढील प्रमाणे करण्यात येत, असे ठरले आहे.

लेखी परीक्षा (Theory)	६० गुण
अंतर्गत (Internal) परीक्षा फिल्ड वर्क / व्हायवा	४० गुण
	एकूण १०० गुण
अंतर्गत ४० गुणांची विभागणी पुढील प्रमाणे करण्यात आली	
उपस्थिती (Attendance)	०५ गुण
वर्तणूक (Behaviour)	०५ गुण
व्हायवा (Viva-voce)	१० गुण
फिल्ड वर्क (Report of field Work)	२० गुण
	<u>४० गुण</u>

त्याअनुषंगाने Environmental Studies या विषयाचा अभ्यासक्रम विद्यापीठ अनुदान आयोगाने दिलेला असून तो तसाच तसा लागू करण्यात आलेला असल्याने अभ्यासक्रमात बदल न करता अभ्यासक्रम तसेच देण्यात आलेला आहे. सदरचा अभ्यासक्रम उमांकच्या संकेत स्थळावर अपलोड करण्यात आला आहे. तो चरील आशय सर्व संवांचेन प्राध्यापक व विद्यार्थी यांचे निदर्शनास आणून देवून पुढील बाबतची कार्यवाही करून विद्यापीठास सहकार्य करावे, ही विनंती.

म.कळारवं.

आपला विश्वासू.

(ए.सो.मनीरे)

उपकुलसचिव  
अभ्यास मंडळ विभाग



Six Months Module Syllabus  
for  
Environmental Studies  
for  
Under Graduate Courses



UNIVERSITY GRANTS COMMISSION  
BAHADURSHAH ZAFAR MARG  
NEW DELHI- 110 002

2003



CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES  
FOR UNDER GRADUATE COURSES OF ALL BRANCHES  
OF HIGHER EDUCATION

Vision

The importance of environmental science and environmental studies cannot be disputed. The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues. The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and world Summit on Sustainable Development at Johannesburg in 2002 have drawn the attention of people around the globe to the deteriorating condition of our environment. It is clear that no citizen of the earth can afford to be ignorant of environment issues. Environmental management has captured the attention of health care managers. Managing environmental hazards has become very important.

Human beings have been interested in ecology since the beginning of civilization. Even our ancient scriptures have emphasized about practices and values of environmental conservation. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices.

India is rich in biodiversity which provides various resources for people. It is also basis for biotechnology.

Only about 1.7 million living organisms have been described and named globally. Still many more remain to be identified and described. Attempts are made to



conserve them in ex-situ and in-situ situations. Intellectual property rights (IPR) have become important in a biodiversity-rich country like India to protect microbes, plants and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution have been found to be responsible for the loss of a large number of life-forms. It is feared that a large proportion of life on earth may get wiped out in the near future.

In spite of the deteriorating status of the environment, study of environment have so far not received adequate attention in our academic programmes. Recognizing this, the Hon'ble Supreme Court directed the UGC to introduce a basic course on environment at every level in college education. Accordingly, the matter was considered by UGC and it was decided that a six months compulsory core module course in environmental studies may be prepared and compulsorily implemented in all the University/Colleges of India.

The experts committee appointed by the UGC has looked into all the pertinent questions, issues and other relevant matters. This was followed by framing of the core module syllabus for environmental studies for undergraduate courses of all branches of Higher Education. We are deeply conscious that there are bound to be gaps between the ideal and real. Genuine endeavour is required to minimize the gaps by intellectual and material inputs. The success of this course will depend on the initiative and drive of the teachers and the receptive students.

## SYLLABUS

### **Unit I : Multidisciplinary nature of environmental studies**

Definition, scope and importance

(2 lectures)

Need for public awareness





## Unit 2 : Natural Resources :

### Renewable and non-renewable resources :

Natural resources and associated problems

- a) Forest resources : Use and over-exploitation, deforestation, case studies.  
Timber extraction, mining, dams and their effects on forest and tribal people.
  - b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams, benefits and problems
  - c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
  - d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
  - e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
  - f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification
- Role of an individual in conservation of natural resources
  - Equitable use of resources for sustainable lifestyles

(8 lectures)

## Unit 3 : Ecosystems

- Concept of an ecosystem.



- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem -
  - a. Forest ecosystem.
  - b. Grassland ecosystem.
  - c. Desert ecosystem.
  - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

(6 lectures)

#### Unit 4 : Biodiversity and its conservation

- Introduction – Definition – genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity – consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.



- Hot-spots of biodiversity
- Threats to biodiversity - habitat loss, poaching of wildlife, man-wildlife conflicts
- Endangered and reserve species of India
- Conservation of biodiversity - In-situ and Ex-situ conservation of biodiversity

(8 lectures)

### Unit 5 : Environmental Pollution

#### Definition

- Cause, effects and control measures of :-
  - a. Air pollution
  - b. Water pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  - f. Thermal pollution
  - g. Nuclear hazards
- Solid waste Management : causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies
- Disaster management : floods, earthquake, cyclone and landslides

(8 lectures)





## Unit 6 : Social Issues and the Environment

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

(7 lectures)

## Unit 7 : Human Population and the Environment

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.



- Environment and human health.
- Human Rights.
- Water Sanitation
- HIV/AIDS.
- Women and Child Welfare
- Role of Information Technology in Environment and human health.
- Case Studies

16 lectures

#### Unit 8 : Field work

- Visit to a local area to document environmental assets- river/forest grassland hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill/slopes, etc. (Field work equal to 8 lecture hours)



SIX MONTHS COMPULSORY CORE MODULE COURSE IN  
ENVIRONMENTAL STUDIES : FOR UNDERGRADUATES

**Teaching Methodologies**

The core Module Syllabus for Environment Studies includes class room teaching and Field Work. The syllabus is divided into eight units covering 50 lectures. The first seven units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit eight is based on field activities which will be covered in five lecture hours and would provide student first hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environmental concerns. This moves out of the scope of the text book mode of teaching into the realm of real learning in the field, where the teacher merely acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Field studies are as essential as class work and form an irreplaceable synergistic tool in the entire learning process.

Course material provided by UGC for class room teaching and field activities be utilized.

The universities/colleges can also draw upon expertise of outside resource persons for teaching purpose.

Environmental Core Module shall be integrated into the teaching programmes of all undergraduate courses.

**Annual System :** The duration of the course will be 50 lectures. The exam will be conducted along with the Annual Examination.





**Semester System :** The Environment course of 50 lectures will be conducted in the second semester and the examination shall be conducted at the end of the second semester

**Credit System :** The course will be awarded 4 credits

**Exam Pattern :** In case of awarding the marks, the question paper should carry 100 marks. The structure of the question paper being

Part-A: Short answer pattern	-	20 marks
Part-B: Essay type with inbuilt choice	-	40 marks
Part-C: Field Work	-	40 marks



## REFERENCE

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- ai) Banarjya, Udaya, The Biodiversity of India, Anjan Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email: anjan@icenet.net (R)
- c) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- d) Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
- e) Cunningham, W.P. Cooper, T.H., Gotham, E. & Hepworth, M.E. 2001, Environmental Encyclopedia, Inca Publ. House, Mumbai, 1196p
- fi) De A.K., Environmental Chemistry, Wiley Eastern Ltd
- g) Down to Earth, Centre for Science and Environment (R)
- h) Gleick, H.P. 1993, Water in crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute Oxford Univ. Press 413p
- i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- ji) Heywood, V.H. & Waston, R.T. 1995, Global Biodiversity Assessment, Cambridge Univ. Press 1140p
- k) Jadhav, H. & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Delhi 284 p.
- li) McKinney, M.L. & School, R.M. 1996, Environmental Science: systems & Solutions, Web enhanced edition, 639p
- mi) Mhaskar A.K., Matter Hazardous, Techno Science Publication (TB)
- ni) Miller T.G. Jr, Environmental Science, Wadsworth Publishing Co. (TB)
- oi) Odum, E.P. 1971, Fundamentals of Ecology, W.H. Saunders Co. USA 574p
- pi) Rao M.N. & Datta, A.K. 1987, Waste Water treatment, Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- qi) Sharma B.K., 2001, Environmental Chemistry, Geol Publ. House, Meerut
- ri) Survey of the Environment, The Hindu (M)
- s) Townsend C., Harper J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)



- (i) Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol-I and II, Luvino Media (R)
- (ii) Trivedi R. K. and P.K. Goel, Introduction to air pollution, Tachino Science Publication (TR)
- (iii) Wangen K.D., 1998 Environmental Management, W.B. Saunders Co, Philadelphia, USA-1999

(M) Magazine

(R) Reference

(TR) Textbook





### Members of the Expert Committee on Environmental Studies

1. Prof. Hachi Blaucha  
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Bharati Vidyapeeth  
Institute of Environment Education &  
Research, Pune
2. Prof. C. Manoharachary  
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Osmania University  
Hyderabad
3. Prof. S. Thayumanavan  
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Centre for Environmental Studies  
Anna University, Chennai
4. Prof. D.C. Goswami  
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Gauhati University  
Guwahati-781 014
5. Shri R. Mehta  
Director EE Division  
Ministry of Environment & Forest  
Prayakaran Bhawan, CGO Complex  
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#### UGC OFFICIALS

6. Dr. N. K. Jain  
Joint Secretary  
UGC, New Delhi



॥ अरी पंढुरस्ये ॥



**KAVAYITRI BAHINABAI CHAUDHARI  
NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**YOGA**

**AC-601 (B): Non-Credit Elective Audit Course**

**With effect from Academic year: 2020-21**

- Name of the Paper : YOGA
- Paper Code : AC-601(B)
- Class : UG (T.Y.B.A., T.Y.B.Com, T.Y.B.Sc)
- Year : 2020-21
- Credit Structure : **Non Credit Elective Audit Course**
- No of Lectures : 30 Teaching Hours
- Total Marks : 100 (Activity Based)
- No of Hrs. per week: 2 Hours/week (Clock hours)



## YOGA PAPER SYLLABUS SEMESTER: VI

Theory / Practical / Project Work : 100

No of Lectures: 30 Teaching Hours

Credit: No credits

### Objectives:

To enable the students:

1. To provide the necessary knowledge of the theory and practice of yoga so that the students learn to practice.
2. To give them a basic understanding of Yoga and its nature, scope

### Learning Outcomes:

After completion of this course, students will be able to:

1. The student can understand the knowledge about the theory and practice of Yoga and its nature, scope, etc
2. The student can understand the knowledge of human anatomy & physiology Of Cell structure.

Unit: I Introduction to Yoga:

- Definition, nature and scope of yoga.
- Elements of Yoga in Vedic and Upanashadic literature.
- Development of yoga through the ages.
- Schools of yoga : Karma Yoga, Bhakti Yoga, Jnana Yoga, Hatha yoga, Raja yoga and Mantra Yoga.





**Unit: II Basic Yoga Texts :**

Principal Upanishads, Bhagavad Gita, Yoga Vasishtha  
Patanjali Yoga Sutra and Hatha Yoga Texts  
Introduction to Hatha Yoga Pradipika and Gheranda Samhitha  
Chakra theory and kundalini yoga

**Unit: III Therapeutic Yoga**

Allied Sciences : Anatomy and Physiology, Diet and Nutrition, General  
Psychology and Counseling  
Yoga and Health  
Therapeutic Yoga – Disease Wise and Evidence based  
Applications of Yoga

**Assignments / Practical work / Field Work: (Any One of the following )**

A) **Assignments:** Students will prepare as Assignment on any one of the following..

1. Prepare your diet plan
2. Prepare your daily exercise chart

**B) Practical work:**

Practical Yoga: Asana, Pranayama, Dharana Dhyana, Bandha, Mudra, Shat Kriya

**C) Field work:**

1. Visit to hill station
2. Visit to yoga center

**References:**

Georg Feuerstein (2002) The Yoga Tradition: Its History, Literature, Philosophy and Practice. New Delhi. Bhavana Books & Prints.

Hiriyana, M (1932/2000). Outlines of Indian Philosophy. Delhi, Motilal Banarasidas

॥ अंतरी पेटवू ज्ञानज्योत ॥



**KAVAYITRI BAHINABAI CHAUDHARI  
NORTH MAHARASHTRA UNIVERSITY, JALGAON**

**NATIONAL SERVICE SCHEME**

**AC-501 (A): Non-Credit Audit Course**

With effect from Academic year: 2020-21

Name of the Paper : **Community Engagement through NSS**

Paper Code : AC-501(A)

Class : **UG ( T.Y.B.Sc )**

Year : **2020-21**

Credit Structure : **Non Credit Audit Course**

No of Lectures : 30 Teaching Hours

Total Marks : **100 (Activity Based)**

No of Hrs. per week: **2 Hours/week (Clock hours)**

**NATIONAL SERVICE SCHEMES PAPER**  
**SYLLABUS**  
**SEMESTER: V**



Theory / Practical / Project Work : 100

No of Lectures: 30 Teaching Hours

Credit: No credits

**Objectives:**

To enable the students:

- ✚ To build the understanding among the students about History, objectives and organizational functioning of NSS.
- ✚ To recognize the importance of community engagement through the NSS activity at large.
- ✚ Identify the needs and problems of the community and involve them in the problem solving.
- ✚ To understand the nature of special program and activates in NSS
- ✚ To understand the nature and scope of NSS in Modern era.
- ✚ To tackle the social challenges in new modern era.
- ✚ Apply the knowledge to solve the social issues.

**Learning Outcomes:**

After completion of this course, students will be able to:

- Understand the History, objectives and organizational structure of NSS.
- Understand the important of community engagement through the NSS.
- Develop the attitudes towards the social perspective and social harmony.
- Follow the principles of NSS in day-to-day life by practicing the concept of 'Not Me But You !'
- Utilize and imbibe the knowledge in finding Community and social problems and solving such grass roots issues.
- Inculcate the characteristics among students community and sensitize them to become responsible citizen.

**Unit: 1 Introduction to National Service Schemes**

- 1.1 History and Objectives of NSS
- 1.2 Organizational Structure of NSS
- 1.3 Advisory committee NSS and its Functions
- 1.4 Emblem, flag, motto, song, badge etc.
- 1.5 Role of Personnel's involved in NSS and their Roles.





## **Unit: 2 Community Engagement through NSS**

- 2.1 Concept of Regular and Special camping in NSS
- 2.2 Personality Development through Community Engagements
- 2.3 Community Projects through NSS
- 2.4 Planning and implication of Regular Program in NSS
- 2.5 Skills ,Leadership Development and NSS

## **Unit: 3 Special program and Activities in NSS**

- 3.1 Health Awareness Program –First-aid , HIV AIDS, Drugs etc
- 3.2 Leadership training : Youth Leadership through NSS
- 3.3 Traffic Regulation and Road Safety
- 3.4 Food and Nutrition and Safe Drinking water, Garments Collection
- 3.5 Youth for Disaster Management

## **Unit: 4 NSS in Modern Era**

- 4.1 NSS Special Camping , Government scheme for rural development
- 4.2 Cyber Security Awareness and Use of Social Media in NSS Activities.
- 4.3 Cultural Program for Community alertness / Awareness
- 4.4 NSS as a tool of Education for Students Development
- 4.5 Adaption of Village and Identification of Community Problems

### **Assignments / Practical work / Field Work : (Any One of the following )**

A) **Assignments:** Students will prepare as Assignment on any one of the following.

- 1) Write a report on current social problems of rural community and submit the same.
- 2) Write a report on NSS activities run by the collage and submit it. Or Participate or conduct the any one NSS activities in college campus and submit the reports.



**B) Practical work :**

- 1) Active participation or Conduct the programme Awareness Program regarding Health Awareness / Road Safety/ Cyber Security Awareness / Safe Drinking water or any other social issue and submit its report.
- 2) Active participation in any one NSS related Social program at College, University, State, National Level and submit the certificate of the same.

**C) Field Work:**

- 1) Visit to remand home / rural school/ orphan's Home / Special School and write a details report on it.
- 2) Conduct a survey on any special theme and submit its report.

**References:**

1. National Service Scheme Manual (Revised, 2006), Ministry of Youth Affairs & Sports, Govt. of India, New Delhi.
2. Nanavare, P. S. & Khirade S. K. (2020) Rastriya Seva Yojana: Samajjivanatil Yogdan, Atharva Publications, Jalgaon

॥ अंतरी पेटवू ज्ञानज्योत ॥



**KAVAYITRI BAHINABAI CHAUDHARI  
NORTH MAHARASHTRA UNIVERSITY, JALGAON**



## **SPORTS**

### **AC-501 (C): Non-Credit Audit Course**

With effect from Academic year: 2020-21

Name of the Paper : Physical Education & Sports

Paper Code : AC-501(C)

Class : UG ( T.Y.B.Sc )

Year : 2020-21

Credit Structure : **Non Credit Audit Course**

No of Lectures : 30 Teaching Hours

Total Marks : **100 Marks**

No of Hrs. per week: **2 Hours/week (Clock hours)**





## Objectives:

- To understand the whole concept of physical education and sports.
- To understand the modern concepts of physical education.
- To understand the concept of growth and development.
- To understand the basics of first aid.
- To understand the whole concept of physical fitness.
- To understand the history and concept of Olympic movement.
- To know the Olympic medal winners of India.
- To understand the national sports awards of India.
- To understand the basic information of games and sports.

## Part one - Theory (50 Marks)

### Unit – 1: Physical Education

- 1) Meaning and definition of physical education.
- 2) Need and importance of physical education.
- 3) Modern concepts of physical education – Sports training, Physical culture, Gymnastics, Games and Sports.
- 4) Growth and development, body types.
- 5) First aid.

### Unit – 2: Physical Fitness

- 1) Meaning and definition of physical fitness.
- 2) Need and importance of physical fitness.
- 3) Components of physical fitness.
- 4) Warming up and cooling down.
- 5) Effect of exercises on various body systems.

### Unit – 3: Olympic Movement

- 1) Ancient Olympic Games.
- 2) Modern Olympic Games.
- 3) Types of Olympic Games – summer, winter, Para and Youth.
- 4) Olympic flag and rings.
- 5) Olympic medal winners of India and national sports awards.



## Part Two – Practical (50 Marks)

### Unit – 4: AIU affiliated games or sports (any one)

- 1) History and development.
- 2) Ground measurements.
- 3) Standard equipments.
- 4) Fundamental skills.
- 5) Important tournaments.

### References:

- Bucher, C. A. (n.d.) *Foundation of physical education*. St. Louis: The C.V. Mosby Co.
- Deshpande, S. H. (2014), *Physical Education in Ancient India*. Amravati: Degree college of Physical education.
- Mcglynn, G., (1993). *Dynamics of fitness*. Madison: W.C.B Brown.
- Sharkey, B. J.(1990). *Physiology of fitness*, Human Kinetics Book.
- Kote, Kamble, Joshi, (2006). *Principles and history of physical education*. Chhaya Publication House, Aurangabad.
- बोशी मकरंद, (२०१०). *शारीरिक शिक्षण - अध्यात्म व अध्यात्म पद्धती*, नित्य नूतन प्रकाशन, पुणे.





Outward No. \_\_\_\_\_

Date :     /     / 20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

**5:- List of Certificates Courses Initiated to  
Address Various Crosscutting Issues**





Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

Web : [www.ricollegeparola.org](http://www.ricollegeparola.org)  
Email : [principalricparola@gmail.com](mailto:principalricparola@gmail.com)

Outward No. \_\_\_\_\_

Date : / / 20


## 1.3:- Curriculum Enrichment


**1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

**5.: - List of certificates courses initiated to address various crosscutting issues**

**(Addressed issues: - In certificate courses.)**

Sr. No.	Name of the Certificate Course	Addressed Issue P. E., G., H.V. & E. S.
1	Soil & Water Analysis Training	Professional ethics, Human Value & Environmental Sustainability
2	High Performance Liquid Chromatography	Professional ethics & Human Value
3	ChemDraw Sketching Training	Professional ethics, Human Value & Environmental Sustainability
4	Nursery Training and plant Propagation	Professional ethics, Human Value & Environmental Sustainability
5	Synthesis of nano materials and its application as gas sensor.	Professional ethics, Human Value & Environmental Sustainability
6	Synthesis of Nano Material	Professional ethics & Human Value
7	Communication and writing skill in Marathi	Professional ethics & Human Value
8	Communication and writing skill in English	Professional ethics & Human Value
9	Basics of Computer	Professional ethics & Human Value
10	Yoga	Professional ethics & Human Value
11	Honey Bee Keeping	Professional ethics, Human Value & Environmental Sustainability

  
IQAC Co-ordinator  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon

Sahajivan Shikshan Prasarak Mandal's  
**Rani Laxmibai Mahavidyalaya, Parola**  
Department of Chemistry  
**Certificate Course in Soil and Water Analysis**

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**Syllabus**

**Paper I (Theory)**

**Marks : 20**

**Unit –I Study of Water (10)**

- a. Hydrosphere- Water resources.
- b. Properties of water- color, odor, turbidity, total salt content, total suspended water.
- c. Water pollution- Definition of water pollution, types of water pollutants ,sources of water pollutants, trace element in water, water quality parameters and standards
- d. Purification of water- Treatment of domestic and industrial water.

**Unit –II Study of Soil (10)**

- A. The structure of earth, Elemental composition of earth crust, Definition of soil.
- B. Nature and classification of soil, important soil forming minerals, soil as eco system, soil fertility and productivity
- C. Properties of soil – Colour, temperature, pH, electrical conductance (EC), waterholding capacity, organic carbon, soil salinity, soil density.
- D. Soil erosion- Definition, Control of erosion, Soil conservation practices, Soil pollutioncauses and remedies.

**Paper II ( practical /work experience/ field work ) Marks : 80**

1. Collection of water samples (Field work)
2. Determination of total hardness of water
3. Determination of alkalinity of water
4. Determination of pH of water
5. Determination of conductivity of water
6. Collection of soil samples from fields and study of soil sampling tools. (Field work)
7. Soil sample preparation
8. Determination of maximum water holding capacity of soil
9. Determination of bulk density of soil
11. Determination of pH of soil
12. Determination of conductivity of soil

**References –**

1. Laboratory Manual of Water and Wastewater Analysis, D.R. Khanna, R. Bhutiani, Daya Publishing House, Delhi, 2008
2. Chemical and Biological Methods for Water Pollution Studies, R.K. Trivedy, P.K.Goel, Oriental Printing Press, Aligarh, 1986
3. Practical Methods in Ecology and Environmental Science, R.K.Trivedy, P.K.Goel, C.L.Trishal, Environmental Publications,Karad (India) 1987
4. Analytical Chemistry-Alka Gupta (PragatiPrakashan)
5. Soil chemicals Analysis - P.R. Hesse
6. Soil testing manual by department of agriculture and cooperation, India

  
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Sahajivan Shikshan Prasarak Mandal's  
**Rani Laxmibai Mahavidyalaya, Parola**  
Department of Chemistry

**Certificate Course in High Performance Liquid Chromatography (HPLC)**

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**Syllabus**

**Hands on HPLC+GC+UV (Experience Beyond on Books)**

**Course Work**

- Hand on HPLC+ GC + UV
- Development of analytical methods on HPLC,GC,UV » Routine Quality Control work
- Calibration of Instruments.
- Validation of Analytical methods by HPLC.
- Maintains and Care of Instruments.

**Certificate Course Details**

- Two Week hand on training on each instruments
- 2 HRs x 15 days
- Diploma in Analytical instruments Two Months
- Weekly Course also available

**Certificate Course of Analytical Instruments Best For**

- B.SC., M.SC.( Analytical Chem., Organic Chem., Life Sciences )
- M.Pharm ( All Branches ) and B.Pharm
- M.Tech ,B.Tech, ( all branches ) & Research Students

**Consultancy Services for**

- Chemical Analysis by HPLC, GC,UV,FT-IR.
- Guidance for Analytical Method Development


  
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**S. S. P. M's**  
**Rani Laxmibai Mahavidyalaya, Parola**  
**Theory Syllabus of Certificate Course**  
**Nursery Training and Plant Propagation**

Unit 1. Introduction	01 L
<ul style="list-style-type: none"><li>• Definition, Objectives, Scope and Importance,</li><li>• Building up of Infrastructure for Nursery,</li><li>• Planning and Seasonal Activities.</li></ul>	
Unit 2. Cultivation / Propagation of Nursery Plants: -	05 L
A) By seeds / Sexual Propagation	
i) Selection of Seeds	
ii) Pre-germination Treatment	
a) Seed dormancy, Causes and Methods of Breaking Dormancy	
b) Applications of Germicide, Insecticide, Pesticides, Fungicides etc.	
c) Seed Storage: Seed Banks, Factors Affecting Seed Viability	
iii) Maintain the Semi-shade condition	
iv) Preparation of Soil and Manures	
<ul style="list-style-type: none"><li>• Preparation of Soil Bade,</li><li>• Filling of Polyethene Bags,</li><li>• Sowing of Seeds</li><li>• Watering Methods</li><li>• Planting: Direct Seedling and Transplant.</li></ul>	
B. Vegetative Propagation	05 L
i) Cutting, ii) Air-layering, iii) Grafting, iv) Budding	
<ul style="list-style-type: none"><li>• Selection,</li><li>• Techniques of cutting,</li><li>• Rooting medium,</li><li>• Planting and hardening of plants in green house or glass house.</li><li>• Harvesting, Packing, Storage and Marketing of Nursery stock.</li></ul>	
Unit 3: Cultivation Practices of Fruits and Vegetables	04 L
<ul style="list-style-type: none"><li>• Introduction,</li><li>• Study of Cultivation of</li><li>• Some Fruits i.e., Mango, Papaya and</li><li>• Vegetables: Brinjal and Tomato w.r.t.,</li></ul>	
i) Sowing	
ii) Transplanting of Seedling	
iii) Varieties	
iv) Manuring and Irrigation	
v) Control Measures of Pest and Diseases	
vi) Harvesting	
vii) Storage and Marketing	

  
Course  
Co-ordinator

  
Head Dept.  
**Head**  
**Dept. of Botany**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

**Practicals of Certificate Course**  
**“Nursery Training and Plant Propagation”**

**Practical: 1) Propagation of Nursery Plants:**

A) By seeds / Sexual Propagation

i) Selection of Seeds

ii) Pre-germination Treatment

a) Seed dormancy, Causes and Methods of Breaking Dormancy

b) Applications of Germicide, Insecticide, Pesticides, Fungicides etc.

c) Seed Storage: Seed Banks, Factors Affecting Seed Viability

**Practical: - 2) iii) Maintain the Semi-shade condition**

iv) Preparation of Soil and Manures

- Preparation of Soil Bads,
- Filling of Polyethene Bags,
- Sowing of Seeds
- Watering Methods
- Planting: Direct Seedling and Transplant

**Practical: - 3 & 4) B. Vegetative Propagation**

i) Cutting, ii) Air-layering & iii) Grafting, iv) Budding

- Selection of propagules,
- Techniques of cutting,
- Rooting medium,
- Planting and hardening of plants in green house or glass house.

**Practical: - 5 & 6) Cultivation Practices of Fruits and Vegetables**

- Study of Cultivation of
- Some Fruits i.e., Mango and Papaya
- Vegetables: Brinjal and Tomato
  - i) Sowing      ii) Transplanting of Seedling
  - iii) Varieties   iv) Manuring and Irrigation
  - v) Control Measures of Pest and Diseases
  - vi) Harvesting   vii) Storage and Marketing



Course  
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Head Dept.  
**Head**  
Dept. of Botany  
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Parola, Tal. Parola Dist. Jalgaon



## Theory Syllabus of Certificate Course A Certificate Course in ChemDraw Sketching Training

### What you'll learn

- Learn to use ChemDraw Professional Software!
- Learn the best drawing tool of choice for Chemists and Biologists!
- Create publication-ready and Scientifically intelligent drawings!
- Have control over your Chemical and Biological Drawings

### Course content

Unit 1. User Interface	03 L
<ul style="list-style-type: none"> <li>• Installing and Launching ChemDraw</li> <li>• Document and Page setup,</li> <li>• Document settings.</li> </ul>	
Unit 2. Basic Drawing: -	06 L
<ul style="list-style-type: none"> <li>• All kinds of bonds</li> <li>• Atoms, Captions and Chemical Analysis</li> <li>• Drawing Rings and Chains</li> <li>• Objects I</li> <li>• Objects II</li> <li>• Finishing up structures</li> </ul>	
Unit 3: BioDraw	04 L
<ul style="list-style-type: none"> <li>• Solution to exercise</li> <li>• BioDraw Templates</li> <li>• Membrane, Helix protein and others</li> <li>• DNA Molecules and Plasmid Maps</li> </ul>	
Unit 4: Advanced Drawing Techniques	04 L
<ul style="list-style-type: none"> <li>• Labels and Atom Numbering</li> <li>• Fragmentation and Structure Perspective</li> <li>• Drawing Reactions</li> <li>• Stoichiometry Grid</li> </ul>	
Unit 5: Additional Features	03 L
<ul style="list-style-type: none"> <li>• ChemDraw for Excel</li> <li>• ChemNMR</li> <li>• Exporting and Importing</li> </ul>	
<b>Course Practical</b>	<b>10 L</b>





**S. S. P. M's,**  
**Rani Laxmibai Mahavidyalaya, Parola**  
**Certificate Course on Basics of Computer**

➤ **Objectives of the Course:**

- To give basic information about the computer system.
- To give knowledge about computer hardware and computer software.
- To familiarize students with the use of MS Windows, Internet and E-mail.
- To familiarize students with the use of MS Office-MS Word, MS Excel & MS PowerPoint.

➤ **Course Overview:**

Computer Proficiency is an inevitable part of every sector. The course is aiming to equip all the aspirants to have basic skills as well as hands on experience on word processing, for creating excel spreadsheets, for building databases and preparing presentations, through the use of Microsoft Office Word, Excel, and PowerPoint programmes.

**SYLLABUS**

**Module I:**

**05 L**

Introduction to Computer Fundamentals, Windows OS, Internet and Email Computer, Classification of computers, Parts of a computer, Operating System, Internet, Modem, Web browsers, E-mail, Establishing your e-mail account.

**Module II:**

**08 L**

Introduction to Microsoft Word Basic components of a Word window, Preparing a word document, editing a prepared document, Adjusting the margin settings, Additional formatting options, Header and Footer options, Border and Shading of page, drawing options, Inserting images, Mail merge options, saving a document, creating a new document, Inserting audio and video files.

**Module III:**

**08 L**

Introduction to Microsoft Excel Enter data in excel workbook, Formatting toolbar, Shortcut to fill a series, Mathematical functions, editing a data sheet, Format cell, Rename a sheet, Save, Open a workbook, arrange data in ascending or descending order, Insert new cell column or row, insert picture or clipart in excel sheet.

**Module IV:**

07 L

Introduction to Microsoft Power Point, how to create a new slide, how to apply animation to slides, Fill background with effects, how to apply sound to slides, how to save a presentation, Opening an existing presentation, insert new slides with different layout, Editing a slide, Inserting picture to a slide, Inserting media files to PowerPoint slides

**Practical's of Certificate Course**

1. Study of different parts of Computer System.
2. Use and searching contents in different Web Browsers.
3. Creating & sending E-Mails.
4. Preparing a word document, editing a prepared document, Adjusting the margin.
5. Inserting images, Audio & Video files, Mail merge options etc.
6. Introduction to Microsoft Excel, data entry in excel workbook
7. Formatting toolbars, Shortcut to fill a series, use of Mathematical functions etc.
8. Data entry in Excel workbook, formatting cells, Arranging data in order.
9. Inserting New Rows, Column's into workbook providing security to workbook.
10. Introduction to Microsoft Power Point. Creation of new slides etc.
11. Applying animation to slides, Fill background with effects etc.
12. Inserting picture to a slide, inserting media files to PowerPoint slides, Creating Presentations with effects.



Course  
Co-ordinator



Head  
Dept. of Computer Science



Vice-Principal  
Rani Lakshmi Bai Mahavidyalaya  
Parola, Dist. Jalgaon


# DEPARTMENT OF PHYSICS

## CERTIFICATE COURSE ON

### SYNTHESIS OF NANOMATERIALS AND ITS APPLICATION AS A GAS SENSOR

ACADEMIC YEAR 2022 - 2023

Sr. No.	Particular	Description
1	Title of Course	Synthesis of nanomaterials and its application as a gas sensor
2	Course Level	Certificate
3	Implementation Year	2022-2023
4	Syllabus of Course	Components 1. Introduction to the synthesis technique: Disc type Ultrasonicated Microwave assisted Centrifuge Technique 2. Preparation of Aqueous – Alcohol Solution 3. Interview Technique 4. PPT formation 5. Ultrasonication 6. Microwave Irradiation 7. Centrifuge 8. Calcination at high temperature (1000°C, 2 hrs.)
5	Faculty of the course	Science
6	Eligibility of admission	B. Sc. (Physics)
7	Duration of the course	30 Hrs.
8	Intake capacity	15 students
9	Pattern of the course	I. Internal 50 Marks based on oral Examination II. External 50 Marks based on Practical Examination
10	Name of the Teacher	Dr. D. R. Patil (Professor) Dr. D. N. Suryawanshi (Asst. Professor)
11	Others Facilities	Library, Internet and Wi-Fi
12	Scheduled Time	02.00 pm to 04.00 pm. (Monday to Saturday) Sept. 01, 2022 to Sept. 15, 2022.

  
Dr. D. N. Suryawanshi  
course coordinator

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



## Department of Marathi

Sr. No.	Particular	Description
1	Title of Course	Communication and writing skill in Marathi
2	Course Level	Certificate
3	Implementation Year	2022-2023
4	Syllabus of Course	Components 1. Essay writing 2. Type of Essay 3. Interview Technique 4. Dialogue (Oral and Writing) 5. Verbal Communication 6. Letter Writing & Types 7. Barriers of Communication
5	Faculty of the course	Arts and Science
	Eligibility of admission	12 <sup>th</sup> Std. pass candidate
7	Duration of the course	30 Hrs.
8	Intake capacity	30 students
9	Pattern of the course	I. Internal 50 Marks based on oral Examination. II. External 50 Marks based on Written Examination
10	Name of the teaching	Mr. S.D.Patil Asst. Professor Dr.S.B.Sawant Asst.Professor
11	Others Facilities	Library, Internet and Wi-Fi
12	Recommended Books	1. Marathi Vyakaran 2. Skill Of Essay writing 3. Upyojit Marathi 4. Vyavharik Marathi

### Time Table

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2.00 pm To 2.45 pm	Communication Skill	Communication Skill	Communication Skill	Communication Skill	Communication Skill	Communication Skill
3.00 pm To 3.45 pm	Writing Skill	Writing Skill	Writing Skill	Writing Skill	Writing Skill	Writing Skill

  
**Head**

**Dept. of Marathi**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

## Department of English

Sr. No.	Particular	Description
1	Title of Course	Communication and writing skill in English
2	Course Level	Certificate
3	Implementation Year	2022 - 2023
4	Syllabus of Course	Components 1. Parts of speech 2. Tense 3. Interview Technique 4. Dialogue (Oral and Writing) 5. Verbal Communication 6. Ecoding and Decoding Message 7. Barriers of Communication
	Faculty of the course	Arts and Science
6	Eligibility of admission	12 <sup>th</sup> Std. pass candidate
7	Duration of the course	30 Hrs.
8	Intake capacity	25 students
9	Pattern of the course	I. Internal 50 Marks based on oral Examination. II. External 50 Marks based on Written Examination
10	Name of the teaching	Mr. Rajendra B. Patil Asst. Professor
11	Others Facilities	Library, Internet and Wi-Fi
12	Recommended Books	1. Communication skill 2. Training materials for trainers. 3. How to talk 4. How to develop self confidence

### Time Table

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2.00 pm To 2.45 pm	Communi cation Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill
3.00 pm To 3.45 pm	Communi cation Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill	Communica tion Skill

**Head**

**Dept. of English**  
**Rani Laxmibai Mahavidyalaya**



## Yoga & Pranayama Course Yogic Syllabus

### ❖ Objectives of Yogic Syllabus

1. To introduce to the students about Yam, Niyam, Asan, Pranayama, Dhyana and samadhi.
2. To make students healthy physically and mentally.
3. To increase grasping power and concentration to the students.
4. To develop physical, mental and intellectual ability of the students.

### ❖ Unit details

- 1) To introduce yam, Niyam of yoga  
Yam- Satya, Ahinsa, Astay, Aparigrah, Bramhacharya,  
Niyam- Sauch, Santosh, Tap, Swadhyay, Ishwarpranidhan
- 2) Prayer- I) Beginning Prayer -a)guruvandana  
b) Omkar Pronunciation  
II) Ending Prayer- Om sarveapi sukhina santu
- 3) Suryanamaskar- I) Slow  
II) Fast  
III) With Breathing  
IV) Shavashan
- 4) Asan-I) Doctrine of Asan  
II) Types of Asan-  
A) Sleeping position Asan's  
1)Navakasan 2) viparitkarani 3) Pawanmuktasan  
4) Sarvangasan 5) Halasan 6) Dvipad Uttanasan.  
  
B) Viparit Shayan Position Asan's-  
1) Bhujangasan 2) Shalabhasan 3) Makarasan  
4) Dhanurasan 5) Naukasan.  
  
C) Bhaithak Position Asan's-  
1) Sashankasan 2) Padmasan 3) Vajrasan  
4) Pachhimtanasan 5) Ardhamatsyendrasan.



D) Danda Position Asan's-

- 1) Ekpad Hasthasan
- 2) Virasan
- 3) Vrukshasan
- 4) Trikonasan
- 5) Janubhalasan
- 6) Chakrasan

5) Mudra- 1) Sinhamudra

- 2) Marjar Mudra
- 3) Buddha Mudra

6) Pranayama- 1) Kapalbhati

- 2) Dirghshwasan(Deepbreathing)
- 3) Vilom-Anulom
- 4) Bhastrika

7) Dhyana (Meditation)- 1) Shraavan dhyana

- 2) Shwasan dhyana(Anapan)
- 3) Sharir dhyana (Vipashana)

**Yoga Teacher**

**Principal**



## Theory Syllabus of Certificate Course "Honey Bee Keeping"

### Aims:

- Training of Honey Bee keeping.
- In which introduction bee's species,
- Handling of bees.
- Beekeeping equipment's,
- Diseases, control and preventive measures,
- Bee products,
- Methods of extraction of honey,
- Their economic importance of bee products,
- Marketing and socio agriculture importance to the students.

### Objective:

- To enhance Bee keeping and Handling skill and technique.
- To awareness socio, agriculture and environmental importance of bees
- To create self-employment and earning.
- To obtain the different important and valuable bee products.

### Unit 1. Biology of Bees: -

- i) History
- ii) Classification and Biology of Honey Bees
- iii) Social Organization of Bee Colony

04 L

### Unit 2: Rearing of Bees

- a) Apiary (Artificial Bee Rearing)
- b) Bee Hives – Newton and Langstroth
- c) Bee Pasturage.
- d) Selection of Bee Species for Apiculture
- e) Bee Keeping Equipment's
- f) Method of Extraction of Honey (Indigenous and Modern)

12L

- Unit 3: Diseases and Enemies
- I) Bee Diseases
    - a) Viral disease
    - b) Fungal Diseases
    - c) bacterial Disease
    - d) Protozoan Diseases
  - II) Bee Enemies
    - a) Bee Parasites
    - b) Bee pest
  - III) Control and Preventive Measure
- 05L**

Unit 4: Bee Economy

- I) Product of Apiculture
    - a) Honey
    - b) Pollen
    - c) Propolis (bee-glue)
    - d) Bee wax
    - e) Bee venom
    - F) Royal jelly
- 04L**

Unit 5: Entrepreneurship in Apiculture

- I) Bee keeping industry
    - a) Resent efforts
    - b) Modern methods in employing artificial bee Hives for cross pollinations in horticulture gardens
- 05L**

Course  
Co-ordinator

Head Dept.

Principal



Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

Web : [www.rlcollegeparola.org](http://www.rlcollegeparola.org)  
Email : [principalrlcparola@gmail.com](mailto:principalrlcparola@gmail.com)

Outward No.

Date : / /20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

**6:- Project**



Outward No.

Date : / / 20



**1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

## 6.- Projects

Sr. No.	Year	Name of Project	Class	No. of Student	Status
1	2022-23	Environmental Studies	F. Y. B. A.	119	Completed
2	2022-23	Environmental Studies	F. Y. B. Sc.	145	Completed
3	2022-23	Physics - Nano Technology	T. Y. B. Sc.	03	Completed
4	2021-22	Environmental Studies	F. Y. B. A.	143	Completed
5	2021-22	Environmental Studies	F. Y. B. Sc.	137	Completed
6	2021-22	Physics Sem-I & II	T. Y. B. Sc.	04 + 04 = 08	Completed
7	2021-22	Physics - Nano Technology	T. Y. B. Sc.	06	Completed
7	2020-21	Environmental Studies	F. Y. B. A.	121	Completed
8	2020-21	Environmental Studies	F. Y. B. Sc.	113	Completed
9	2020-21	Physics Sem-I & II	T. Y. B. Sc.	05 + 05 = 10	Completed
10	2020-21	Physics - Nano-Technology	T. Y. B. Sc.	09	Completed
11	2019-20	Environmental Studies	F. Y. B. A.	167	Completed
12	2019-20	Environmental Studies	F. Y. B. Sc.	140	Completed
13	2019-20	Physics - Nano-Technology	T. Y. B. Sc.	06	Completed
14	2018-19	Environmental Studies	F. Y. B. A.	130	Completed
15	2018-19	Environmental Studies	F. Y. B. Sc.	164	Completed

  
 IQAC Co-ordinator  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Telus) Sanchalit  
**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**




ESTD: 1992

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**Internal Quality Assurance Cell**  
**Field work Project on Environmental Studies**  
**Academic Year (2018-2019)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	146	1 to 25	Solid waste management in Parola City
			26 to 50	Effect of air Pollution on Environment
			51 to 75	Effect of Sound Pollution on Environment
			76 to 100	Effect of water Pollution on Environment
			101 to 125	Global warming and Environment
			126 to 146	Importance of Biodiversity
2	Arts	130	1 to 25	Biodiversity around Parola Tahsil
			26 to 50	Study of Vegetation's cover in Parola Tahsil
			51 to 75	Impact of Air population due to National Highway (NH6)
			76 to 100	Relationship both Man and Environment
			101 to 130	Water reservoir around Parola Tahsil and its impact

  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
Rani Laxmibai Mahavidyalaya  
PAROLA Dist. Jalgaon





### Student List of Science Faculty

Sr.No	PRN	Student Name	Gender
1.	2018015400031874	AKHADE PRANALI PRAVIN	Female
2.	2018015400032773	BADGUJAR PAVAN SUBHASH	Male
3.	2018015400032893	BAGAD SHWETA SURESH	Female
4.	2018015400032622	BARI MAMTA NIMBA	Female
5.	2018015400032711	BEDISKAR SWAPNIL SUNIL	Male
6.	2018015400032684	BHADANE ASHWINI RAJU	Female
7.	2018015400032653	BHADANE PRIYANKA GULAB	Female
8.	2018015400032204	BHADANE SUJATA ANANDA	Female
9.	2018015400032742	BIRARI GAYATREE NANA	Female
10.	2018015400024696	BIRARI HARSHADA DNYANESHWAR	Female
11.	2018015400032212	BORASE PRIYANKA ARUN	Female
12.	2018015400032676	CHAUDHARI DIPALI PRAVIN	Female
13.	2018015400032595	CHAUDHARI SARITA DILIP	Female
14.	2018015400032757	CHAVAN AKSHAY SUDAM	Male
15.	2018015400031762	CHAVAN PRAJAKTA RAVINDRA	Female
16.	2018015400024731	DESALE TEJAS RAVASAHEB	Male
17.	2018015400031963	DESHMUKH DNYANESHWARI ADHIKRAO	Female
18.	2018015400032877	DESHMUKH ROSHANI ISHWAR	Female
19.	2018015400031835	GAYKWAD HARSHAL RAJENDRA	Male
20.	2018015400032227	GIRASE JYOTSNA ADHAR	Female
21.	2018015400032065	GIRASE PRIYANKA DADABHAI	Female
22.	2018015400094785	HATKAR KISHOR WALMIK	Male
23.	2018015400032444	JADHAV RAVINA PRAKASH	Female
24.	2018015400032057	JADHAV SONALI GANPAT	Female
25.	2018015400032162	JAGDALE SHUBHANGI SURENDRA	Female
26.	2018015400032587	KASAR ASHWINI PRAMOD	Female
27.	2018015400032692	KHAIRNAR NIKITA PRAKASH	Female
28.	2018015400031707	KHARE AYUSH DINESH	Male
29.	2018015400031665	KOLI RAKESH ASHOK	Male
30.	2018015400031785	KUMBHAR RAHUL ASHOK	Male
31.	2018015400032026	MAHAJAN ASHVINI RAVINDRA	Female
32.	2018015400032935	MAHAJAN DIVYANI ANIL	Female
33.	2018015400032556	MAHAJAN JAGRUTI KAILAS	Female
34.	2018015400024611	MAHAJAN MAYUR SUNIL	Male
35.	2018015400032297	MAHAJAN NUTAN ANANDA	Female
36.	2018015400032081	MAHAJAN PRACHI RAJU	Female
37.	2018015400032107	MALI GAYATRI NANDKISHOR	Female
38.	2018015400032386	MALI GAYATRI RAMESH	Female
39.	2018015400032614	MANE POOJA AJABRAO	Female
40.	2018015400032517	MISTARI KALYANI SUNIL	Female
41.	2018015400032533	MORE HRUSHIKESH SHARAD	Male
42.	2018015400024723	MORE MRUNAL PANKAJ	Female
43.	2018015400031827	NAVARKAR SACHIN PRAVIN	Male
44.	2018015400032645	NIKAM KOMAL PRAVIN	Female





	2018015400031866	NIKAM MAYUR PRADEEPBHAI	Male
46.	2018015400032572	NIKAM SHALINI BALU	Female
47.	2018015400032301	PARDESHI BHAVANA SACHINSING	Female
48.	2018015400032316	PATIL ABHAY MANOJ	Male
49.	2018015400031723	PATIL AJAYKUMAR NIMBA	Male
50.	2018015400032436	PATIL AKASH DILIP	Male
51.	2018015400032885	PATIL APURVA UTTAM	Female
52.	2018015400032606	PATIL ASHWINI RAYABA	Female
53.	2018015400032363	PATIL BHAGYASHRI BALU	Female
54.	2018015400031897	PATIL BHAVESH VINOD	Male
55.	2018015400032951	PATIL CHAITALI BHAGWAT	Female
56.	2018015400031901	PATIL DARSHAN RATNAKAR	Male
57.	2018015400032235	PATIL DARSHANA SANJAY	Female
58.	2018015400032421	PATIL DEEPALI RAMLAL	Female
59.	2018015400032525	PATIL DEEPIKA GUNAWANT	Female
60.	2018015400031843	PATIL DINESH SANJAY	Male
61.	2018015400032115	PATIL DIPAK BAPU	Male
62.	2018015400031777	PATIL DNYANESHWAR SHANTARAM	Male
63.	2018015400032332	PATIL GAYATRI SUNIL	Female
64.	2018015400032347	PATIL GUNJAN ANIL	Female
65.	2018015400032394	PATIL HARSHADA KISHOR	Female
66.	2018015400024673	PATIL HARSHADA RAMKRUSHANA	Female
67.	2018015400031882	PATIL HARSHAL KALYAN	Male
68.	2018015400024681	PATIL JAYASHRI CHANDRAKANT	Female
69.	2018015400032734	PATIL JAYESH ANIL	Male
70.	2018015400031793	PATIL JAYWANT MADHUKAR	Male
71.	2018015400032131	PATIL KAVERI SUNIL	Female
72.	2018015400032564	PATIL KOMAL MANOJ	Female
73.	2018015400032815	PATIL LALIT ANIL	Male
74.	2018015400031804	PATIL MANOJ RAJENDRA	Male
75.	2018015400032096	PATIL MAYUR YASHWANT	Male
76.	2018015400032831	PATIL MAYURI BHAGWAT	Female
77.	2018015400032251	PATIL MAYURI ISHWAR	Female
78.	2018015400032193	PATIL MAYURI SURESH	Female
79.	2018015400032324	PATIL MOHINI VIKAS	Female
80.	2018015400032371	PATIL MONALI PANDHARINATH	Female
81.	2018015400032371	PATIL MONALI PANDHARINATH	Female
82.	2018015400032966	PATIL NANDINEE KAILAS	Female
83.	2018015400032413	PATIL NIKHIL PRADIP	Male
84.	2018015400031681	PATIL NILESH RAJENDRA	Male
85.	2018015400024707	PATIL PAWAN GOKUL	Male
86.	2018015400032355	PATIL POONAM PRAMOD	Female
87.	2018015400032781	PATIL PRAJAKTA SAMBHAJI	Female
88.	2018015400032846	PATIL PRASHANT VALMIK	Male
89.	2018015400032912	PATIL PRASHANT VINOD	Male
90.	2018015400031673	PATIL PRATHMESH NARAYAN	Male
91.	2018015400032637	PATIL PRIYANKA DNYANESHWAR	Female
92.	2018015400031746	PATIL PRIYANKA VIJAY	Female





	2018015400032405	PATIL RAJSHRI GULABRAO	Female
94.	2018015400032974	PATIL RISHIKESH PRABHAKAR	Male
95.	2018015400032475	PATIL SACHIN ARUN	Male
96.	2018015400032796	PATIL SACHIN RAMKRISHNA	Male
97.	2018015400031715	PATIL SHATRUGHNA RAJENDRA	Male
98.	2018015400032467	PATIL SHUBHAM ANKUSH	Male
99.	2018015400031812	PATIL SHUBHAM GULAB	Male
100.	2018015400032274	PATIL SONALI TUKARAM	Female
101.	2018015400031731	PATIL SUCHITA SANJAY	Female
102.	2018015400032765	PATIL SUMEDHA ANIL	Female
103.	2018015400032765	PATIL SUMEDHA ANIL	Female
104.	2018015400032154	PATIL SUSHAMA PRALHAD	Female
105.	2018015400032491	PATIL SWAPNALI RAJENDRA	Female
106.	2018015400032862	PATIL SWAPNIL SANTOSH	Male
107.	2018015400032661	PATIL SWATI BHARAT	Female
108.	2018015400032483	PATIL SWATI DAGADU	Female
109.	2018015400032177	PATIL SWATI PRAMOD	Female
110.	2018015400031986	PATIL TEJASHRI UMESH	Female
111.	2018015400032034	PATIL TEJASWINI SANJAY	Female
112.	2018015400031754	PATIL TUSHAR VIJAYSING	Male
113.	2018015400032073	PATIL VAISHALI JIJABRAO	Female
114.	2018015400032003	PATIL VISHAL BHIDAS	Male
115.	2018015400031971	PATIL VISHAL CHANDRASHEKHAR	Male
116.	2018015400031916	PATIL VISHAL RAJENDRA	Male
117.	2018015400031916	PATIL VISHAL RAJENDRA	Male
118.	2018015400031851	PATIL VIVEK PUNDALIK	Male
119.	2018015400032807	PATIL VIVEK RAMRAO	Male
120.	2018015400032927	PATIL YOGESH PRADIP	Male
121.	2018015400031955	PATIL YOGINI ANIL	Female
122.	2018015400031994	PAWAR BHARATI SHRIRAM	Female
123.	2018015400032452	PAWAR RAKESH MANOHAR	Male
124.	2018015400032943	PAWAR SAMADHAN ANIL	Male
125.	2018015400094777	PINGALE PRITESH SHRIKRISHNA	Male
126.	2018015400031947	PINJARI SANIYA SIKANDAR	Female
127.	2018015400031932	RAJPUT MAYURI ARJUNSING	Female
128.	2018015400031924	SAWANT NILIMA SANJAY	Female
129.	2018015400032502	SHAH ARSHAD SHAKIL	Male
130.	2018015400032703	SHELAR HARSHALI GULAB	Female
131.	2018015400032243	SHELAR JAYESH BHASKAR	Male
132.	2018015400032726	SHENDE DIVYANI SUDHAKAR	Female
133.	2018015400032854	SHINDE SURAJ SHRIRAM	Male
134.	2018015400032185	SINDHI KAJAL RAMKUMAR	Female
135.	2018015400032982	SONAR DIPALI SUNIL	Female
136.	2018015400032266	SONAR JAGRUTI SANJAY	Female
137.	2018015400032282	SONAWANE ASHWINI RAJENDRA	Female
138.	2018015400032011	SONAWANE GAYATREE DNYANESHWAR	Female
139.	2018015400032042	SONAWANE HARSHADA SANJAY	Female





140.	2018015400031696	TELI RAKESH DEVIDAS	Male
141.	2017015400072475	THAKRE NILESH ANKUSH	Male
142.	2018015400032823	VANKHEDE CHETAN DINKAR	Male
143.	2018015400032123	VASAIKAR RAJESHWARI VITTHALBHAI	Female
144.	2018015400024715	VASANDE HANSRAJ DIPAK	Male
145.	2018015400032541	WAGH HARSHADA PRAKASH	Female
146.	2018015400032146	WANI ACHAL RAMESH	Female

*PRINCIPAL*  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



## Student List of Arts Faculty

Sr.No	PRN	Student Name	Gender
1.	2018015400025034	AHIRE DIPALI DNYANESHWAR	Female
2.	2018015400024916	AMRUTSAGAR YOGITA DATTU	Female
3.	2018015400024874	BAGUL VISHAL SUNIL	Male
4.	2018015400025235	BANJARI SANDEEP DAGADU	Male
5.	2018015400025042	BELDAR SHASHIKANT PANDHARINATH	Male
6.	2018015400025266	BHOI AKSHAY SURESH	Male
7.	2018015400025676	BHOI MOHAN HIRAMAN	Male
8.	2018015400025413	BHOI VIKI RATILAL	Male
9.	2018015400025684	BIRARI SACHIN HEMRAJ	Male
10.	2018015400025386	BORASE KAMINI RAVINDRA	Female
11.	2018015400024827	CHAUDHARI BHAGYASHRI ANIL	Female
12.	2018015400025115	CHAVAN GURUPRASAD KANTILAL	Male
13.	2018015400025177	CHAVHAN MANISHA PRABHAKAR	Female
14.	2018015400025282	DESHMUKH UJWALA BALVANT	Female
15.	2018015400025614	DHANAGAR SWATI SHIVAJI	Female
16.	2018015400025935	DHANGAR NAMRATA AASARAM	Female
17.	2018015400024963	DHANGAR PRACHI RAJENDRA	Female
18.	2018015400025073	JADHAV BHAGYASHRI BHALCHANDRA	Female
19.	2018015400025193	JADHAV KAPILKUMAR SHIVAJI	Male
20.	2018015400024174	JADHAV LAXMAN SAKHARAM	Male
21.	2018015400025204	JADHAV PRASHANTKUMAR SHIVAJI	Male
22.	2018015400025162	KADAM RAGINI SANJIV	Female
23.	2018015400025943	KHADE MANISHA YUVARAJ	Female
24.	2018015400025324	KHAIRNAR SONALI DEVIDAS	Female
25.	2018015400025297	KHAN NOOR MOHAMMAD KHAN ZAKIR	Male
26.	2018015400025243	KOLI KAVITA SANJAY	Female
27.	2018015400025185	KOLI SANDIP RAJENDRA	Male
28.	2018015400024897	KUMBHAR VARSHA PANDIT	Female
29.	2018015400025107	LOHAR TAUHASIF EKRAMUDDIN	Male
30.	2018015400024634	LOKHANDE KOMAL DNYANESHWAR	Female
31.	2018015400024777	MAHAJAN AKANKSHA NAMDEO	Female
32.	2018015400025421	MAHAJAN DHANESHWARI DIPAK	Female
33.	2018015400025421	MAHAJAN DHANESHWARI DIPAK	Female
34.	2018015400031592	MAHAJAN GAYATRI DNYANESHWAR	Female
35.	2018015400025525	MAHAJAN MAHESH SANJAY	Male
36.	2018015400025363	MAHAJAN PRIYANKA RAVINDRA	Female
37.	2018015400025912	MAHAJAN SUVARNA SANJAY	Female
38.	2018015400025212	MAHAJAN VARSHA DATTATRAY	Female
39.	2018015400024882	MAHAJAN YOGESH SHANTARAM	Male
40.	2018015400025606	MAHALE KAJAL GOTU	Female
41.	2018015400025595	MAHALE ROHINI BHAGWAN	Female
42.	2018015400024793	MALI ASHWINI DAGADU	Female
43.	2018015400031611	MALI SONALI BABULAL	Female
44.	2017015400047744	MALI TEJASWINI BHAGWAN	Female
45.	2018015400024986	MARATHE DAMINI BHAGWAN	Female
46.	2018015400025394	MISTARY VAISHALI SUDAM	Female
47.	2018015400024804	MORE ANJALI ISHWAR	Female
48.	2018015400025927	MORE KALPESH MAHESH	Male
49.	2018015400025355	MORE SHITAL VIJAY	Female
50.	2017015400047647	NARWADE MANOJ TUKADU	Male
51.	2018015400024603	NIKAM DIPALI DAGADU	Female
52.	2018015400024665	PARDHI SAMADHAN GANGARAM	Male
53.	2018015400028493	PATIL AJAY HARISHCHANDRA	Male
54.	2018015400025444	PATIL AKSHADA SANJAY	Female
55.	2016015400189802	PATIL ANKITA NANDLAL	Female
56.	2018015400028512	PATIL ASHWINEE LAXMAN	Female
57.	2018015400031626	PATIL BHAVANA SUNIL	Female
58.	2018015400024754	PATIL CHETANA DNYANESHWAR	Female
59.	2018015400024754	PATIL CHETANA DNYANESHWAR	Female
60.	2018015400025475	PATIL DIPAK SITARAM	Male
61.	2018015400024835	PATIL DIPALI BHAUSAHEB	Female
62.	2018015400025065	PATIL DIPALI JANARDAN	Female
63.	2018015400025541	PATIL GAYATRI VALMIK	Female
64.	2018015400025587	PATIL HARSHADA PANJABRAO	Female





65.	2018015400024746	PATIL HARSHADA SUNIL	Female
66.	2018015400025483	PATIL HEMANT SUNIL	Male
67.	2018015400025533	PATIL JAYASHRI NAMDEV	Female
68.	2018015400025661	PATIL JYOTI SHALIGRAM	Female
69.	2018015400024851	PATIL JYOTSNA KAILAS	Female
70.	2018015400025556	PATIL KIRTIKA KISHOR	Female
71.	2018015400024971	PATIL KISHOR JIVAN	Male
72.	2018015400024151	PATIL MADHAVI ANANDA	Female
73.	2018015400025502	PATIL MAHENDRA VITTHAL	Male
74.	2018015400024642	PATIL MANISHA PITAMBAR	Female
75.	2018015400025951	PATIL MAYABAI DNYANESHWAR	Female
76.	2018015400024955	PATIL MAYURI KAILAS	Female
77.	2018015400024812	PATIL MAYURI VISHWAS	Female
78.	2018015400025692	PATIL NEHA DHONDU	Female
79.	2018015400024166	PATIL NILESH JITENDRA	Male
80.	2018015400025572	PATIL NITIN BHAUSAHEB	Male
81.	2018015400024994	PATIL NITIN VILAS	Male
82.	2018015400025436	PATIL PAVAN GOPAL	Male
83.	2018015400025081	PATIL PAYAL EKNATH	Female
84.	2018015400025452	PATIL POONAM TRYAMBAK	Female
85.	2018015400025332	PATIL PRAGATI NANDKISHOR	Female
86.	2018015400025026	PATIL PRANALI SURESH	Female
87.	2018015400025154	PATIL PRATIKSHA KHUSHAL	Female
88.	2018015400024947	PATIL PRIYANKA GOPAL	Female
89.	2018015400025251	PATIL PRIYANKA GORAKH	Female
90.	2018015400025467	PATIL RAHUL RAJENDRA	Male
91.	2018015400024924	PATIL RITA SHALIK	Female
92.	2018015400025622	PATIL RUPALI SUKDEO	Female
93.	2018015400027656	PATIL SARIKA RAVINDRA	Female
94.	2018015400031642	PATIL SARITA KAILAS	Female
95.	2018015400028527	PATIL SHUBHAM BHAIYASAHEB	Male
96.	2018015400025123	PATIL SUVARNA MADHAVRAO	Female
97.	2018015400028504	PATIL TRUPTI SANJAY	Female
98.	2018015400025301	PATIL VAISHALI BAPU	Female
99.	2018015400025146	PATIL VAISHALI BARKU	Female
100.	2018015400025227	PATIL VAISHALI KAPURSING	Female
101.	2018015400031634	PATIL VIDYA NIMBA	Female
102.	2018015400028485	PATIL VIJAY HARISHCHANDRA	Male
103.	2018015400024762	PATIL YASHOMATI BHAGWAN	Female
104.	2018015400024901	PATVE NADEEM SHAIKHA SALIM	Male
105.	2018015400025564	PAWAR DHANASHRI GANESH	Female
106.	2018015400025653	PAWAR SAMADHAN SHRAVAN	Male
107.	2018015400024657	PAWAR SAPANA KAILAS	Female
108.	2018015400025274	PAWAR SHUBHANGI SANJAY	Female
109.	2018015400025131	PAWAR SNEHAL SAMADHAN	Female
110.	2018015400025011	PAWAR SUNIL ADHIKRAO	Male
111.	2018015400025096	PAWAR SURESH SANTOSH	Male
112.	2018015400025517	PAWAR VIKAS SUBHASH	Male
113.	2018015400025637	RATHOD JITENDRA RAJENDRA	Male
114.	2017015400047292	ROKADE POONAM JAYRAM	Female
115.	2018015400024843	ROKADE SNEHA NARENDRA	Female
116.	2018015400025491	SAINDANE DIPAK YUVRAJ	Male
117.	2018015400031657	SAINDANE MRUNAL AVINASH	Female
118.	2018015400025966	SAKERABI SHAIKH BASHR SHAIKH	Female
119.	2018015400031603	SALI RUSHIKESH DNYANESHWAR	Male
120.	2018015400025645	SARDAR POONAM SHALIK	Female
121.	2018015400024866	SHAIKH AFATAB SHAIKH HARUN	Male
122.	2018015400024182	SHAIKH ALTAMASH JHAHIRODDIN	Male
123.	2017015400042012	SONAR KAJAL SANJAY	Female
124.	2018015400025003	SONAWANE ASHWINI PRABHAKAR	Female
125.	2018015400025405	SONAWANE KIRTI SANJAY	Female
126.	2018015400024626	SONAWANE PRAJAKTA PRAMOD	Female
127.	2018015400025057	SONTAKKE AKASH VASANT	Male
128.	2018015400025316	SURYAWANSHI DIVYA PANDHAREENATH	Female
129.	2018015400024785	SURYAWANSHI KIRTI KHUMANSING	Female
130.	2018015400025347	VADAR NILABAI RAJENDRA	Female

  
7  
PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehn) Sauchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**

ESTD: 1992



Website: [rcollegeparola.com](http://rcollegeparola.com), Email: [principalrparola@gmail.com](mailto:principalrparola@gmail.com), Tel: +91 2597 292666, Fax: +91 2597 292665

**Internal Quality Assurance Cell**

**Field work of Environmental Studies**

**Academic Year (2019-2020)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	140	1 to 25	Solid waste management in Parola City
			26 to 50	Effect of air Pollution on Environment
			51 to 75	Effect of Sound Pollution on Environment
			76 to 100	Effect of water Pollution on Environment
			101 to 125	Global warming and Environment
			126 to 140	Importance of Biodiversity
2	Arts	167	1 to 25	Biodiversity around Parola Tahsil
			26 to 50	Study of Vegetation's cover in Parola Tahsil
			51 to 75	Impact of Air pollution due to National Highway (NH6)
			76 to 100	Relationship both Man and Environment
			101 to 125	Water reservoir around Parola Tahsil and its impact
			126 to 150	As a Youth what is our duty for Conservation of Environment
151 to 167	Solid waste management in Parola City			

  
IQAC Coordinator  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon



### Students List of Science Faculty

Sr.No	PRN	Student Name	Gender
1	2019015400001806	AHIRE SAGAR ANIL	Male
2	2019015400002431	AHIRRAO MADHURI BHARAT	Female
3	2019015400002164	BIRARI GAURAV GOVINDA	Male
4	2019015400002423	BIRARI MAYUR BABAN	Male
5	2019015400015315	BORASE RAKESH BHASKAR	Male
6	2019015400002222	CHAUDHARI MAYAVATI BHARAT	Female
7	2019015400000173	CHAUDHARI PRATIKSHA NARAYAN	Female
8	2019015400002535	CHAVAN KRISHNA BHAGWAN	Male
9	2019015400002396	DANEJ MADHURI YOGESH	Female
10	2019015400002052	DANEJ SWATI KIRAN	Female
11	2019015400001926	DEORE ADITYA PRAKASH	Male
12	2019015400001884	DEORE NIKHIL PRAKASH	Male
13	2019015400002117	DESHMUKH RINKU RAMESH	Female
14	2019015400000215	DHANGAR MADHURI ISHWAR	Female
15	2019015400001957	GADILOHAR NEHA DIPAK	Female
16	2019015400000382	GIRASE NIKHIL DARBARSING	Male
17	2019015400001787	HATKAR DNYANESHWARI ABA	Female
18	2019015400002342	HATKAR SACHIN SANJAY	Male
19	2019015400002292	HINDUJA SHRUTI ANILKUMAR	Female
20	2019015400002326	JADE VAISHNAVI NARENDRA	Female
21	2019015400015307	JADHAV DIPAK RANJIT	Male
22	2019015400002206	JADHAV KAVITA NATTHU	Female
23	2019015400001683	JAGTAP PUJA HARISH	Female
24	2019015400001717	JAWARE HARISHKUMAR RAMAN	Male
25	2019015400001586	KHADE DINESH BALU	Male
26	2019015400009864	KHAIRNAR NANDINI DEVENDRA	Female
27	2019015400002044	KOLI YOGESH DNYANESHWAR	Male
28	2019015400002365	KU PATIL PRERANA TUKARAM	Female
29	2019015400002446	LOKAKSHI VAIBHAV ANANT	Male
30	2019015400001636	MAHAJAN AVANTIKA DILIP	Female
31	2019015400346201	MAHAJAN CHETAN SUNIL	Male
32	2019015400001652	MAHAJAN JAYASHRI SAHEBRAO	Female
33	2019015400001892	MAHAJAN KOMAL SANJAY	Female
34	2019015400001942	MAHAJAN MOHINI VILAS	Female
35	2019015400001934	MAHAJAN POOJA BAPU	Female
36	2019015400001702	MAHALE DIPALI SUDAM	Female
37	2019015400002485	MAHALE RAJASHRI PURUSHOTTAM	Female
38	2019015400002311	MAHALE SARIKA TUKARAM	Female
39	2019015400009895	MALI DIPALI RAJENDRA	Female
40	2019015400009914	MALI RAVINDRA SAHEBRAO	Male
41	2019015400015323	MALI RINA RAJENDRA	Female
42	2019015400346197	MARATHE NILESH SITARAM	Male
43	2019015400002067	MORE PAVAN VILAS	Male
44	2019015400002407	MORE YOGINI RAJENDRA	Female
45	2019015400002133	NERAKAR MAYURI ASHOK	Female



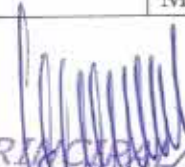


46	201901540001772	NIKAM HARSHADA PRAMOD	Female
47	2019015400002477	PATHAN AYUBKHA BHIKANKHA	Male
48	2019015400009945	PATIL AISHWARYA GULAB	Female
49	2019015400002334	PATIL ASHWINI BALU	Female
50	2019015400001837	PATIL ASHWINI NANDRAM	Female
51	2019015400001764	PATIL ASHWINI SANJAY	Female
52	2019015400002663	PATIL BHAGYASHRI SUKLAL	Female
53	2019015400001996	PATIL BHAVANA DINESH	Female
54	2019015400002543	PATIL BHUSHAN SHANTARAM	Male
55	2019015400002091	PATIL CHANDRAKANT MADHAVRAO	Male
56	2019015400002261	PATIL DHIRAJ SANJAY	Male
57	2019015400000196	PATIL DIKSHA GORAKH	Female
58	2019015400001876	PATIL DIPAK ASHOK	Male
59	2019015400002373	PATIL DIPALI PRALHAD	Female
60	2019015400009922	PATIL DIPALI VINOD	Female
61	2019015400002237	PATIL DIVYA SANJAY	Female
62	2019015400002075	PATIL GAURAV CHHAGAN	Male
63	2019015400000181	PATIL GAYATRI SUNIL	Female
64	2019015400002125	PATIL GOPAL SUNIL	Male
65	2019015400001594	PATIL HARSHAL VITTHALRAO	Male
66	2019015400002245	PATIL HARSHALA PRAKASH	Female
67	2019015400012506	PATIL ISHWAR SUNIL	Male
68	2019015400012553	PATIL JANAVI NARESH	Female
69	2019015400002566	PATIL JAYESH LOTAN	Male
70	2019015400000397	PATIL KALPANABEN ANIL	Female
71	2019015400002671	PATIL KALYANI BHAGWAN	Female
72	2019015400001555	PATIL KAVITA ARUN	Female
73	2019015400002021	PATIL KAVITA SATISH	Female
74	2019015400002574	PATIL LALIT BHAVRAO	Male
75	2019015400009856	PATIL MAHESH VITHTHAL	Male
76	2019015400002597	PATIL MAYUR MILIND	Male
77	2019015400009887	PATIL MAYUR SUNIL	Male
78	2019015400001667	PATIL MAYURI ASHOK	Female
79	2019015400001822	PATIL MAYURI KAILAS	Female
80	2019015400002102	PATIL MAYURI RAVINDRA	Female
81	2019015400001741	PATIL MEGHA DHANRAJ	Female
82	2019015400001814	PATIL MINAL DHANRAJ	Female
83	2019015400001973	PATIL MOHINI SAMBHAJI	Female
84	2019015400002527	PATIL NIKITA DNYANESHWAR	Female
85	2019015400001795	PATIL NIKITA PIRAN	Female
86	2019015400002187	PATIL NIKITA RAJENDRA	Female
87	2019015400002195	PATIL NIKITA RAVINDRA	Female
88	2019015400002415	PATIL NUTAN SHANTARAM	Female
89	2019015400009872	PATIL PANKAJ KISHOR	Male
90	2019015400001981	PATIL POONAM HARI	Female
91	2019015400002284	PATIL PRATIBHA GOKUL	Female
92	2019015400001644	PATIL PRIYANKA BHASKAR	Female
93	2019015400009841	PATIL PRIYANKA YUVRAJ	Female





94	2019015400012522	PATIL PUJA GULABARAO	Female
95	2019015400015273	PATIL RADHIKA ASHOK	Female
96	2019015400002601	PATIL ROHIDAS MOHAN	Male
97	2019015400002303	PATIL ROHIT GULAB	Male
98	2019015400002381	PATIL SAMADHAN SANJAY	Male
99	2019015400002504	PATIL SANDIP BHAGVAN	Male
100	2019015400000207	PATIL SANJANA DNYANESHWAR	Female
101	2019015400002624	PATIL SATYAM RAJENDRA	Male
102	2019015400009833	PATIL SHUBHAM PRAVIN	Male
103	2019015400002616	PATIL SHWETA JITENDRA	Female
104	2019015400002454	PATIL SUDARSHAN PIRAN	Male
105	2019015400000165	PATIL SWATI KAILAS	Female
106	2019015400002736	PATIL UMESH DILIP	Male
107	2019015400002551	PATIL VAISHALI CHANDU	Female
108	2019015400015281	PATIL VAISHNAVI SHANABHAU	Female
109	2019015400002512	PATIL VARSHA SANTOSH	Female
110	2019015400002632	PATIL VISHAL CHINDHA	Male
111	2019015400002582	PAWAR DHANASHRI RAVINDRA	Female
112	2019015400001532	PAWAR KULDIP KISHOR	Male
113	2019015400002655	PAWAR SACHIN RAJENDRA	Male
114	2019015400001861	PAWAR SNEHAL BHATU	Female
115	2019015400002005	PAWAR VAISHALI NIMBA	Female
116	2019015400002493	PILE CHETANA PURUSHOTTAM	Female
117	2019015400001725	PINJARI YASMIN SHAKIL	Female
118	2019015400001911	SALI ANJALI SANJAY	Female
119	2019015400001845	SAUDAGAR ARCHANA NIMBA	Female
120	2019015400002036	SHELAR NIKITA NAMDEV	Female
121	2019015400012537	SHENDE RASHMI JAGANNATH	Female
122	2019015400001756	SHIMPI DIPALI RAMESH	Female
123	2019015400001903	SHINDE KALASHRI SUBHASH	Female
124	2019015400001691	SHINDE MAYURI RAMRAO	Female
125	2019015400001965	SHINDE NAYANA DNYANESHWAR	Female
126	2019015400000401	SHINDE RITU DADABHAU	Female
127	2019015400009906	SHINDE VISHAL VASANT	Male
128	2019015400001733	SHIROLE SANKET SANJAY	Male
129	2019015400001675	SONAWANE VARSHA SANJAY	Female
130	2019015400002357	SURYAWANSHI ASHWINI RAVSAHEB	Female
131	2019015400012514	SURYAWANSHI ROSHAN YASHAVANT	Male
132	2019015400002013	THAKARE ASHWINI PRAMOD	Female
133	2019015400001853	THAKUR CHARUSHILA MADAN	Female
134	2018015400221046	THAKUR MANISH KUNDANSINGH	Male
135	2019015400002462	THAKUR YOGESHWARI VITTHAL	Female
136	2019015400002253	TOLKAR REVATI GOVIND	Female
137	2019015400002083	VADAR UMESH RAVINDRA	Male
138	2019015400009937	WAGH YASH ANIL	Male
139	2019015400002276	YADAV MEGHA ASHOK	Female
140	2019015400029362	YEOLE SUPRASAD SUNIL	Male

  
PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





## Students List of Science Faculty

Sr.No	PRN	Student Name	Gender
1.	2019015400000811	AHIRRAO SWATI KRUSHNA	Female
2.	2019015400001234	AMBEKAR AKANKSHA RAJENDRA	Female
3.	2019015400001056	BABAR RAJASHRI HARISH	Female
4.	2019015400000776	BACHHAV PANKAJ NIMBA	Male
5.	2019015400000792	BADGUJAR BHAGYASHRI DNYANESHWAR	Female
6.	2019015400000977	BAGUL PRIYANKA KANTILAL	Female
7.	2019015400000366	BHIL KALYANI DHARMA	Female
8.	2019015400001435	BHOI DIPAK DNYANESHWAR	Male
9.	2019015400001346	BHOI MONALI DASHARATH	Female
10.	2019015400000312	BHOI SHUBHANGI NANDLAL	Female
11.	2019015400001427	BIRARI SHUBHAM HEMRAJ	Male
12.	2019015400000834	BORASE ANURADHA CHANDRAKANT	Female
13.	2019015400000374	BORSE MAYURI ASHOK	Female
14.	2019015400000664	CHAUDHARI LALITA DEVIDAS	Female
15.	2019015400002767	CHAUDHARI PUNAM TRYAMBAK	Female
16.	2019015400001145	CHAUDHARI SWATI SANJAY	Female
17.	2019015400001323	CHAUDHARI YOGINI SANJAY	Female
18.	2019015400001501	CHAVAN DIPANJALEE DNYANESHWAR	Female
19.	20180154000031762	CHAVAN PRAJAKTA RAVINDRA	Female
20.	2019015400002721	CHAVAN SACHIN LALU	Male
21.	2019015400001041	DEORE DURGESH SANJAY	Male
22.	2019015400001095	DESHMUKH JAYASHREE AMBADAS	Female
23.	2019015400000695	DHANGAR ASHWINI KAILAS	Female
24.	2019015400002744	DHANGAR DIVYA PARSHURAM	Female
25.	2019015400000803	JADHAV BHAGYASHRI DEVIDAS	Female
26.	2019015400000896	JADHAV NIMBA NAMDEV	Male
27.	2019015400000304	JADHAV SANDIP SHIVA	Male
28.	2019015400000463	JAGDALE ASHWINI RAMESH	Female
29.	2019015400001192	JAGTAP NISHANT BALU	Male
30.	2019015400000455	JAIN MAYURI ANIL	Female
31.	2019015400001203	JAIWAL SHIVANI SANJAY	Female
32.	2019015400000962	JAWLE PUNAM ANANDA	Female
33.	2019015400002713	KAMBALE SONALI SAHEBRAO	Female
34.	2019015400000625	KAROSHIYA VIJAY RADHESHAM	Male
35.	2019015400001524	KHAIRE MONALI RAJENDRA	Female
36.	2019015400001296	KHAIRNAR DIVYA SUBHASH	Female
37.	2019015400000262	KHAIRNAR PRIYANKA SHANTARAM	Female
38.	2019015400001307	KHAN RAZIYA BI KARIM	Female
39.	2019015400002791	KOLI MAHAVIR NARENDR	Male
40.	2019015400000591	KOLI YOGITA BUDHA	Female
41.	2019015400000881	KOTHAWADE ASHWINI PRAFULL	Female
42.	2019015400341157	KUMBHAR YOGINI KAILAS	Female
43.	2019015400001377	KUMHAR MANISHA RAMESH	Female
44.	2017015400138506	MAHAJAN PRASHANT DEEPAK	Male
45.	2019015400000985	MAHAJAN PRIYANKA KAILAS	Female
46.	2019015400000745	MAHAJAN RUPALI SAMBHAJI	Female
47.	2019015400341142	MAHAJAN SAYALI DATTATRAY	Female
48.	2019015400000424	MALI PRATIKSHA DNYANESHWAR	Female
49.	2019015400002752	MANGLANI DIVYA RAJESHKUMAR	Female
50.	2019015400000672	MARATHE POOJA JITENDRA	Female
51.	2019015400001621	MARATHE POOJABEN SUNILBHAJI	Female
52.	2019015400000223	MARATHE SHUBHANGI AABA	Female
53.	2019015400001265	MARSALE ALAKA SHANKAR	Female
54.	2019015400000513	METAKAR AKSHATA SUNIL	Female
55.	2019015400341134	MORE SHUBHAM KISHOR	Male
56.	2019015400341126	NARVADE ROHANT ROHIDAS	Male
57.	2019015400001482	NARVALE KU CHETANA KASHINATH	Female
58.	2019015400002783	NAYAK SONU SURESH	Female
59.	2019015400002856	NERPAGAR VAISHNAVI ANIL	Female
60.	2019015400001273	NIKAM DIPALI SUNIL	Female
61.	2019015400002906	NIKAM RAVINA SANTOSH	Female
62.	2019015400001137	PARDHI DINESH SUDHAKAR	Male
63.	2019015400000505	PATIL AKSHAY NANA	Male
64.	2019015400000714	PATIL ARCHANA AMAR	Female





65.	2019015400000641	PATIL ARTI ASHOK	Female
66.	2019015400001385	PATIL ASHVINI BHAUSAHEB	Female
67.	2019015400000471	PATIL ASHWINI KARMARAJ	Female
68.	2019015400001184	PATIL ASHWINI LOTAN	Female
69.	2019015400000447	PATIL ASHWINI SANJAY	Female
70.	2019015400000486	PATIL ASHWINI SUNIL	Female
71.	2019015400000857	PATIL ASHWINI VIJAY	Female
72.	2019015400002825	PATIL ASHWINI VILAS	Female
73.	2019015400000416	PATIL BHAGYASHRI KAILAS	Female
74.	2019015400000784	PATIL BHAVANA RAJENDRA	Female
75.	2019015400001242	PATIL DIPAK KAILAS	Male
76.	2019015400001176	PATIL DIPIKA EKNATH	Female
77.	2019015400001087	PATIL DIVYA DILIP	Female
78.	2019015400001354	PATIL GAYATRI JAGDISH	Female
79.	2019015400000602	PATIL GAYATRI PRAKASH	Female
80.	2019015400001257	PATIL GAYTRI RAVINDRA	Female
81.	2019015400001064	PATIL HARSHADA SATILAL	Female
82.	2019015400000993	PATIL ISHWARLAL RAJENDRA	Male
83.	2019015400002833	PATIL JAGRUTI BHASKAR	Female
84.	2019015400000826	PATIL JAGRUTI SUNIL	Female
85.	2019015400000873	PATIL JAYASHRI SAKHARAM	Female
86.	2019015400002872	PATIL JAYSHRI VILAS	Female
87.	2019015400002775	PATIL KALYANI PRAVIN	Female
88.	2019015400001571	PATIL KAMLESH GULAB	Male
89.	2019015400001122	PATIL KAVITA MADHUKAR	Female
90.	2019015400000567	PATIL KAVITA SANJAY	Female
91.	2019015400000583	PATIL KISHORI NARESH	Female
92.	2019015400000544	PATIL LAVKESH GOPAL	Male
93.	2019015400002694	PATIL MADHURI MUKUNDA	Female
94.	2019015400002686	PATIL MADHURI PRABHAKAR	Female
95.	2019015400000923	PATIL MADHURI SHANTARAM	Female
96.	2018015400025502	PATIL MAHENDRA VITTHAL	Male
97.	2019015400001404	PATIL MAHESH SANJAY	Male
98.	2019015400001002	PATIL MANOHAR HIRAMAN	Male
99.	2019015400002895	PATIL MAYURI DILIP	Female
100.	2019015400000246	PATIL MUKESH RAMESH	Male
101.	2019015400000753	PATIL NAYANA CHATUR	Female
102.	2019015400000633	PATIL NEHA RAJENDRA	Female
103.	2019015400000865	PATIL NIKITA KAILAS	Female
104.	2019015400000521	PATIL NIKITA SANJAY	Female
105.	2019015400001547	PATIL NUTAN DURYODHAN	Female
106.	2018015400116574	PATIL PANKAJ RAVINDRA	Male
107.	2019015400000907	PATIL POOJA RAVINDRA	Female
108.	2019015400001025	PATIL POONAM VALMIK	Female
109.	2019015400002887	PATIL PRANALI MANOHAR	Female
110.	2019015400002841	PATIL PRIYANKA BHIKAN	Female
111.	2019015400002864	PATIL PUNAM LOTAN	Female
112.	2019015400000351	PATIL RAJSHRI DHARMARAJ	Female
113.	2019015400000722	PATIL RITESH PANDURANG	Male
114.	2019015400002817	PATIL RITU DINKAR	Female
115.	2019015400001613	PATIL ROHAN BHIMRAO	Male
116.	2019015400001393	PATIL ROHIT BHAGWAN	Male
117.	2019015400000293	PATIL RUPALI SANTOSH	Female
118.	2019015400001281	PATIL SANGEETA ASHOK	Female
119.	2019015400000617	PATIL SARITA SUNIL	Female
120.	2019015400000761	PATIL SAYALI SANJAY	Female
121.	2019015400001161	PATIL SHAMKANT GORAKH	Male
122.	2019015400000946	PATIL SHITAL SUPADU	Female
123.	2019015400000931	PATIL SHUBHANGI BHASKAR	Female
124.	2019015400001106	PATIL SHWETA MAHENDRA	Female
125.	2019015400000842	PATIL SIMA SANJAY	Female
126.	2019015400001017	PATIL SONALI DATTU	Female
127.	2019015400000335	PATIL SONALI PRAVIN	Female
128.	2019015400000687	PATIL SUNITA BHATU	Female
129.	2019015400000327	PATIL SUSHMA DEVENDRA	Female
130.	2019015400000343	PATIL SUVARNA ARJUN	Female
131.	2019015400002802	PATIL UJJWALA RAVINDRA	Female
132.	2019015400000494	PATIL URMILA SAMHAJI	Female





133.	2019015400001226	PATIL VAIBHAV BHAGVAN	Male
134.	2019015400001412	PATIL VARSHA DHARMA	Female
135.	2019015400000954	PATIL VARSHA KAILAS	Female
136.	2019015400001605	PATIL VIJAY RAVAN	Male
137.	2019015400000552	PATIL YASH SANJAY	Male
138.	2019015400001563	PATIL YOGITA LOTAN	Female
139.	2019015400000277	PAWAR AMOL DESHMUKH	Male
140.	2019015400001033	PAWAR BHARATI DHARASHI	Female
141.	2019015400000706	PAWAR JAYASHRI BABULAL	Female
142.	2019015400002705	PAWAR JAYASHRI CHHOTU	Female
143.	2019015400000432	PAWAR KAVITA SANJAY	Female
144.	2019015400001072	PAWAR NAMDEO RAJENDRA	Male
145.	2019015400001211	PAWAR RITESH RAMESH	Male
146.	2019015400000915	PAWAR SANTOSH VILAS	Male
147.	2019015400354355	PAWAR SUNIL BHAUSAHEB	Male
148.	2019015400001474	PAWAR VIJAY YUVRAJ	Male
149.	2019015400000737	PRAJAPATI NIKITA RAMESH	Female
150.	2019015400001497	RATHOD BHARAT GULAB	Male
151.	2019015400000575	RATHOD SUNIL INDAL	Male
152.	2019015400001331	RATHOD VILAS GOBA	Male
153.	2019015400000231	RATHOD YOGESH SHANTILAL	Male
154.	2019015400000254	ROKADE AKASH NARENDRA	Male
155.	2019015400000285	ROKADE ASHWINI PRAMOD	Female
156.	2019015400359205	SHIMPI MAYUR ARUN	Male
157.	2019015400001362	SONAWANE MADHURI SATISH	Female
158.	2019015400012545	SONAWANE PANKAJ SHANTARAM	Male
159.	2019015400000656	SONAWANE RAJASHRI EKNATH	Female
160.	2019015400001153	SONAWANE SAGAR BHAGWAN	Male
161.	2019015400001516	SURYAVANSHI SONALI SHEKHAR	Female
162.	2019015400000536	SURYAVANSHI MANISHA ASHOK	Female
163.	2019015400001315	TAMBAT RUTUJA RAJENDRA	Female
164.	2019015400001466	WANI AKASH MANOHAR	Male
165.	2019015400001114	WANKHEDE GAYATRI SAHEBRAO	Female
166.	2019015400001443	YADAV SAGAR SANJAY	Male
167.	2019015400001451	ZELATE RUSHIKESH ARUN	Male

  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Vice Principal  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Tehn) Sanchalit  
**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**



ESTD: 1992

Website: ricollegeparola.com, Email: principal@parola@gmail.com, Tel: +91 2597 292666, Fax: +91 2597 292665

**Internal Quality Assurance Cell**

**Field work of Environmental Studies**

**Academic Year (2020-2021)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	113	1 to 20	Solid waste management in Parola City
			21 to 40	Effect of air Pollution on Environment
			41 to 60	Effect of Sound Pollution on Environment
			61 to 80	Effect of water Pollution on Environment
			81 to 100	Global warming and Environment
			101 to 113	Importance of Biodiversity
2	Arts	121	1 to 20	Biodiversity around Parola Tahsil
			21 to 40	Study of Vegetation's cover in Parola Tahsil
			41 to 60	Impact of Air pollution due to National Highway (NH6)
			61 to 80	Relationship both Man and Environment
			81 to 100	Water reservoir around Parola Tahsil and its impact
			101 to 115	As a Youth what is our duty for Conservation of Environment
			116 to 121	Solid waste management in Parola City

  
IQAC Coordinator  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Acting Principal  
Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



### Students List of Science Faculty

Sr. No.	Last Name	First Name	Middle Name	PRN Number
1	AHIRE	KIRTI	GANESH	2020015400019292
2	AMBHORE	ROHIT	PRAKASH	2020015400017761
3	BARI	ASHWINI	RAJENDRA	2020015400018211
4	BELDAR	SHAKERA BI	SARDAR KHAN	2020015400018064
5	BHOSALE	AMOL	SANJAY	2020015400019284
6	CHAUDHARI	ADITYA	LAXMAN	2020015400019833
7	CHAUDHARI	LAXMI	ASHOK	2020015400019365
8	CHAUDHARI	RAJNANDINI	GOKUL	2020015400017954
9	CHAUDHARI	RUCHIKA	MAHESH	2020015400019686
10	CHAUDHARI	VAISHALI	KISHOR	2020015400019694
11	DADKAR	AMRUTA	KISHOR	2020015400019021
12	DESALE	VISHAL	TUKARAM	2020015400019303
13	DHANGAR	NIKITA	ASARAM	2020015400019222
14	GADHARI	NIVEDITA	LALA	2020015400019237
15	JADHAV	NIKITA	MACHHINDRA	2020015400017834
16	JADHAV	SACHIN	RAJENDRA	2020015400018122
17	JADHAV	SHWETA	SANJAY	2020015400019423
18	JOGI	RAVINDRA	SHIVDAS	2020015400019415
19	KADAM	TEJAL	SANJIV	2020015400018056
20	KASAR	MONALI	GIRISH	2020015400017811
21	KHADE	AJAY	VINOD	2020015400018087
22	KSHATRIY	VIVEK	KAILASSA	2020015400019551
23	MAHAJAN	DIPALI	DNYANESHWAR	2020015400019535
24	MAHAJAN	JAGRUTI	BAPURAO	2020015400019036





25	MAHAJAN	RAJESH	SAHEBRAO	2020015400019616
26	MAHAJAN	SONALI	MANOHAR	2020015400017672
27	MAHAJAN	SWATI	DASHARATH	2020015400017915
28	MAHAJAN	VINAYAK	SHIVDAS	2020015400019601
29	MARATHE	DHANVANT	DINESH MARATHE	2020015400018145
30	MISTARI	DIVYANI	VIJAY	2020015400017695
31	NATHJOGI	RUPALI	RAJENDRA	2020015400017687
32	NIKAM	DNYANESHWAR	VIKAS	2020015400017784
33	NIKAM	NEETA	ASHOK	2020015400017907
34	NIKAM	RUSHIKESH	KISHOR	2020015400019253
35	NIKAM	VIDYA	VINOD	2020015400019125
36	NIKUMBH	KALPESH	SUNIL	2019015400008025
37	PATIL	ABHISHEK	SANJAY	2020015400019052
38	PATIL	AISHWARYA	DIPAK	
39	PATIL	AKSHAY	BHAGWAT	2020015400019736
40	PATIL	AKSHAY	JAGANNATH	2020015400018114
41	PATIL	ANKITA	KAILAS	2020015400017857
42	PATIL	ANUSHKA	UTTAM	2020015400019067
43	PATIL	ASHWINI	RAJENDRA	2020015400019326
44	PATIL	ASHWINI	SANJAY	2020015400017803
45	PATIL	AVINASH	CHANDU	2020015400018137
46	PATIL	BHAGYASHRI	RAMDAS	2020015400019477
47	PATIL	BHANUPRIYA	SUNIL	2020015400019663
48	PATIL	CHETAN	GOTU	2020015400019825
49	PATIL	DEVENDRA	SHANKAR	2020015400022947
50	PATIL	DIPAK	BAPU	2020015400017985



51	PATIL	DIPALI	CHUDAMAN	2020015400022023
52	PATIL	DIPANJALI	SURESH	2020015400017617
53	PATIL	DIPIKA	SANJAY	2020015400017946
54	PATIL	DIPMALA	VIJAY	2020015400019431
55	PATIL	DIVYA	RAJENDRA	2020015400017664
56	PATIL	GANESH	BHARATBHAI	2020015400022031
57	PATIL	GAYATRI	MUKUNDA	2020015400017792
58	PATIL	HARSHADA	SURYABHAN	2020015400017993
59	PATIL	HARSHALI	ARVIND	2020015400019164
60	PATIL	HEMANGI	ARVIND	2020015400019187
61	PATIL	HIMANI	RAJENDRA	2020015400018176
62	PATIL	JAYASHRI	PRAVIN	2020015400019133
63	PATIL	JAYSHREE	BHAUSAHEB	2020015400019214
64	PATIL	JEET	RAMKRUSHNA	2020015400017625
65	PATIL	KAVITA	MADHAVRAO	2020015400018017
66	PATIL	KSHITIJ	AJAY	2020015400018362
67	PATIL	KU CHAITALI	SAMBHAJI	2020015400018025
68	PATIL	MAHESH	BAPURAO	2020015400019624
69	PATIL	MANOJ	SAHEBRAO	2020015400019493
70	PATIL	MAYUR	BHAGWAN	2020015400019705
71	PATIL	MAYUR	PARMESHWAR	2020015400019342
72	PATIL	NEHA	GORAKH	2020015400019334
73	PATIL	NEHA	LOTAN	2020015400017962
74	PATIL	NEHA	VASANT	2020015400017591
75	PATIL	NIKITA	SUNIL	2020015400017641
76	PATIL	NIKITA	SURESH	2020015400019632



77	PATIL	NILESH	YUVRAJ	2020015400022007
78	PATIL	PANKAJ	PREMRAJ	2020015400019454
79	PATIL	POOJA	DNYANESHWAR	2020015400017842
80	PATIL	PRATHAMESH	LAXMAN	2020015400019597
81	PATIL	PRIYA	LAXMAN	2020015400017656
82	PATIL	PRIYANKA	SUNIL	2020015400019543
83	PATIL	RAJ	MAHIPAT	2020015400019195
84	PATIL	RAJASHRI	RAMCHANDRA	2020015400017931
85	PATIL	ROSHANI	LAXMAN	2020015400017881
86	PATIL	SAPNA	RAVINDRA	2020015400019446
87	PATIL	SARITA	DNYANESHWAR	2020015400021983
88	PATIL	SHITAL	SAHEBRAO	2020015400022015
89	PATIL	SHUBHAM	DHANRAJ	2020015400017753
90	PATIL	SHUBHAM	MACHHINDRA	2020015400017745
91	PATIL	TANU	SATISH	2020015400019396
92	PATIL	TEJASWINI	ANIL	2020015400019527
93	PATIL	TEJASWINI	PANDURANG	2020015400018161
94	PATIL	VAISHALI	SATILAL	2020015400019206
95	PAWAR	ANKITA	RAMESH	2020015400019357
96	PAWAR	PRAKASH	BABULAL	2020015400019156
97	SALI	ASHVINI	SUNIL	2020015400019574
98	SALUNKHE	DIVYA	MANOHAR	2020015400019091
99	SHELAR	SANJIVANI	RANGRAO	2020015400018153
100	SHINDE	BHAGYASHRI	DADABHAU	2020015400017706
101	SONAR	NEHA	VALMIK	2020015400017602
102	SONAWANE	RITESH	PRABHAKAR	2020015400019462





103	SONAWANE	UDAY	PRUTHWIRAJ	2020015400017776
104	SURYAWANSHI	ANKITA	SANJAY	2020015400018996
105	SURYAWANSHI	MAMTA	JIJABRAO	2020015400019013
106	SURYAWANSHI	TEJAL	KAUTIK	2020015400019075
107	TANEJA	DISHA	RAKESH	2020015400018184
108	THAKARE	GAYATRI	ISHWAR	2020015400019512
109	TOLKAR	PRATIK	NANDKISHOR	2020015400019671
110	WAGH	PIYUSH	RAJIV	2020015400019841
111	WAGH	UMESH	SUNIL	2020015400019647
112	WANI	ASHWINI	MAHENDRA	2020015400017633
113	WANI	GAYATRI	DINESH	2020015400019504

  
PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



### Students List of Arts Faculty

Roll No.	Last Name	First Name	Middle Name	Mobile Number	PRN Number
1	AHIRE	AKASH	NIMBA	917666079457	2020015400019864
2	AHIRE	GANESH	RAMDAS	917387976382	2020015400018683
3	BAGUL	GAURAV	VILAS	918767191359	2020015400018926
4	BELDAR	AARTEE	SUKALAL	919822836347	2020015400018691
5	BELDAR	NITTIN	SHIVDAS	919021914138	2020015400018814
6	BELDAR	ROSHNI	BAPU	919158973109	2020015400018571
7	BHADANE	ABHISHEK	GULAB BHADANE	918390896080	2020015400018586
8	BHADANE	BHATU	SUNIL	7822998291	2020015400018764
9	BHOI	BHAGYASHRI	DNYANESHWAR	918767828382	2020015400018242
10	BHOI	GOKUL	RAVINDRA	917768936760	2020015400018106
11	BHOI	KHUSHALI	SHIVAJI	919970906447	2020015400018192
12	BHOI	RAVINDRA	ANIL	919370759227	2020015400018427
13	BIRHADE	MEGHANA	LOTAN	919594527422	2020015400018772
14	CHAUDHARI	HARSHAL	ASHOK	917822929341	2020015400019566
15	CHAUDHARI	MEGHANA	BHARAT	919518760911	2020015400019937
16	CHAUDHARI	VIJAY	NIMBA	917218883892	2020015400019582
17	CHAVAN	MAYA	GANSING	8263992655	2020015400019914
18	CHAVHAN	JAGDISH	DESHMUKH	919890763556	2020015400019922
19	DESAI	AARTI	PRAMOD	919975354673	2020015400021991
20	DEVARE	MUKESH	ANKUSH	7264905923	2020015400018404
21	DEVARE	RAJMAL	PRAKASH	917756824702	2020015400018443
22	DHANGAR	KHUSHBU	GANGARAM	919142845111	2020015400019906
23	DHANGAR	SWATI	PANDURANG	919370346075	2020015400018702
24	GURAV	BHAVIKA	BHANUDAS	919022374200	2020015400018942
25	HATKAR	KAVITA	BALU	919529542218	2020015400018041
26	HATKAR	PRATIKSHA	SHIVAJI	918805438666	2020015400018822
27	JADHAV	ASHWINI	GORAKH	918999562860	2020015400018095



28	KALOSHIYA	RUPESH	RADHESHAM	918999336896	2020015400019117
29	KASAR	JANHAVI	RAMCHANDRA	918055235900	2020015400019744
30	KHADE	BHAGYASHRI	NAMDEV	919975536443	2020015400019895
31	KHAIRNAR	CHETANA	SUDAM	919420899867	2020015400018501
32	KHAIRNAR	ROHIT	SHANTARAM	919146212326	2020015400019141
33	KSHATRIYA	DHANASHRI	MADHUKAR	917768099825	2020015400020001
34	KULKARNI	ABHISHEK	UDAY	919730928218	2020015400018072
35	KULKARNI	UTKARSHA	DHANRAJ	919763004777	2020015400019083
36	MAHAJAN	ASHWINI	RAJENDRA	919322478347	2020015400018474
37	MAHAJAN	MANOJ	DAGADU	919529462439	2020015400019783
38	MAHAJAN	PRASHANT	GORAKH	918806372120	2020015400018393
39	MAHAJAN	ROHIT	VASUDEV	917620278731	2020015400017923
40	MAHAJAN	SHITAL	RAJENDRA	919834407250	2020015400017865
41	MAHALE	AVINASH	RAVINDRA	919356576439	2020015400018853
42	MAHALE	BHAGYASHRI	SUBHASH	918767925131	2020015400018482
43	MAHESH	PATIL	BHAUSAHEB	917620716563	2020015400018613
44	MALI	MAMTA	DEVIDAS	917798010385	2020015400019044
45	MALI	PAVAN	GOVINDA	919145012087	2020015400019817
46	MALI	PRATIK	ASHOK	918459877105	2020015400019856
47	MALI	RUPALI	BABULAL	8262948611	2020015400019655
48	MARATHE	TEJASWINI	DIPAK	918767238491	2020015400019373
49	MISTARI	NANDINI	RAJENDRA	9022949526	2020015400018717
50	MOHITE	SHITAL	RAJU	919960199806	2020015400018675
51	MORE	BHAUSAHEB	ANANDA	917758924804	2020015400019953
52	NIKAM	CHETAN	GAJANAN	919049234502	2020015400017714
53	NIKAM	VIJAY	RAVSAHEB	918261060946	2020015400018033
54	PARADHI	ANJALI	RAVINDRA	919890585418	2020015400018652
55	PATIL	AMOL	SUDHAKAR	919503804038	2020015400018412
56	PATIL	ASHVINI	BAPU	9765187281	2020015400018981






57	PATIL	ASHWARYA	VILAS	919637947330	2020015400018516
58	PATIL	ASHWINI	ISHWAR	918805437444	2020015400019102
59	PATIL	ASHWINI	SHRAWAN	9307735904	2020015400019407
60	PATIL	ASHWINI	VIJAY	919665201841	2020015400018795
61	PATIL	BHAGYASHRI	DHANRAJ	918788768657	2020015400017977
62	PATIL	BHARATI	SANJAY	918459226890	2020015400019767
63	PATIL	BHUMIKA	CHANDRAKANT	919356055192	2020015400019311
64	PATIL	CHETAN	PRAKASH	917387974621	2020015400019172
65	PATIL	CHETAN	RAMKRUSHNA	919022221352	2020015400017896
66	PATIL	DIPIKA	KHUSHAL	919284147113	2020015400018837
67	PATIL	DIVYA	SUBHASH	919673749443	2020015400018644
68	PATIL	GAYATRI	DASHARATH	919359683864	2020015400018884
69	PATIL	GITANJALI	PRAVIN	917517870058	2020015400018806
70	PATIL	JYOTI	ASHOK	918698080144	2020015400019775
71	PATIL	KAMINI	DHARAM	919545314065	2020015400018965
72	PATIL	KU NIKITA	MANOHAR	919370660402	2020015400018563
73	PATIL	KU GAYATRI	SHANTARAM	919021931118	2020015400018555
74	PATIL	KU MAYURI	SUDAM	7387377185	2020015400018547
75	PATIL	KU POONAM	DNYANESHWAR	918390690923	2020015400018002
76	PATIL	MADHURI	DILIP	919561491891	2020015400018636
77	PATIL	MANASI	PRALHAD	919561826414	2020015400019713
78	PATIL	MAYURI	LILADHAR	9316432351	2020015400019005
79	PATIL	MAYURI	NANDU	919766717797	
80	PATIL	MOHINI	KHANDU	919370474128	2020015400018911
81	PATIL	NEHA	DHANESHWAR	7620455071	2020015400017737
82	PATIL	NEHA	MAHADU	919960400193	2020015400018973
83	PATIL	NEHA	SUBHASH	919404594621	2020015400018725
84	PATIL	NIKITA	DILIP	9021530200	2020015400017873
85	PATIL	PANKAJ	BHAUSAHEB	919023551632	2020015400018845



86	PATIL	POONAM	PANJABRAO	917666930249	2020015400018733
87	PATIL	PRAJAKTA	BHAGAWAT	918390849749	2020015400018532
88	PATIL	PRANALI	BHAIYASAHEB	918329306852	2020015400018903
89	PATIL	PRIYANKA	GOPAL	919356681722	2020015400018667
90	PATIL	PRIYANKA	ISHWAR	917498022970	2020015400019961
91	PATIL	PUJA	PRADIP	8010071382	2020015400019245
92	PATIL	PUJA	RAJENDRA	919145163690	2020015400019752
93	PATIL	PUJA	SANJAY	919529713195	2020015400018787
94	PATIL	RAHUL	BAPU	919075411322	2020015400018497
95	PATIL	RANI	SUKADEV	918847762402	2020015400018876
96	PATIL	ROHIDAS	MOHAN	919421531572	2019015400002601
97	PATIL	RUPALI	SUKLAL	919022711075	2020015400018892
98	PATIL	SAKSHI	SANTOSH	917798961311	2020015400019381
99	PATIL	SANJIVNI	JITENDRA	919322067350	2020015400018466
100	PATIL	SAPANA	GAMBHIR	917498426590	2020015400019802
101	PATIL	SAVITA	RAVINDRA	919637797820	2020015400021975
102	PATIL	SHUBHANGI	BHAGWAN	917498008551	2020015400018451
103	PATIL	TUSHAR	KAUTIK	919579036007	2020015400019721
104	PATIL	UDDHAVI	SURESH	918668917306	2020015400019976
105	PATIL	YOGESH	GORAKH	919834945797	2020015400018957
106	PATIL	YOGESH	NIMBA	918600915378	2020015400019485
107	PAWAR	ANJUBAI	ARUN	917387246924	2020015400018594
108	PAWAR	BHAGYASHRI	ASHOK	918788208465	2020015400018524
109	PAWAR	PANKAJ	RAJENDRA	919503020374	2020015400019945
110	PAWAR	SARALABAI	VASANT	919890916420	2020015400018605
111	ROKADE	KALYANI	SHRIRAM	918080870346	2020015400019984
112	ROKADE	KAVITA	PRAKASH	918668511131	2020015400018377
113	SAIYYAD	KAISARKHALI D ALI	ARMAL ALI	919518525529	2020015400018435
114	SALUNKHE	POOJA	GULABRAO	917767042223	2020015400017722



115	SHIMPI	KAVITA	SANJAY SHIMPI	919545198359	2020015400018741
116	SONAWANE	VISHAL	ASHOK	919322037297	2020015400018234
117	SURYAVANSHI	PRAMOD	MACHCHHINDRA	919325985439	2020015400018385
118	SUTAR	DHANASHRI	SUDAM	918261957566	2020015400018861
119	VADAR	RITESH	CHANDU	917378408265	2020015400018934
120	WAGH	ASHWINI	VILAS	919822389000	2020015400018621
121	WANKHEDE	RUPALI	ANIL	919763660494	2020015400018203

  
IQAC Coordinator  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**



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**Internal Quality assurance**

**Field work of Environmental Studies**

**Academic Year (2021-2022)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	137	1 to 25	Solid waste management in Parola City
			26 to 50	Effect of air Pollution on Environment
			51 to 75	Effect of Sound Pollution on Environment
			76 to 100	Effect of water Pollution on Environment
			101 to 125	Global warming and Environment
			126 to 137	Importance of Biodiversity
2	Arts	143	1 to 25	Biodiversity around Parola Tahsil
			26 to 50	Study of Vegetation's cover in Parola Tahsil
			51 to 75	Impact of Air population due to National Highway ( NH6)
			76 to 100	Relationship both Man and Environment
			101 to 125	Water reservoir around Parola Tahsil and its impact
			126 to 143	As a Youth what is our duty for Conservation of Environment

  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



### Students List of Science Faculty

Roll No	Last Name	First Name	Middle Name	PRN Number
01	PATIL	CHAITALI	SANJAY	2021015400032904
02	PATIL	JANAVI	SUNIL	2021015400033714
03	BOBADE	BHAGYASHRI	RAMKRISHNA	2021015400040873
04	PATIL	PRATIKSHA	RAVINDRA	2021015400040865
05	PATIL	DIVYA	NANA	2021015400032935
06	PATIL	CHETANA	ADHIKRAO	2021015400032927
07	PATIL	SEJAL	DATTATRAY	2021015400032912
08	PATIL	DEVYANI	RAJU	2021015400033722
09	MORE	LEENA	SURESH	2021015400032893
10	PATIL	MOHINI	SHANTILAL	2021015400033803
11	PATIL	PALLAVI	MAHENDRA	2021015400033463
12	NIKAM	ABHAY	VASUDEV	2021015400033745
13	PATIL	SWAPNIL	SUNIL	2021015400033753
14	WAGH	VAISHALI	SHAILENDRA	2021015400033834
15	DEORE	PRATIK	RAJENDRA	2021015400032943
16	PATIL	ANKUSH	TULSIDAS	2021015400033776
17	PATIL	VIVEK	ARUN	2021015400033761
18	SURYAWANSHI	PANKAJ	VILAS	2021015400033792
19	PATIL	CHANDRAKANT	RAJENDRA	2021015400039193
20	MALI	BHAGYASHRI	DAGADU	2021015400031305
21	PATIL	RITIKA	JAGANNATH	2021015400031294
22	JADHAV	VAISHNAVI	GAJENDRA	2021015400031127
23	PATIL	KOMAL	VITTHAL	2021015400033022
24	PATIL	NEHA	SURESH	2021015400033737



25	MORE	SATYAM	SANJAY	2021015400033784
26	MALI	DIPALI	NANDKISHOR	2021015400031112
27	PATIL	DIPTI	SANJAY	2021015400031336
29	MAHAJAN	NEHA	GULAB	2021015400033471
30	PATIL	NEHA	SAHEBRAO	2021015400031104
31	PATIL	KAVITA	SUNIL	2021015400031023
32	DEORE	KOMAL	GANESH	2021015400031046
33	PATIL	RITESH	KAUTIK	2021015400031062
34	PATIL	NIKITA	ASHOK	2021015400031143
35	CHAUDHARI	RAJASHRI	ANIL	2021015400031174
36	NAVARKAR	VRUSHALI	PRAVIN	2021015400031182
37	PATIL	DHANASHRI	GULABRAO	2021015400031151
38	CHAUDHARI	HEMANGI	KISHOR	2021015400031166
39	PATIL	KOMAL	DNYANESHWAR	2021015400033037
40	BORASE	ASHWINI	DNYANESHWAR	2021015400031093
41	SHINDE	KOMAL	SANTOSH	2021015400031135
42	PATIL	TEJAL	SUNIL	2021015400031216
43	PATIL	KALYANI	SACHIN	2021015400031201
44	PATIL	APEKSHA	MANOHAR	2021015400031197
45	PATIL	CHANDRAKANT	VASANT	2021015400031224
46	SURYAVANSHEE	VAIBHAVI	VILAS	2021015400031545
47	PATIL	ROSHANEE	SUNIL	2021015400031537
48	GAYAKAWAD	ASHWINEE	KAILAS	2021015400031522
49	PATIL	KIRAN	RAVINDRA	2021015400031514
50	JADHAV	SANI	SANJAY	2021015400031263
51	PATIL	JAYASHRI	SANJAY	2021015400032982





52	PATIL	PRASHANT	NAMDEVRAO	2021015400032966
53	PATIL	DILBHAR	YUVRAJ	2021015400031472
54	BOPCHE	KAJAL	MANIKRAM	2021015400032951
55	PATIL	CHETAN	KISHOR	2021015400031464
56	SHINDE	NIDHI	UMESH	2021015400031843
57	GADHARI	NIKITA	LALA	2021015400031495
58	PATIL	VAIBHAV	DILIP	2021015400033006
59	PATIL	RUPESH	PARSHURAM	2021015400033014
60	GURAV	KETAKI	MANOJ	2021015400031352
61	SHARMA	SIDDHANT	RAVINDRA	2021015400032974
62	PARDESHI	KOMAL	HIRA	2021015400031367
63	PATIL	ANUSHKA	SANJAY	2021015400031506
64	PARADHI	GITANJALI	SURESH	2021015400037712
65	PATIL	BHAGYASHRI	BHAUSAHEB	2021015400032997
66	DEORE	PRIYANKA	GANESH	2021015400031344
67	PATIL	ASHWINI	GANESH	2021015400031321
68	PATIL	DIKSHA	SUNIL	2021015400031487
69	NIKAM	MAYURI	DIPAKRAO	2021015400031456
70	SHINDE	PRANALI	GHANSHYAM	2021015400031313
71	MAHAJAN	BHUMIKA	BAPU	2021015400037012
72	CHAVHAN	DIVYA	NANDU	2021015400037027
73	PATIL	KOMAL	SHRAVAN	2021015400037236
74	PATIL	VAISHNAVI	KHUSHALCHANDRA	2021015400037221
75	PATIL	SUCHIT	SUBHASH	2021015400031851
76	PATIL	ARCHANA	RAVINDRA	2021015400037275
77	SONAWANE	YASHKUMAR	NIRANJAN	2021015400037727



78	PATIL	DNYANESHWAR	CHANDULAL	2021015400037341
79	PATIL	DIVYAM	RAVINDRA	2021015400037267
80	PATIL	HARSHAL	ANANDA	2021015400037372
81	PATIL	MOHINI	RAMKRUSHNA	2021015400037213
82	PATIL	GAURAV	PRAKASH	2021015400037364
83	PATIL	OM	KIRAN	2021015400037526
84	PATIL	DHIRAJ	VIJAY	2021015400037333
85	PATIL	PRATHAMESH	CHHOTU	2021015400037631
86	PATIL	JANHAVI	YASHAVANT	2021015400033092
87	PATIL	PARAG	SUNIL	2021015400034281
88	DEORE	HEMCHANDRA	RAJENDRA	2021015400037565
89	PATIL	KIRAN	BALU	2021015400033126
90	DESLE	JAGRUTI	BHAUSAHEB	2021015400033111
91	PATIL	HARSHALI	ROHIDAS	2021015400037283
92	MAHAJAN	AJAY	PARMESHWAR	2021015400037387
93	CHAUDHARI	BHAGYASHRI	VIJAY	2021015400037302
94	BARI	SHWETA	SATISH	2021015400037325
95	PATIL	SANKET	ASHOK	2021015400037735
97	PATIL	VIJAYA	YADAV	2021015400037252
98	PATIL	PANKAJ	SAMBHAJI	2021015400037244
99	PATIL	MONIKA	GOKUL	2021015400037743
100	CHINCHORE	TANUSHKA	MANOJ	2021015400037291
101	JAWALE	JITENDRA	SONU	2021015400038375
102	BADGUJAR	DHIRAJ	PANDHARINATH	2021015400036716
103	CHAUDHARI	YOGINI	SHRAWAN	2021015400037607
104	PATIL	SAKSHI	SUNIL	2021015400037317



105	BAGLE	CHETAN	RAJENDRA	2021015400037685
106	SHINDE	NIKITA	NILKANTHA	2021015400037596
107	KOLI	BHAGYASHREE	BHAGAWAN	2021015400037581
108	PATIL	SHUBHANGEE	NIMBAJEE	2021015400037511
109	SAVANT	GAYATRI	SANJAY	2021015400037542
111	PATIL	SACHIN	ROHIDAS	2021015400036701
112	MORE	KAUSHAL	RAVINDRA	2021015400037774
113	MAHAJAN	DIPIKA	ISHWAR	2021015400033494
114	BHOI	PANKAJ	KAUTIK	2021015400037414
115	MAHAJAN	KANCHAN	PUNJU	2021015400031777
116	MAHAJAN	JAYASHRI	SUDAM	2021015400031696
117	MISTARI	VISHAL	SANJAY	2021015400037484
118	PATIL	GAURAV	RAJU	2021015400037445
119	PATIL	YASH	VISHVAS	2021015400037476
120	JADHAV	SHUBHANGI	PRADIP	2021015400037693
121	PATIL	MOHINI	CHARANDAS	2021015400074517
122	PATIL	ROHIT	DAGADU	2021015400074525
124	PATIL	GAURAV	RAVINDRA	2021015400074541
125	BADGUJAR	PRATIK	ASHOK	2021015400074556
126	PATIL	DIVYA	ANIL	2021015400074572
127	THAKARE	HITESH	RAVSAHEB	2021015400074564
128	PATIL	KALYANI	BHAGWAN	2021015400074614
129	PATIL	CHETAN	SUNIL	2021015400073537
130	SALI	SHARADA	MANOJ	2021015400073545
131	PATIL	HARSHADA	SURESH	2021015400073576
132	PATIL	DIGVIJAY	DILIP	2021015400099546





133	PATIL	BHAGYASHRI	KAUTIK	2021015400116373
134	MAHAJAN	AJAY	SHIVAJI	2021015400116381
135	PATIL	HARSHAL	LOTAN	2021015400311262
136	PATIL	RAMKRUSHNA	ASHOK	2021015400311277
137	PATIL	VIKAS	NANA	2021015400306117

  
**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



### Students List of Arts Faculty

Roll No	Last Name	First Name	Middle Name	PRN Number
01	KHAIRNAR	ARATI	SUNIL	2021015400040881
02	MARATHE	KAVITA	SANJAY	2021015400040896
03	PATIL	JYOTI	ASHOK	2021015400033076
04	SHINDE	ASHWINI	SAJAN	2021015400040907
05	BHADANE	TEJASWINI	MOHAN	2021015400037406
06	PATIL	BHAGYASHREE	BHAUSAHEB	2021015400031715
07	PATIL	MADHURI	PRAKASH	2021015400031707
08	PATIL	ARCHANA	NANA	2021015400031665
09	PATIL	SHITAL	BHAUSAHEB	2021015400031673
10	PATIL	PRIYANKA	DNYANESHWAR	2021015400031681
11	PATIL	GAYATRI	RAJENDRA	2021015400031657
12	PATIL	JAGRUTI	ARUN	2021015400031785
13	PATIL	DIVYA	DAGADU	2021015400031731
14	KUMBHAR	KETKI	RAVINDRA	2021015400033053
15	PATIL	JAGRUTI	DNYANESHWAR	2021015400033045
16	PATIL	ANJU	VASANT	2021015400033857
17	PATIL	MANJU	VASANT	2021015400033865
18	PATIL	KAJAL	NAGO	2021015400040915
19	GURAV	KAMINI	BHANUDAS	2021015400040923
20	PATIL	PRIYANKA	RAJENDRA	2021015400040931
21	PATIL	NAYANA	PRAVIN	2021015400032877
22	PATIL	GAYATRI	BALU	2021015400032885
23	PATIL	AARATI	MILIND	2021015400032862
24	JADHAV	NIKITA	RAJENDRA	2021015400033826



25	MAHAJAN	ASHWINI	VASANT	2021015400033811
26	PATIL	POONAM	ASHOK	2021015400033842
27	PATIL	AACHAL	SUNIL	2021015400030886
28	PATIL	TRUPTIBEN	BHATUBHAI	2021015400030894
29	ROKADE	MANOJ	SHRIRAM	2021015400030913
30	PATIL	BHAGYASHRI	DNYANESHWAR	2021015400030936
31	SURYAVANSHI	AJAY	PRAKASH	2021015400030975
32	BHOI	NIKITA	DNYANESHWAR	2021015400030905
33	MAHAJAN	KALYANI	PARMESHWAR	2021015400030983
34	KUMBHAR	SALONI	ASHOK	2021015400030991
35	PATIL	NIKITA	SARDEEP	2021015400031015
36	CHAUDHARI	ASHWINI	PANKAJ	2021015400030952
37	PATIL	VAISHALI	ASHOK	2021015400030967
38	PATIL	ANJALI	VIRBHAN	2021015400031031
39	DESALE	SHRUTI	DNYANESHWAR	2021015400031054
40	PATIL	POONAM	KANTILAL	2021015400031007
41	AHIRE	HARSHAL	JITENDRA	2021015400031077
42	MARATHE	SARALA	BHAGAVAN	2021015400031085
43	MAHAJAN	BHAVIKA	ANIL	2021015400031232
44	SHIMPI	PRERANA	SURESH	2021015400031247
45	JADHAV	PRAJAKTA	NARENDRA	2021015400031255
46	PATIL	NIKITA	DNYANESHWAR	2021015400031271
47	BELEKAR	KAVERI	BALU	2021015400031286
48	VISAPUTE	DIVYA	MANGESH	2021015400030921
49	PATIL	NANDINI	GULAB	2021015400031561
50	PATIL	BHAGYASHRI	MADHUKAR	2021015400031592





51	PAWAR	ASHVINI	SANJAY	2021015400031603
52	PAWAR	MANDAKINI	RAMESH	2021015400031634
53	PATIL	MOHINI	CHAITRAM	2021015400031611
54	PATIL	MANISHA	DAGADU	2021015400031626
55	PATIL	GAYATRI	DADABHAU	2021015400031576
56	PATIL	HARSHAL	RAJENDRA	2021015400031754
57	PATIL	NEHA	VASUDEV	2021015400031746
58	PATIL	KAVERI	JITENDRA	2021015400031762
59	BEDEKAR	SHUBHANGI	SUNIL	2021015400031723
60	BELDAR	KARISHMA	NANDALAL	2021015400031793
61	KUMBHAR	VAISHALI	NANA	2021015400031812
62	PATIL	PUJA	SANJAY	2021015400031584
63	PATIL	PRIYANKA	BANSILAL	2021015400031827
64	PATIL	GANESH	DATTU	2021015400031804
65	CHAVHAN	SHALU	SUNIL	2021015400031835
66	BELEKAR	GAYATRI	RAJENDRA	2021015400030944
67	PATIL	UMESH	DILIP	2021015400031866
68	PATIL	NITA	EKNATH	2021015400036844
70	PATIL	SONALI	SANTOSH	2021015400031642
71	NAIK	ARATI	PREMSING	2021015400036941
72	KHAIRNAR	VAISHALI	KAILAS	2021015400036821
73	PATIL	BHAGYASHRI	DNYANESHWAR	2021015400036964
74	WARULE	AMOL	RAMKRUSHNA	2021015400036956
75	WARULE	DIPALI	AATMARAM	2021015400036972
76	PATIL	SACHIN	ANANT	2021015400036995
77	SONAWANE	RUPALI	ABHIMAN	2021015400036987



78	JADHAV	GULAB	GORAKH	2021015400031553
79	PATIL	VAISHALI	SUKALAL	2021015400037004
80	PATIL	MAYURI	AMAR	2021015400033084
81	DESHMUKH	KOMAL	GANESH	2021015400033103
82	SONAWANE	AASHA	BARKU	2021015400033061
83	PATIL	MAHENDRA	RAVINDRA	2021015400037356
84	GAWALI	KRISHNAKANT	TUKARAM	2021015400037453
85	PATIL	BHUSHAN	GAMBHEER	2021015400037422
86	HATKAR	YASHASVI	DHANRAJ	2021015400037492
87	PATIL	BHAGYASHRI	DNYANESHWAR	2021015400037503
88	PATIL	NUTAN	RAVINDRA	2021015400037534
89	PATIL	VAISHALI	LOTAN	2021015400037623
90	PATIL	SAKSHI	ANIL	2021015400037615
91	SAUDAGAR	KALPANA	NIMBA	2021015400037557
92	HATKAR	VAISHNAVI	SANJAY	2021015400037677
93	PATIL	DARPANA	RAVINDRA	2021015400037704
94	MAHAJAN	VICKY	ASHOK	2021015400037646
95	PAWAR	KARAN	SUNIL	2021015400037654
96	BHILL	RAJ	NANA	2021015400037437
97	WANKHEDE	DIVYA	SAHEBRAO	2021015400033432
98	PATIL	ROHIT	SANJAY	2021015400033447
99	PATIL	MADHURI	DILIP	2021015400033455
100	CHAUDHARI	DARSHANA	RAJENDRA	2021015400036836
101	BEHERE	SONI	DEVIDAS	2021015400033486
102	DESALE	SONALI	VIJAY	2021015400037766
103	AHIRE	PRAGATI	SANJAY	2021015400037782




104	ADHAV	JAGDISH	BALIRAM	2021015400033505
105	PATIL	DHANASHRI	RAVINDRA	2021015400037797
106	PATIL	RAJESH	MAHENDRA	2021015400033513
107	PATIL	DURGESH	RAMESH	2021015400037801
108	PATIL	MANGESH	RAMESH	2021015400037751
109	BHILL	RAKESH	DNYANESHWAR	2021015400033873
110	PATIL	AKSHAY	GOVINDA	2021015400034273
111	PATIL	VISHAL	SAMADHAN	2021015400034296
112	PATIL	ROHIT	RATILAL	2021015400034307
113	PAWAR	SHIVANI	BHAUSAHEB	2021015400034323
114	PATIL	SHAM	BAPU	2021015400034331
115	PATIL	PRIYANKA	KAILAS	2021015400034315
116	PATIL	GOVINDA	BHAUSAHEB	2021015400034346
117	PATIL	AVINASH	ATMARAM	2021015400034354
118	MOHITE	SAJAN	LIMBA	2021015400038367
119	PATIL	NIKITA	MAHADU	2021015400038383
120	RATHOD	BABITA	KANVAR	2021015400032026
121	NARVADE	ROHANT	ROHIDAS	2019015400341126
122	BHOI	BHARATI	PRAKASH	2021015400032081
123	PATIL	SWATI	SANJAY	2021015400038901
124	PATIL	PRATIBHA	RAJENDRA	2021015400038916
125	PAWAR	YOGESH	RAMSING	2021015400039185
126	CHAUDHARI	GAJENDRA	BHAGWAN	2016015400065903
127	PATIL	SARITA	BHAIDAS	2021015400039204
128	PATIL	PRIYANKA	BAPU	2021015400039212
129	PATIL	DIVYA	SANJAY	2021015400039235





130	JADHAV	RAVINDRA	LAHU	2021015400036732
131	LANDGE	AHILYA	NILKANTH	2021015400074595
132	BIRHADE	AMOL	BHASKAR	2021015400074587
133	SHAIKH	FARJANABI	MUNWAR	2021015400074606
134	CHAUDHARI	SHUBHAM	KAILAS	2021015400073522
135	PATIL	KIRAN	PRAKASH	2021015400073561
136	NERPAGAR	KOMAL	NANDU	2021015400099531
137	AHIRE	RINKU	ASHOK	2021015400116357
138	PAWAR	SACHIN	KISAN	2021015400291994
139	PATIL	DEVYANI	DHANRAJ	2021015400304977
140	KOLI	GORAKH	MADHUKAR	2021015400306125
141	MARATHE	SONALI	AABA	2021015400309584
142	GAVALI	KALYANI	SUDAM	2021015400309592
143	GAVALI	AISHWARYA	PRABHAKAR	2021015400309603

  
IQAC Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Telu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**



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**Internal Quality Assurance Cell**  
**Field work of Environmental Studies**

**Academic Year (2022-2023)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	145	1 to 25	Solid waste management in Parola City
			26 to 50	Effect of air Pollution on Environment
			51 to 75	Effect of Sound Pollution on Environment
			76 to 100	Effect of water Pollution on Environment
			101 to 125	Global warming and Environment
			126 to 145	Importance of Biodiversity
2	ARTS	119	1 to 25	Biodiversity around Parola Tahsil
			26 to 50	Study of Vegetation's cover in Parola Tahsil
			51 to 75	Impact of Air population due to National Highway (NH6)
			76 to 100	Relationship both Man and Environment
			101 to 119	Water reservoir around Parola Tahsil and its impact

  
IOAC Coordinator  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

**Students List of Science Faculty**

  
Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Sr.No	DRN	Student Name	Gender
1.	2017015400042557	AMRUTKAR AMRUTA MAHENDRA	Female
2.	2017015400042132	BADGUJAR KALYANI ASHOK	Female
3.	2017015400041763	BHAROTE VAISHNAVI DHARMENDRA	Female
4.	2017015400041883	BHILMAL TINA RAGHO	Female
5.	2017015400042317	BHOI DIPALI RAJENDRA	Female
6.	2017015400047493	BHOI RAHUL MANGAL	Male
7.	2017015400041964	BOBADE KIRAN NARAYAN	Male
8.	2017015400047462	BORASE REEMA PANDHARINATH	Female
9.	2017015400042186	BORASE SUHANI DINESH	Female
10.	2017015400042051	CHAUDHARI ANITA TUKARAM	Female
11.	2017015400041933	CHAUDHARI SHIVANI SHANTILAL	Female
12.	2017015400041902	CHAUDHARI VISHWAJEET SANJAY	Male
13.	2017015400042267	CHAUDHARI YOGITA ANIL	Female
14.	2017015400042163	DEORE AKSHAY BHIMARAO	Male
15.	2017015400047914	DESALE NIKITA BHAUSAHEB	Female
16.	2017015400042581	GIRASE NILESH RAJESING	Male
17.	2017015400042275	HATKAR GANESH ABHIMAN	Male
18.	2017015400047303	HINDUJA DIVYA VINOD	Female
19.	2017015400041635	HINDUJA SIMRAN YOGESH	Female
20.	2017015400042526	JAGDALE AAKASH GAJENDRA	Male
21.	2017015400042147	JAWALE RAKESH MOTILAL	Male
22.	2017015400047485	KASAR CHHAYA ARUN	Female
23.	2017015400042171	KHAIRNAR KOHINOOR SUBHASHI	Male
24.	2017015400041956	KSHATRIYA KOMAL KAILASSA	Female
25.	2017015400041465	LINDAYAT DIVYA VANA	Female
26.	2017015400041457	LINDAYAT MONALI ROHIDAS	Female
27.	2017015400046176	MAHAJAN APEKSHA NAMDEO	Female
28.	2017015400047543	MAHAJAN DHANASHREE BAPU	Female
29.	2017015400042341	MAHAJAN MAYURI SATISH	Female
30.	2017015400041403	MAHAJAN NEHA HANSILAL	Female
31.	2017015400041813	MAHAJAN SMITAL RAJENDRA	Female
32.	2017015400046571	MAHAJAN SUVARNA PRAKASH	Female
33.	2017015400047446	MAHALE DIPIKA ASHOK	Female
34.	2017015400047655	MAHALE VIDHYA SANJAY	Female
35.	2017015400042387	MALI SIDDHI SUNIL	Female
36.	2017015400047744	MAHI TRJASWINI BHAGWAN	Female
37.	2017015400041546	MANE HARSHADA AJABRAO	Female
38.	2017015400046973	MARATHE POONAM SANJAY	Female
39.	2017015400047396	MISTARI GANESH DAYARAM	Male
40.	2017015400047454	MISTARI SHARADA RAJULAL	Female
41.	2017015400041925	MORE ANUJA RAJENDRA	Female
42.	2017015400041473	MORE KARISHMA VILAS	Female
43.	2017015400042066	MORE SACHIN SOPAN	Male
44.	2017015400047895	MUJAWAR AKIM SHAIKH HAMID	Male
45.	2017015400042074	MUJAWAR ASIF LATIF	Male
46.	2017015400042097	NERKAR RAHUL ANANDA	Male
47.	2017015400041585	NIKAM HARSHADA CHANDRAKANT	Female
48.	2017015400047551	NIKAM UDDHAV DINESH	Male
49.	2017015400041643	NIKAM YOGITA PUNDALIK	Female
50.	2017015400042116	PAKHALE CHETANABEN ANILBHAI	Female
51.	2017015400042484	PARDESHI HARSHADA MAHENDRASING	Female
52.	2017015400042236	PATIL AARTI ADHIKARAO	Female
53.	2017015400042406	PATIL AKSHAY BIHARAT	Male
54.	2017015400047736	PATIL ANIKET VASANT	Male
55.	2017015400046161	PATIL ANITA DENKAR	Female
56.	2017015400041674	PATIL ASHWINI BHAGAWAN	Female





57.	2017015400046934	PATIL ASHWINI LALCHAND	Female
58.	2017015400042035	PATIL BHAGYASHREE ARUN	Female
59.	2017015400041392	PATIL BHAGYASHRI JAGATRAO	Female
60.	2017015400042503	PATIL BHAGYASHRI SURESH	Female
61.	2017015400046145	PATIL BHAVANA HEMRAJ	Female
62.	2017015400042283	PATIL CHHAYA NANDULAL	Female
63.	2017015400047423	PATIL DARSHAN PRAMOD	Male
64.	2017015400041411	PATIL GAYATRI BHUPENDRA	Female
65.	2017015400042511	PATIL GAYATRI SUNIL	Female
66.	2017015400041867	PATIL HARSHA KISHOR	Female
67.	2017015400041995	PATIL HARSHAL ASHOK	Male
68.	2017015400046605	PATIL JAGRUTI VASANT	Female
69.	2017015400046903	PATIL JAGRUTI YASHWANT	Female
70.	2017015400042325	PATIL JAYASHRI RAJENDRA	Female
71.	2017015400041481	PATIL JAYSHRI RAVINDRA	Female
72.	2017015400041875	PATIL KAVITA BALU	Female
73.	2017015400041917	PATIL KAVITA SANJAY	Female
74.	2017015400042534	PATIL KIRAN AWACHIT	Male
75.	2017015400041987	PATIL KOMAL SATISH	Female
76.	2017015400042395	PATIL LALIT NANA	Male
77.	2017015400041426	PATIL MADHURI ASHOK	Female
78.	2017015400047705	PATIL MADHURI BHIDAS	Female
79.	2017015400046981	PATIL MADHURI GANPAT	Female
80.	2017015400041716	PATIL MADHURI LOTAN	Female
81.	2017015400047906	PATIL MADHURI SURESH	Female
82.	2017015400046137	PATIL MAMATA DILIP	Female
83.	2017015400041941	PATIL MAYURI KALU	Female
84.	2017015400042542	PATIL NIKHIL RAVINDRA	Male
85.	2017015400042101	PATIL NIKITA ARUN	Female
86.	2017015400064402	PATIL NUTAN BHIKAN	Female
87.	2017015400041972	PATIL POOJA YUVRAJ	Female
88.	2017015400047721	PATIL POONAM GAJANAN	Female
89.	2017015400046563	PATIL POONAM LAXMAN	Female
90.	2017015400042082	PATIL PRADEEP ANANDA	Male
91.	2017015400042372	PATIL PRADIP DILIP	Male
92.	2017015400046153	PATIL PRIYANKA DAGADI	Female
93.	2017015400041724	PATIL PRIYANKA RAJENDRA	Female
94.	2017015400042302	PATIL PUJA SARJERAO	Female
95.	2017015400041314	PATIL RAJESH RAMKRUSHNA	Male
96.	2017015400042607	PATIL RAKESH PRAVIN	Male
97.	2017015400042356	PATIL ROHINI RAVINDRA	Female
98.	2017015400042194	PATIL ROHIT ARJUN	Male
99.	2017015400042043	PATIL RUPALI UDYALAL	Female
100.	2017015400042027	PATIL SAGAR BHASKAR	Male
101.	2017015400042565	PATIL SAGAR DEELIPRAO	Male
102.	2017015400042333	PATIL SAGAR RAJU	Male
103.	2017015400041852	PATIL SANKET KISHOR	Male
104.	2017015400046524	PATIL SHITAL SATILAL	Female
105.	2017015400041891	PATIL SHIRADHA NATHU	Female
106.	2017015400042492	PATIL SHUBHAM MOHANDAS	Male
107.	2017015400042573	PATIL SHUBHAM VASANT	Male
108.	2017015400042596	PATIL SHUBHAM VIJAY	Male
109.	2017015400042205	PATIL SNEHAL VITTHAL	Female
110.	2017015400041604	PATIL SUCHITA VILAS	Female
111.	2017015400041697	PATIL SUREKHA RANGRAO	Female
112.	2017015400047245	PATIL TEJASWINI PRAVIN	Female
113.	2017015400064391	PATIL TUSHAR SURESH	Male
114.	2017015400042221	PATIL UDAY VALMIK	Male
115.	2016015400351083	PATIL VAIBHAV RAJENDRA	Male
116.	2017015400041844	PATIL VAIBHAV SUKDEV	Male
117.	2017015400041295	PATIL VAIBHAV VASANT	Male
118.	2017015400042244	PATIL VAIBHAVI PRAVIN	Female
119.	2017015400047713	PATIL VARSHA SUNIL	Female
120.	2017015400041306	PATIL YOGESH SANJAY	Male
121.	2017015400042252	PAWAR KOMAL SANAJAY	Female



122.	2017015400047431	PAWAR NUTAN MANOHAR	Female
123.	2017015400047527	RAVATE SHITAL RAVINDRA	Female
124.	2017015400047292	ROKADE POONAM JAYRAM	Female
125.	2017015400041322	SAINDANE PRASHANT RAJENDRA	Male
126.	2017015400046586	SAINDANE VISHAKA VALMIK	Female
127.	2017015400041836	SALI VISHAKHA PRABHAKAR	Female
128.	2017015400042213	SALUNKHE ROHIT MANOHAR	Male
129.	2017015400046594	SHINDE NEETA RAMDAS	Female
130.	2017015400042364	SHIRODE BHAGYASHRI SHARAD	Female
131.	2017015400047477	SHIRUDKAR TEJAL SUSHIL	Female
132.	2017015400047535	SONAJE CHETASHRI PURUSHOTTAM	Female
133.	2017015400042012	SONAR KAJAL SANJAY	Female
134.	2017015400047214	SONAR POOJA ARUN	Female
135.	2017015400046122	SONAWANE GAYATRI SANJAY	Female
136.	2017015400041821	SONAWANE KALYANI RAJENDRA	Female
137.	2017015400042291	SONAWANE MAYURI RAVINDRA	Female
138.	2017015400041562	SONAWANE PALLAVI GANESH	Female
139.	2017015400041805	SURWADE AMRAPALI MANOHAR	Female
140.	2017015400042155	SURYAWANSHI SHASHIKANT SANJAY	Male
141.	2017015400042124	TAMBE SIDDHANT DIPAK	Male
142.	2017015400042004	TOLKAR NIKITA NANDKISHOR	Female
143.	2017015400046957	WAGH KIRAN NARENDRA	Female
144.	2017015400047253	WANI PRATIKSHA RAVINDRA	Female

  
PRINCIPAL  
Rani Laxmi Bai Mahavidyalaya  
Parola, Dist. Jalgaon

### Students List of Arts Faculty





Sr.No	PRN	Student Name	Gender
1	2017015400041531	AJAHARUDDIN SHAIKH GULAB	Female
2	2017015400046717	AMRUTKAR YESH CHANDULAL	Male
3	2017015400042422	ARAB ARABAJ AYUB	Male
4	2017015400047694	AVCHITE PRAVIN YUVRAJ	Male
5	2017015400046683	BADGUJAR VAISHALI SUBHASH	Female
6	2017015400046323	BAGUL YOGESHWARI DEVIDAS	Female
7	2017015400041747	BHADANE AMOL BHAGWAN	Male
8	2017015400047326	BHADANE PRATIKSHA GULAB	Female
9	2017015400046853	BHAMARE HARSHADA SANJAY	Female
10	2017015400041786	BHIL DHIRAJ DEVIDAS	Male
11	2017015400046822	BHIL YOGITA BHIMRAO	Female
12	2017015400047091	BHILLA SHALUBAI DNYANESHWAR	Female
13	2017015400042476	BHOSLE PALLAVI SAJAN	Female
14	2017015400047334	BIRARI BALAJI RAJARAM	Male
15	2017015400046226	BIRHADE MUKESH ASHOK	Male
16	2017015400047597	BIWAL VINAY CHUNILAL	Male
17	2017015400046412	BORASE PRIYANKA KAMLESH	Female
18	2017015400046265	BORSE NUTAN CHANDRAKANT	Female
19	2017015400047415	CHAUDHARI ASHWINI BAPU	Female
20	2016015400065903	CHAUDHARI GAJENDRA BHAGWAN	Male
21	2017015400047044	CHAUDHARI MADHURI SANJAY	Female
22	2017015400047237	CHAVHAN SUREKHA DESHMUKH	Female
23	2017015400046861	DALVI BHUVNESH KISHOR	Male
24	2017015400047284	DEORE ARATI BAPU	Female
25	2017015400046806	DEORE MADHURI EKANATH	Female
26	2017015400046532	DEORE SAGAR CHANDRAKANT	Male
27	2017015400047775	DEORE SHRIKRISHNA VASUDEO	Male
28	2017015400041434	DEORE TEJASWINI SUNILBHAI	Female
29	2017015400041755	GAYAKWAD SURESH BAPU	Male
30	2017015400047373	GOSAVI DEEPAI NIMBAJI	Female
31	2017015400041523	JADHAV ROHAN BHARAT	Male
32	2017015400047164	KAPURE ASHWINI RAMESH	Female
33	2017015400041666	KHATIK FIROZ KALIM	Male
34	2017015400046702	KOLI SUNIL SHANKAR	Male
35	2017015400047365	KSHATRIY VIJAY HIRALAL	Male
36	2016015400065837	KSHATRIYA SATISH BALUSA	Female
37	2017015400047083	KULKARNI DHANASHRI ANIL	Female
38	2017015400047067	KULKARNI ROHINI SUNIL	Female
39	2017015400046281	KUMBHAR KALYANI PANDIT	Female
40	2017015400047195	MAGAR MADHURI SHALIK	Female
41	2017015400046184	MAHAJAN DAMINI SAHEBRAO	Female
42	2017015400047624	MAHAJAN REKHA DHARMA	Female
43	2017015400047574	MAHAJAN SAGAR HIMMAT	Male
44	2017015400046837	MAHALE BHAGYASHREE RAJENDRA	Female
45	2017015400046242	MAHALE VARSHA RAMKRUSHANA	Female
46	2017015400046814	MALI ARATI SURESH	Female
47	2017015400046516	MALI ASHWINI VIKAS	Female
48	2017015400047671	MALI HARSHADA VILAS	Female
49	2017015400046876	MALPURE PRADNYA JAGDISH	Female
50	2017015400047616	MARATHE DNYANESHWAR RAMKRUSHNA	Male
51	2016015400065675	METKAR ABHAY SHARAD	Male
52	2017015400046547	MORE PUJA PREMRAJ	Female
53	2017015400047647	NARWADE MANOJ TUKADU	Male
54	2017015400047276	NIKAM HARSHAL SANJAY	Male
55	2017015400047663	NIKAM NIKITA KISHOR	Female
56	2017015400046795	PAKHALE SANKET RAJENDRA	Male
57	2017015400047512	PATHAK PRANJALI RAMCHANDRA	Female
58	2017015400041682	PATIL AISHWARYA RAJENDRA	Female
59	2017015400041507	PATIL AMRUTA DHANARAJ	Female
60	2017015400046234	PATIL ARCHANA GULAB	Female
61	2017015400041345	PATIL ASHVINI ARUN	Female
62	2017015400047686	PATIL AVINASHI SUNIL	Male
63	2017015400046331	PATIL CHETANA SHANTARAM	Female
64	2017015400046435	PATIL DHANASHRI ASHOK	Female
65	2017015400047117	PATIL DHANASHRI DINKAR	Female
66	2017015400046621	PATIL DIPALI EKNATH	Female
67	2017015400046192	PATIL DIPALI NANA	Female
68	2017015400046346	PATIL DIPALI SUNIL	Female
69	2017015400047783	PATIL DIPEEKA ADHIKRAO	Female





70	2017015400047021	PATIL GAURAV VILAS	Male
71	2017015400046996	PATIL GOKUL UTTAM	Male
72	2017015400042414	PATIL HARSHADA BHAGAWAN	Female
73	2017015400047357	PATIL HARSHAL BHAUSAHEB	Male
74	2017015400047075	PATIL HARSHALA SANJAY	Female
75	2017015400046725	PATIL HEMLATA JAGDISH	Female
76	2017015400047937	PATIL JAYASHRI PRAKASH	Female
77	2017015400046613	PATIL JAYASHRI VALMIK	Female
78	2017015400046892	PATIL JYOTSNA SAMBHAJI	Female
79	2017015400042445	PATIL KAMINI RATILAL	Female
80	2017015400047632	PATIL KAMLESH ISHWAR	Male
81	2017015400041361	PATIL KAVITA BAPURAO	Female
82	2017015400046652	PATIL KAVITA RAJENDRA	Female
83	2017015400041651	PATIL KIRTI RATILAL	Female
84	2017015400046691	PATIL KOMAL GULAB	Female
85	2017015400046257	PATIL MADHURI SUNIL	Female
86	2017015400047767	PATIL MAHESH SURESH	Male
87	2017015400046393	PATIL MAMATA SANJAY	Female
88	2017015400046427	PATIL MAMATA SANJAY	Female
89	2017015400041771	PATIL MAYUR JAGDISH	Male
90	2017015400046377	PATIL MONALI KAILAS	Female
91	2017015400046667	PATIL NIKITA ANANDA	Female
92	2017015400046451	PATIL NIKITA CHUDAMAN	Female
93	2017015400046756	PATIL NIKITA VASANT	Female
94	2017015400047013	PATIL NILESH HEMCHAND	Male
95	2017015400046501	PATIL NITAL GULAB	Female
96	2017015400046211	PATIL NITIN SITARAM	Male
97	2017015400047102	PATIL PALLAVI RAVINDRA	Female
98	2017015400047381	PATIL POOJA SANTOSH	Female
99	2017015400046965	PATIL POONAM SHRIRAM	Female
100	2017015400047342	PATIL PRAGATI ANANDA	Female
101	2017015400041627	PATIL PRAMOD GOVIND	Male
102	2017015400041353	PATIL PRAVIBHA ARUN	Female
103	2017015400047141	PATIL PRAVIBHA VISHWAS	Female
104	2017015400046675	PATIL PRIYANKA RAJENDRA	Female
105	2017015400046884	PATIL PRIYANKA SUKDEV	Female
106	2017015400041376	PATIL PUJA EKNATH	Female
107	2017015400046404	PATIL PUJA RAMESH	Female
108	2017015400046362	PATIL RAJ ADHIKAR	Male
109	2017015400047566	PATIL RAJSHRI BAPU	Female
110	2017015400046644	PATIL RAJSHRI SHANTARAM	Female
111	2017015400046787	PATIL RUPALI BHAGWAT	Female
112	2017015400047261	PATIL SACHIN DHANRAJ	Male
113	2017015400046307	PATIL SAGAR SHIVAJI	Male
114	2017015400047311	PATIL SAMADHAN SUDHAKAR	Male
115	2017015400047504	PATIL SAPANA SURESH	Female
116	2017015400046296	PATIL SAVITA RAMDAS	Female
117	2017015400047187	PATIL SEEMA RAJENDRA	Female
118	2017015400041701	PATIL SHUBHAM NANA	Male
119	2017015400046764	PATIL SHUBHAM PRAMOD	Male
120	2017015400047133	PATIL SHUBHANGI KISHOR	Female
121	2017015400046466	PATIL SHUBHANGI MANGAL DAS	Female
122	2017015400041593	PATIL SHUBHANGI SAKHARAM	Female
123	2017015400042453	PATIL SHWETA RAVINDRA	Female
124	2017015400041384	PATIL SIMA SANJAY	Female
125	2017015400041794	PATIL SNEHAL BALU	Female
126	2016015400065025	PATIL SUNIL DNYANESHWAR	Male
127	2016015400065787	PATIL SURESH SAHEBRAO	Male
128	2017015400047052	PATIL SUSHMA DINKAR	Female
129	2017015400046772	PATIL SUVARNA BHAGWAT	Female
130	2017015400041442	PATIL SUVARNA ISHWAR	Female
131	2017015400047156	PATIL SUVARNA RAVINDRA	Female
132	2017015400046355	PATIL SWAPNAL HARI	Female
133	2017015400046497	PATIL TRUPTI SAHEBRAO	Female
134	2017015400042461	PATIL TUSHAR BHAIYA	Male
135	2017015400046636	PATIL TUSHAR SANJAY	Male
136	2017015400047752	PATIL URMILA DEVENDRA	Female
137	2017015400047036	PATIL URMILA HIMMAT	Female
138	2017015400041612	PATIL VAISHALI PRAVIN	Female
139	2017015400041732	PATIL VAISHALI RAVSAHEB	Female



140	2017015400046733	PATIL VARSHA DILIP	Female
141	2017015400041577	PATIL VARSHA SUKADBO	Female
142	2017015400046354	PATIL VIJAY SANJAY	Male
143	2017015400047125	PATIL VIJAYA EKNATH	Female
144	2017015400047222	PATIL VINOD SHANTARAM	Male
145	2017015400046741	PATIL VISHAL GULAB	Male
146	2017015400047206	PATIL YOGESH BHATISAHBB	Male
147	2016015400191236	PATIL YOGESH DNYANESHWAR	Male
148	2017015400047582	PATIL YOGITA LOTAN	Female
149	2017015400047922	PAWAR DIPAK HANSRAJ	Male
150	2017015400046911	PAWAR DIPIKA SANTOSH	Female
151	2016015400064776	PAWAR HARSHAL YU VARAJ	Male
152	2017015400046845	PAWAR KAJAL YOGRAJ	Female
153	2016015400065041	PAWAR PRIYANKA DAGADU	Female
154	2017015400041496	PAWAR RAJARAM CHATRU	Male
155	2017015400046443	PAWAR RANI VASANT	Female
156	2017015400047407	PAWAR SARALA DESHMUKHI	Female
157	2017015400046926	PAWAR VAISHALI ANIL	Female
158	2017015400046385	PINJARI NEHA SHARIF	Female
159	2017015400046482	RAMOSHI DNYANESHWAR BHIMRAO	Male
160	2017015400047172	RATHOD NAVAL DATTU	Male
161	2017015400041554	RATHOD SACHIN KISAN	Male
162	2017015400046315	SHIMPI NIKITA MOHAN	Female
163	2017015400041515	SHINDE BHUMIKA SHRIRAM	Female
164	2017015400042437	SHIRASATH VIKAS BHIMRAO	Male
165	2017015400047005	SONAWANE NIKITAKUMARI MAHENDRABHAI	Female
166	2017015400046203	SONAWANE SHUBHANGI ANANDA	Female
167	2017015400046942	SURYAWANSHI KAMLESH MOTILAL	Male
168	2017015400047601	THAKARE VINOD NANA	Male
169	2016015400093443	THORAT HILAL PUNDLIK	Male
170	2017015400041337	VAIDYA KIRTI DNYANESHWAR	Female
171	2017015400046273	VANJARI YOGESH PAPALAL	Male
172	2017015400046474	YEOLE PUNAM CHHOTU	Female

  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





## DEPT. OF PHYSICS

### ACTIVITY: PROJECTS ON NANOTECHNOLOGY

Academic Year: 2019 – 2020

Sr. No.	Name of the Student	Class	Title of the Project	Status of the Project
1	Ms. Sali Vishakha Prabhakar	T. Y. B. Sc.	Synthesis of nanostructured BaO and its study as a resistor	Completed
2	Ms. Patil Archana Himmatrao	T. Y. B. Sc.	Synthesis of nanostructured ZrO <sub>2</sub> and its study as a resistor	Completed
3	Ms. Patil Rohini Raosaheb	T. Y. B. Sc.	Synthesis of nanostructured Bi <sub>2</sub> O <sub>3</sub> and its study as a resistor	Completed
4	Ms. Patil Bhavana Hemraj	T. Y. B. Sc.	Synthesis of nanostructured Al <sub>2</sub> O <sub>3</sub> and its study as a resistor	Completed
5	Ms. Patil Varsha Dhanaraj	T. Y. B. Sc.	Synthesis of nanostructured ZnO and its study as a resistor	Completed
6	Mr. Patil Rohit Arjun	T. Y. B. Sc.	Synthesis of nanostructured SrO <sub>2</sub> and its study as a resistor	Completed

Vice Principal

**Vice Principal**

Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon

Dr. D. R. Patil  
Project Guide



Established : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

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NAAC Accredited "B" Grade



**Date: 30/04/2020**

## **CERTIFICATE OF APPRECIATION**

This is to certify that, Mr. / Ms. **Sali Vishakha Prabhakar** in T. Y. B. Sc Physics has completed his / her project entitled **"Synthesis of nanostructured BaO and its study as a resistor"** during the academic year **2019-2020**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

**Vice Principal**

Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon

**Dr. D. R. Patil**

**Project Guide**

Established : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit.



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NAAC Accredited "B" Grade



**Date: 30/04/2020**

### **CERTIFICATE OF APPRECIATION**

This is to certify that, Mr. / Ms. **Patil Archana Himmatrao** in T. Y. B. Sc Physics has completed his / her project entitled "**Synthesis of nanostructured ZrO<sub>2</sub> and its study as a resistor**" during the academic year **2019-2020**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

**Vice Principal**  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon

**Dr. D. R. Patil**  
**Project Guide**

Established : June 1992

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Date: 30/04/2020

### CERTIFICATE OF APPRECIATION

This is to certify that, Mr. / Ms. **Patil Rohini Raosaheb** in T. Y. B. Sc Physics has completed his / her project entitled "Synthesis of nanostructured  $\text{Bi}_2\text{O}_3$  and its study as a resistor" during the academic year 2019-2020. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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This is to certify that, Mr. / Ms. **Patil Bhavana Hemraj** in T. Y. B. Sc Physics has completed his / her project entitled "**Synthesis of nanostructured  $Al_2O_3$  and its study as a resistor**" during the academic year **2019-2020**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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This is to certify that, Mr. / Ms. **Patil Varsha Dhanaraj** in T. Y. B. Sc Physics has completed his / her project entitled "**Synthesis of nanostructured ZnO and its study as a resistor**" during the academic year **2019-2020**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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This is to certify that, Mr. / Ms. **Patil Rohit Arjun** in T. Y. B. Sc Physics has completed his / her project entitled "**Synthesis of nanostructured SrO<sub>2</sub> and its study as a resistor**" during the academic year **2019-2020**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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## DEPT. OF PHYSICS

### ACTIVITY: PROJECTS ON NANOTECHNOLOGY

Academic Year: 2020 – 2021

Sr. No.	Name of the Student	Class	Title of the Project	Status of the Project
1	Mr. Patil Tushar Vijaysingh	T. Y. B. Sc.	Studies on nanostructured MoO <sub>3</sub> based gas sensors	Completed
2	Mr. Bediskar Swapnil Sunil	T. Y. B. Sc.	Studies on nanostructured MoO <sub>3</sub> based gas sensors	Completed
3	Ms. Thakare Nikita Ishwar	T. Y. B. Sc.	Studies on nanostructured Bi <sub>2</sub> O <sub>3</sub> based gas sensors	Completed
4	Ms. Patil Mayuri Ishwar	T. Y. B. Sc.	Studies on nanostructured Bi <sub>2</sub> O <sub>3</sub> based gas sensors	Completed
5	Ms. Patil Komal Manoj	T. Y. B. Sc.	Studies on nanostructured ZrO <sub>2</sub> based gas sensors	Completed
6	Ms. Wani Achal Ramesh	T. Y. B. Sc.	Studies on nanostructured ZrO <sub>2</sub> based gas sensors	Completed
7	Ms. Patil Gunjan Anil	T. Y. B. Sc.	Studies on nanostructured MgO based gas sensors	Completed
8	Ms. Patil Jayashri Pandurang	T. Y. B. Sc.	Studies on nanostructured MgO based gas sensors	Completed
9	Mr. Vasande Hansraj Dipak	T. Y. B. Sc.	Studies on nanostructured La <sub>2</sub> O <sub>3</sub> based gas sensors	Completed

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This is to certify that, Mr. / Ms. **Patil Tushar Vijaysingh** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured MoO<sub>3</sub> based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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## CERTIFICATE OF APPRECIATION

This is to certify that, Mr. / Ms. **Bediskar Swapnil Sunil** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured MoO<sub>3</sub> based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Thakare Nikita Ishwar** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured Bi<sub>2</sub>O<sub>3</sub> based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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## CERTIFICATE OF APPRECIATION

This is to certify that, Mr. / Ms. **Patil Komal Manoj** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured ZrO<sub>2</sub> based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Wani Achal Ramesh** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured ZrO<sub>2</sub> based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Patil Gunjan Anil** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured MgO based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Patil Jayashri Pandurang** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on nanostructured MgO based gas sensors**" during the academic year **2020-2021**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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## DEPT. OF PHYSICS

### ACTIVITY: PROJECTS ON NANOTECHNOLOGY

Academic Year: 2021 – 2022

Sr. No.	Name of the Student	Class	Title of the Project	Status of the Project
1	Ms. Patil Minal Dhanaraj	T. Y. B. Sc.	Studies on MgO based resistor	Completed
2	Ms. Chaudhari Mayawati Bharat	T. Y. B. Sc.	Studies on ZrO <sub>2</sub> based resistor	Completed
3	Ms. Nerkar Mayuri Ashok	T. Y. B. Sc.	Studies on MgO based resistor	Completed
4	Ms. Patil Mayuri Kailas	T. Y. B. Sc.	Studies on SnO <sub>2</sub> based resistor	Completed
5	Ms. Patil Nikita Dnyaneshwar	T. Y. B. Sc.	Studies on SnO <sub>2</sub> based resistor	Completed
6	Mr. Patil Chandrakant Gulab	T. Y. B. Sc.	Studies on ZrO <sub>2</sub> based resistor	Completed

  
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This is to certify that, Mr. / Ms. **Patil Minal Dhanaraj** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on MgO based resistor**" during the academic year **2021-2022**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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This is to certify that, Mr. / Ms. **Chaudhari Mayawati Bharat** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on ZrO<sub>2</sub> based resistor**" during the academic year **2021-2022**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Nerkar Mayuri Ashok** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on MgO based resistor**" during the academic year **2021-2022**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Patil Nikita Dnyaneshwar** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on SnO<sub>2</sub> based resistor**" during the academic year **2021-2022**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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This is to certify that, Mr. / Ms. **Patil Chandrakant Gulab** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on ZrO<sub>2</sub> based resistor**" during the academic year **2021-2022**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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## DEPT. OF PHYSICS

### ACTIVITY: PROJECTS ON NANOTECHNOLOGY

Academic Year: 2022 – 2023

Sr. No.	Name of the Student	Class	Title of the Project	Status of the Project
1	Ms. Beldar Shakirabi Khan	T. Y. B. Sc.	Studies on CdO based resistor	Completed
2	Mr. Patil Uday Dayanand	T. Y. B. Sc.	Studies on SnO <sub>2</sub> based resistor	Completed
3	Mr. Dabhade Roshan M.	T. Y. B. Sc.	Studies on Al <sub>2</sub> O <sub>3</sub> based resistor	Completed

  
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## CERTIFICATE OF APPRECIATION

This is to certify that, Mr. / Ms. **Beldar Shakirabi Khan** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on CdO based resistor**" during the academic year **2022-2023**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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This is to certify that, Mr. / Ms. **Patil Uday Dayanand** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on SnO<sub>2</sub> based resistor**" during the academic year **2022-2023**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

  
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## CERTIFICATE OF APPRECIATION

This is to certify that, Mr. / Ms. **Dabhade Roshan Meghraj** in T. Y. B. Sc Physics has completed his / her project entitled "**Studies on  $Al_2O_3$  based resistor**" during the academic year **2022-2023**. He / She paid the devotion for the successful completion of the project at our Bulk and Nanomaterials Research Laboratory, Department of Physics, R. L. College Parola under the guidance of Dr. D. R. Patil.

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**PAROLA, DIST - JALGAON, 425111**



ESTD: 1992

Website: [ricollegeparola.com](http://ricollegeparola.com), Email: [principal@parola@gmail.com](mailto:principal@parola@gmail.com), Tel: +91 2597 292666, Fax: +91 2597 292665

**Internal Quality Assurance Cell**  
**Field work of Environmental Studies**



**Academic Year (2022-2023)**

Sr. No	Name of faculty	Total students	Roll No. of students	Project name allotted to students
1	SCIENCE	145	1 to 25	Solid waste management in Parola City
			26 to 50	Effect of air Pollution on Environment
			51 to 75	Effect of Sound Pollution on Environment
			76 to 100	Effect of water Pollution on Environment
			101 to 125	Global warming and Environment
			126 to 145	Importance of Biodiversity
2	ARTS	119	1 to 25	Biodiversity around Parola Tahsil
			26 to 50	Study of Vegetation's cover in Parola Tahsil
			51 to 75	Impact of Air population due to National Highway (NH6)
			76 to 100	Relationship both Man and Environment
			101 to 119	Water reservoir around Parola Tahsil and its impact

  
IQAC Coordinator  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
Acting Principal  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil:Paroia, State:Maharashtra

**General Register**

B.Sc. (with Credits)-Regular-under CBCS [June-2022] Pattern , Sem-I

**Academic Year :2022-2023**

Sr.No	PRN	Student Name	Gender	Contact No.	Category
1	2022015400047046	BADGUJAR AJAY GURUDAS	Male	919370988088	OBC
2	2022015400040901	BADGUJAR GANESH DNYANESHWAR	Male	919370835090	OBC
3	2022015400032967	BARI MAYUR SATISH	Male	918010227500	OBC
4	2022015400046445	BARI MAYURI RAVINDRA	Female	919923552314	OBC
5	2022015400032975	BARI MINAKSHI VIKRAM	Female	917020530350	OBC
6	2022015400046476	BAVISKAR GANESH PRADIP	Male	919371323820	NT-1 (NT-B)
7	2022015400246053	BAVISKAR ROSHAN SAMHAJI	Male	919322916137	OBC
8	2022015400032824	BHAMARE PRATIKSHA GANJIDHAR	Female	919096340923	OBC
9	2022015400040843	BHIL CHETAN ANIL	Male	917498392044	ST
10	2022015400040874	BHOI DHANASHRI KAILAS	Female	919156636416	NT-1 (NT-B)
11	2022015400037357	BHOI VISHAL PANDHARINATH	Female	919518389841	NT-1 (NT-B)
12	2022015400032132	CHAUDHARI CHAITALI NITIN	Female	918830188065	OBC
13	2022015400032936	CHAUDHARI KAJAL RAJENDRA	Female	919699119023	OBC
14	2022015400027483	CHAUDHARI KOMAL SHANKAR	Female	919975092451	OBC
15	2022015400036017	CHAVAN BHARAT SHRIRAM	Male	918668521387	VJ/DT(A)
16	2022015400027436	CHAVAN PRERANA SANJU	Female	919370934188	VJ/DT(A)
17	2022015400046526	CHITTE VIVEK SOMNATH	Male	917666490640	OBC
18	2022015400047015	DALAVI NEHA SUBHASH	Female	919850678199	VJ/DT(A)
19	2022015400042142	DEORE KULDIP RAMRAO	Male	919049626411	OBC
20	2022015400036892	DEORE PAVAN CHANDRAKANT	Male	919370840308	OBC
21	2022015400041742	DHANGAR PRAGATI DILIP	Female	919579285012	NT-2 (NT-C)
22	2022015400032816	GADHARI BHAGYASHREE ISHWAR	Female	917757840988	NT-2 (NT-C)
23	2022015400031972	GADHARI DIVYA CHHABULAL	Female	918983405001	NT-2 (NT-C)
24	2022015400046437	GIRASE ANJALI BHARATSING	Female	919022272767	VJ/DT(A)
25	2022015400042181	GIRASE SWATI NARAYAN	Female	918999011920	Open
26	2022015400027444	HAJARE DEVKI DINESH	Female	917387175535	NT-1 (NT-B)
27	2022015400041757	HATKAR KAVITA CHANDRAKANT	Female	919823992451	NT-2 (NT-C)
28	2022015400031585	HATKAR POONAM SURESH	Female	919529624370	NT-2 (NT-C)





29	2022015400036845	HATKAR SAGAR NARAYAN	Male	918767344346	NT-2 (NT-C)
30	2022015400043911	JADHAV PAVAN UTTAM	Male	919588648902	VJ/DT(A)
31	2022015400041765	JAGTAP SIDDHARTH HARISH	Male	918010541710	Open
32	2022015400047054	JAIN BRAMHI BHARAT	Female	919665542220	Open
33	2022015400046414	JATSWAL VAISHNAVI PANNALAL	Female	918055620095	Open
34	2022015400041823	JAMAL KAHEKSHAN MOHAMMAD	Female	918149927598	OBC
35	2022015400040866	JAVALE JAYASHRI RATILAL	Female	917798216508	SC
36	2022015400251916	KHADE JAYASHRI NAMDEV	Female	919975536443	OBC
37	2022015400029281	KHADE YOGESH BALU	Male	919421636945	OBC
38	2022015400036861	KHAIRNAR SAKSHI MURLIDHAR	Female	917387598589	OBC
39	2022015400043981	KHATIK LUCKY PAPPU	Male	918080945620	Open
40	2022015400046395	LOHAR ROSHANI ARJUN	Female	919156676583	OBC
41	2022015400032751	MAHAJAN ASHWINI MANOHAR	Female	918806346215	OBC
42	2022015400032766	MAHAJAN BHAGYASHRI SHRIRAM	Female	919096149430	OBC
43	2022015400042173	MAHAJAN DIPAK GOPAL	Male	917058002348	OBC
44	2022015400042157	MAHAJAN DIPALI ABA	Female	919665202795	OBC
45	2022015400041796	MAHAJAN DIVYA AVACHIT	Female	917875502375	OBC
46	2022015400043973	MAHAJAN JAGDISH KESHAV	Male	919860980819	OBC
47	2022015400046364	MAHAJAN JAYSHRI RAJENDRA	Female	919922722285	OBC
48	2022015400032952	MAHAJAN KALYANI VIJAY	Female	917020188299	OBC
49	2022015400032801	MAHAJAN POONAM SHANKAR	Female	919637400150	OBC
50	2022015400032066	MAHAJAN RITIKA BAPU	Female	919404594667	Open
51	2022015400043965	MAHALE DIPESH RAJENDRA	Male	918698274976	OBC
52	2022015400046511	MAHALE GAYATRI RAJU	Female	918261881521	SC
53	2022015400043934	MAHALE HARSHAL RAMKRUSHNA	Male	917767027817	OBC
54	2022015400032372	MAHALE ROHIT RAJENDRA	Male	918999297711	SC
55	2022015400042134	MALI PUJA JAGANNATH	Female	919172874451	OBC
56	2022015400043903	MARATHE GAURAV DEVAJI	Male	918766938497	OBC
57	2022015400031577	NIKAM GAYATRI PUNDLIK	Female	919834924072	OBC
58	2022015400046422	NIKAM MANASI SUNIL	Female	919673166339	OBC
59	2022015400042111	NIKAM VISHAKHA VIJAY	Female	918767196989	OBC
60	2022015400036822	PAGAR VAISHNAVI SANTOSH	Female	919370396377	OBC
61	2022015400046534	PANPATIL PRADIP RAVINDRA	Male	919356881494	SC
62	2022015400046503	PARADHI VILAS ARUN	Male	918262874185	ST







63	2022015400032097	PARDESHI HEMANT KISHOR	Male	918600869745	OBC
64	2022015400033015	PATIL AARTI YUVRAJ	Female	917841013877	OBC
65	2022015400032012	PATIL ADITI JAGADISH	Female	919284708105	OBC
66	2022015400042103	PATIL AKSHTA BHAGWAT	Female	917499201505	OBC
67	2022015400032124	PATIL ARCHANA GOKUL	Female	918265020112	OBC
68	2022015400043926	PATIL ASHWINI SANTOSH	Female	919823477451	OBC
69	2022015400032147	PATIL BHAGYASHRI RAOSAHEB	Female	917972149099	OBC
70	2022015400047077	PATIL CHETAN SANJAY	Male	919527987926	OBC
71	2022015400032797	PATIL CHETANA SANJAY	Female	919922471025	OBC
72	2022015400046453	PATIL CHETANA SUNIL	Female	919545252441	OBC
73	2022015400027452	PATIL DHANANJAY PUNDALIK	Male	917798901517	OBC
74	2022015400032406	PATIL DIVYA SANTOSH	Female	919657672958	Open
75	2022015400027467	PATIL FALAGUNI SHARAD	Female	919022491857	OBC
76	2022015400031523	PATIL GAURI SHEKHAR	Female	918010749109	Open
77	2022015400031531	PATIL GAYATRI BHASKAR	Female	918888145783	OBC
78	2022015400040882	PATIL GAYATRI DHANARAJ	Female	918767879990	OBC
79	2022015400032395	PATIL GAYATRI DHANRAJ	Female	919595011390	Open
80	2022015400036853	PATIL GAYATRI DILIP	Female	918600514925	OBC
81	2022015400050451	PATIL GAYATRI VINOD	Female	919325969930	OBC
82	2022015400043957	PATIL HARSHADA HARESHWAR	Female	919325219944	OBC
83	2022015400032991	PATIL HARSHADA MANOHAR	Female	917620467291	OBC
84	2022015400032101	PATIL HARSHADA SUDAM	Female	918767611994	OBC
85	2022015400040851	PATIL HITESH SHANTARAM	Male	918767246480	OBC
86	2022015400031562	PATIL INDRAYANI DNYANESHWAR	Female	919657552852	Open
87	2022015400040897	PATIL JAYSHREE DNYANESHWAR	Female	919561982406	OBC
88	2022015400027421	PATIL JYOTI PRUTHVIRAJ	Female	919022072103	OBC
89	2022015400046406	PATIL KALYANI ASHOK	Female	918459311560	OBC
90	2022015400032832	PATIL KALYANI PUNDALIK	Female	919913748443	OBC
91	2022015400042126	PATIL KANCHAN HARICHANDRA	Female	917498880750	OBC
92	2022015400027475	PATIL KRUSHNA DEVANAND	Male	919322011817	OBC
93	2022015400042165	PATIL KUNAL BHAGWAN	Male	919021399948	OBC
94	2022015400036814	PATIL LALIT DHONDU	Male	918010730431	OBC
95	2022015400036056	PATIL LOKITA SANJAY	Female	919673316300	OBC
96	2022015400047023	PATIL MADHURI RAVINDRA	Female	919623630241	OBC







97	2022015400050443	PATIL MANASI MADHUKAR	Female	919503773192	OBC
98	2022015400036025	PATIL MANISH KISHOR	Male	918010731210	OBC
99	2022015400032944	PATIL NAMRATA JIJABRAO	Female	919322992570	OBC
100	2022015400031995	PATIL NITIN JIJABRAO	Male	919322165591	OBC
101	2022015400036041	PATIL PARESH VIJAY	Male	918767025761	OBC
102	2022015400041815	PATIL PRAJAKTA SATISH	Female	919860921557	OBC
103	2022015400046387	PATIL PRAPTI DINKAR	Female	918668549727	OBC
104	2022015400046484	PATIL PRATIKSHA DEVIDAS	Female	917709548611	OBC
105	2022015400032004	PATIL PRIYANKA JITENDRA	Female	918080174988	OBC
106	2022015400032027	PATIL PUJA KIRAN	Female	919637352768	OBC
107	2022015400031593	PATIL PUSHPAL SANJAY	Female	918390691730	Open
108	2022015400036876	PATIL RAJ GANESH	Male	918459320909	OBC
109	2022015400031554	PATIL RAJASHRI JAGANNATH	Female	918007729088	OBC
110	2022015400032082	PATIL RAJASHRI RAVINDRA	Female	919356736305	Open
111	2022015400139172	PATIL RAJASHRI SUNIL	Female	919860038837	Open
112	2022015400033007	PATIL RINA BAPU	Female	919370701476	OBC
113	2022015400036033	PATIL ROHIT BHAIYYASAHEB	Male	919158320320	OBC
114	2022015400032774	PATIL SAHIL BAPURAO	Male	919359004343	OBC
115	2022015400037365	PATIL SHUBHAM DATTU	Male	918261849664	OBC
116	2022015400031604	PATIL SHUBHANGI RAVINDRA	Female	917057213016	OBC
117	2022015400040827	PATIL SIMA RAYABA	Female	919527487084	OBC
118	2022015400047085	PATIL TEJAL BHIDAS	Female	919503926791	OBC
119	2022015400041807	PATIL TEJASWINI DEVAJI	Female	917249565349	OBC
120	2022015400040835	PATIL TEJASWINI RAJESH	Female	919860034707	OBC
121	2022015400047031	PATIL YASH SHAMKANT	Male	919049036162	OBC
122	2022015400041781	PATIL YOGESHWARI JIJABARAO	Female	919699369723	OBC
123	2022015400032983	PATIL YOGINI DEVENDRA	Female	919322978173	OBC
124	2022015400032043	PATIL YOGITA MADHAVRAO	Female	919356089298	OBC
125	2022015400027491	PAWAR KALPESH BHASKAR	Male	917507225030	ST
126	2022015400041773	PAWAR MONALI SHIVDAS	Female	919860870346	VJ/DT(A)
127	2022015400046372	PINJARI ARSHIN SIKANDAR	Female	918999640240	OBC
128	2022015400036837	RAJPUT JAYESH MOHAN	Male	919356889548	Open
129	2022015400036064	RATHOD VIJESH TULASHIRAM	Male	918261046345	VJ/DT(A)
130	2022015400031546	ROKDE PUJA PRAKASH	Female	919322966721	OBC





131	2022015400047007	SARDAR JAYASHRI DIPAK	Female	917447850209	SC
132	2022015400032782	SAWANT ARATI SATISH	Female	918698179773	Open
133	2022015400036884	SHELAR ROHIT KRUSHNARAO	Male	918262820181	OBC
134	2022015400047062	SHRIWASTAV NISHA MOHAN	Female	919561974540	OBC
135	2022015400043942	SONAR CHARU SUNIL	Female	919326586426	OBC
136	2022015400032364	SONAWANE DARSHAN ISHWAR	Male	919356014612	OBC
137	2022015400032035	SUTAR UNNATI PRAKASH	Female	918766509175	OBC
138	2022015400032074	THAKARE BHAVANA RAMCHANDRA	Female	919561529235	Open
139	2022015400046492	VALHE ROHIT NARAYAN	Male	919322316638	SC
140	2022015400046461	WANI TANVI SHARAD	Female	919665751520	OBC
141	2022015400031987	WANKHEDE AMRAPALI SHYAM	Female	918308595613	SC
142	2022015400032051	WANKHEDE ARATI SAHEBRAO	Female	919028613336	SC
143	2022015400032116	WANKHEDE DIVYA DIPAK	Female	918459435407	OBC
144	2022015400032387	WANKHEDE VANITA BHAIYYASAHEB	Female	919637755648	SC
145	2022015400036072	YEOLE NEHA KHEMCHAND	Female	918468915256	OBC





**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai  
Mahavidyalaya**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil: Parola, State: Maharashtra



**General Register**

B.Sc. (with Credits)-Regular-under CBCS [June-2019] Pattern, Sem-III

**Academic Year :2022-2023**

Sr.N	PRN	Student Name	Gender	Contact No.	Category
1	2021015400036716	BADGUJAR DHIRAJ PANDHARINATH	Male	919730914101	OBC
2	2021015400074556	BADGUJAR PRATIK ASHOK	Male	917083259762	OBC
3	2021015400037685	BAGLE CHETAN RAJENDRA,	Male	917666800316	SC
4	2021015400032966	BAGUL PRASHANT NAMDEVRAO	Male	919834718286	OBC
5	2021015400037325	BARI SHWETA SATISH	Female	918010227500	OBC
6	2021015400037414	BHOI PANKAJ KAUTIK	Male	919765799268	NT-1 (NT-B)
7	2021015400040873	BOBADE BHAGYASHRI RAMKRISHNA	Female	917058829943	Open
8	2021015400032951	BOPCHE KAJAL MANIKRAM	Female	918767309145	OBC
9	2021015400031093	BORASE ASHWINI DNYANESHWAR	Female	919370039171	OBC
10	2021015400037302	CHAUDHARI BHAGYASHRI VIJAY	Female	918888902532	OBC
11	2021015400031166	CHAUDHARI HEMANGI KISHOR	Female	919834039986	OBC
12	2021015400031174	CHAUDHARI RAJASHRI ANIL	Female	917403480111	OBC
13	2021015400037607	CHAUDHARI YOGINI SHRAWAN	Female	918767753168	OBC
14	2021015400037027	CHAVHAN DIVYA NANDU	Female	919356025183	NT-2 (NT-C)
15	2021015400037565	DEORE HEMCHANDRA RAJENDRA	Female	917821906410	OBC
16	2021015400031046	DEORE KOMAL GANESH	Female	919373552125	OBC
17	2021015400033111	DESLE JAGRUTI BHAUSAHEB	Female	918668809954	OBC
18	2021015400031495	GADHARI NIKITA LALA	Female	918080308820	NT-2 (NT-C)
19	2021015400031522	GAYAKAWAD ASHWINEE KAILAS	Female	917057018455	OBC
20	2021015400031352	GURAV KETAKI MANOJ	Female	919766480075	OBC
21	2021015400031263	JADHAV SANI SANJAY	Male	919356813488	SC
22	2021015400037693	JADHAV SHUBHANGI PRADIP	Female	919764622350	Open
23	2021015400031127	JADHAV VAISHNAVI GAJENDRA	Female	919699636857	OBC
24	2021015400037581	KOLI BHAGYASHREE BHAGAWAN	Female	919579027218	SBC
25	2021015400037012	MAHAJAN BHUMIKA BAPU	Female	919960765300	OBC
26	2021015400033494	MAHAJAN DIPIKA ISHWAR	Female	919028478583	OBC
27	2021015400031696	MAHAJAN JAYASHRI SUDAM	Female	918390212757	OBC







28	2021015400031777	MAHAJAN KANCHAN PUNJU	Female	918055965975	OBC
29	2021015400033471	MAHAJAN NEHA GULAB	Female	919423914455	OBC
30	2021015400031305	MALI BHAGYASHRI DAGADU	Female	919637076374	OBC
31	2021015400031112	MALI DIPALI NANDKISHOR	Female	919356064004	OBC
32	2021015400037484	MISTARI VISHAL SANJAY	Male	919764621097	OBC
33	2021015400037774	MORE KAUSHAL RAVINDRA	Male	919403221546	OBC
34	2021015400032893	MORE LEENA SURESH	Female	919096946501	NT-1 (NT-B)
35	2021015400033784	MORE SATYAM SANJAY	Male	919359955832	OBC
36	2021015400031182	NAVARKAR VRUSHALI PRAVIN	Female	917447231851	OBC
37	2021015400031456	NIKAM MAYURI DIPAKRAO	Female	917219512816	OBC
38	2021015400037712	PARADHI GITANJALI SURESH	Female	918010014393	ST
39	2021015400031367	PARDESHI KOMAL HIRA	Female	919503415982	OBC
40	2021015400033776	PATIL ANKUSH TULSIDAS	Male	917588326355	Open
41	2021015400031506	PATIL ANUSHKA SANJAY	Female	917887761588	OBC
42	2021015400031197	PATIL APEKSHA MANOHAR	Female	918459787483	OBC
43	2021015400037275	PATIL ARCHANA RAVINDRA	Female	919921075531	OBC
44	2021015400031321	PATIL ASHWINI GANESH	Female	919881081478	OBC
45	2021015400032904	PATIL CHAITALI SANJAY	Female	919158152127	OBC
46	2021015400039193	PATIL CHANDRAKANT RAJENDRA	Male	917219449154	OBC
47	2021015400031224	PATIL CHANDRAKANT VASANT	Male	919322491545	OBC
48	2021015400031464	PATIL CHETAN KISHOR	Male	917387729938	OBC
49	2021015400073537	PATIL CHETAN SUNIL	Male	919307956634	OBC
50	2021015400032927	PATIL CHETANA ADHIKRAO	Female	919356187360	OBC
51	2021015400033722	PATIL DEVYANI RAJU	Female	919420157303	OBC
52	2021015400099546	PATIL DIGVIJAY DILIP	Male	917820823014	OBC
53	2021015400031487	PATIL DIKSHA SUNIL	Female	917820885236	OBC
54	2021015400031472	PATIL DILBHAR YUVRAJ	Male	919309589223	OBC
55	2021015400031336	PATIL DIPTI SANJAY	Female	918668867958	OBC
56	2021015400074572	PATIL DIVYA ANIL	Female	919595521555	OBC
57	2021015400032935	PATIL DIVYA NANA	Female	919021440205	OBC
58	2021015400037341	PATIL DNYANESHWAR CHANDULAL	Male	919158016301	OBC
59	2021015400037364	PATIL GAURAV PRAKASH	Male	919067465648	OBC
60	2021015400074541	PATIL GAURAV RAVINDRA	Male	919326155611	Open
61	2021015400073576	PATIL HARSHADA SURESH	Female	919370349210	OBC





62	2021015400037372	PATIL HARSHAL ANANDA	Male	919322851329	OBC
63	2021015400311262	PATIL HARSHAL LOTAN	Male	919511829396	OBC
64	2021015400037283	PATIL HARSHALI ROHIDAS	Female	918010121584	OBC
65	2021015400033714	PATIL JANAVI SUNIL	Female	919422996219	OBC
66	2021015400032982	PATIL JAYASHRI SANJAY	Female	919112143850	OBC
67	2021015400074614	PATIL KALYANI BHAGWAN	Female	918459773721	OBC
68	2021015400031201	PATIL KALYANI SACHIN	Female	918390361017	OBC
69	2021015400031023	PATIL KAVITA SUNIL	Female	917757928114	OBC
70	2021015400033126	PATIL KIRAN BALU	Female	919356972434	OBC
71	2021015400033037	PATIL KOMAL DNYANESHWAR	Female	919673245011	OBC
72	2021015400037236	PATIL KOMAL SHRAVAN	Female	918600071990	OBC
73	2021015400033022	PATIL KOMAL VITTHAL	Female	919322094579	OBC
74	2021015400074517	PATIL MOHINI CHARANDAS	Female	918788330362	OBC
75	2021015400037213	PATIL MOHINI RAMKRUSHNA	Female	918459601558	OBC
76	2021015400033803	PATIL MOHINI SHANTILAL	Female	918788859903	OBC
77	2021015400037743	PATIL MONIKA GOKUL	Female	919503273847	OBC
78	2021015400033737	PATIL NEHA SURESH	Female	919552204632	OBC
79	2021015400031143	PATIL NIKITA ASHOK	Female	919834855801	OBC
80	2021015400037244	PATIL PANKAJ SAMBHAJI	Male	918080295338	OBC
81	2021015400034281	PATIL PARAG SUNIL	Male	919529044506	OBC
82	2021015400040865	PATIL PRATIKSHA RAVINDRA	Female	919284103358	OBC
83	2021015400311277	PATIL RAMKRUSHNA ASHOK	Male	919699819662	Open
84	2021015400031062	PATIL RITESH KAUTIK	Male	917498545630	OBC
85	2021015400031294	PATIL RITIKA JAGANNATH,	Female	918459821274	OBC
86	2021015400031537	PATIL ROSHANE SUNIL	Female	917498618983	OBC
87	2021015400036701	PATIL SACHIN ROHIDAS	Male	919096340654	OBC
88	2021015400037317	PATIL SAKSHI SUNIL	Female	919322854845	OBC
89	2021015400032912	PATIL SEJAL DATTATRAY	Female	919545521649	OBC
90	2021015400037511	PATIL SHUBHANGEE NIMBAJEE	Female	919325595796	OBC
91	2021015400033753	PATIL SWAPNIL SUNIL	Male	918767338734	OBC
92	2021015400037221	PATIL VAISHNAVI KHUSHALCHANDRA	Female	918421622168	OBC
93	2021015400037252	PATIL VIJAYA YADAV	Female	919049400813	OBC
94	2021015400306117	PATIL VIKAS NANA	Male	919665577944	OBC
95	2021015400033761	PATIL VIVEK ARUN	Male	919890761447	OBC





96	2021015400037476	PATIL YASH VISHVAS	Male	918767964363	OBC
97	2021015400073545	SALI SHARADA MANOJ	Female	919422562948	SBC
98	2021015400037542	SAVANT GAYATRI SANJAY	Female	919322426133	SC
99	2021015400032974	SHARMA SIDDHANT RAVINDRA	Male	919373126901	Open
100	2021015400031135	SHINDE KOMAL SANTOSH	Female	918600360299	OBC
101	2021015400031843	SHINDE NIDHI UMESH	Female	919503002345	OBC
102	2021015400037596	SHINDE NIKITA NILKANTHA	Female	919096982764	OBC
103	2021015400031313	SHINDE PRANALI GHANSHYAM	Female	919503496269	OBC
104	2021015400037727	SONAWANE YASHKUMAR NIRANJAN	Male	918412065865	OBC
105	2021015400033792	SURYAWANSHI PANKAJ VILAS	Male	919022143100	OBC
106	2021015400074564	THAKARE HITESH RAVSAHEB	Male	919307387118	OBC
107	2021015400033834	WAGH VAISHALI SHAILENDRA	Female	919890769281	OBC





**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil:Parola,

**General Register**

B.Sc. (with Credits)-Regular-under CBCS [June-2019] Pattern , Sem-V

**Academic Year :2022-2023**

Sr.No	PRN	Student Name	Gender	Contact No.	Category
1	2020015400019292	AHIRE KIRTI GANESH	Female	917038026656	OBC
2	2020015400017761	AMBHORE ROHIT PRAKASH	Male	917719966753	SC
3	2020015400018064	BELDAR SHAKERA BI SARDAR KHAN	Female	919022565151	NT-1 (NT-B)
4	2020015400019833	CHAUDHARI ADITYA LAXMAN	Male	918975701179	OBC
5	2020015400017954	CHAUDHARI RAJNANDINI GOKUL	Female	918983908485	OBC
6	2020015400019686	CHAUDHARI RUCHIKA MAHESH	Female	919423385325	OBC
7	2020015400019694	CHAUDHARI VAISHALI, KISHOR	Female	918208603494	OBC
8	2021015400189611	DABHADE ROSHAN MEGHRAJ	Male	917588646876	OBC
9	2020015400019021	DADKAR AMRUTA KISHOR	Female	919730968623	Open
10	2018015400290913	DESALE KARISHMA SUNIL	Female	917507250637	OBC
11	2020015400019303	DESALE VISHAL TUKARAM	Male	919552652373	OBC
12	2020015400019222	DHANGAR NIKITA ASARAM	Female	919834599245	NT-2 (NT-C)
13	2020015400019423	JADHAV SHWETA SANJAY	Female	917709054802	SC
14	2020015400018056	KADAM TEJAL SANJIV	Female	919130760252	Open
15	2020015400017811	KASAR MONALI GIRISH	Female	918055020415	OBC
16	2020015400019551	KSHATRIY VIVEK KAILASSA	Male	918888921341	OBC
17	2020015400019535	MAHAJAN DIPALI DNYANESHWAR	Female	919890773693	OBC
18	2020015400017672	MAHAJAN SONALI MANOHAR	Female	917219226165	OBC
19	2020015400019601	MAHAJAN VINAYAK SHIVDAS	Male	917498199132	OBC
20	2020015400018145	MARATHE DHANVANT DINESH MARATHE	Male	918459967319	OBC
21	2020015400017695	MISTARI DIVYANI VIJAY	Female	919049116303	OBC
22	2020015400017687	NATHJOGI RUPALI RAJENDRA	Female	919022918621	Open
23	2020015400019253	NIKAM RUSHIKESH KISHOR	Male	919309914464	OBC
24	2020015400019125	NIKAM VIDYA VINOD	Female	919322467813	OBC
25	2019015400008025	NIKUMBH KALPESH SUNIL	Male	919325321293	OBC
26	2020015400019052	PATIL ABHISHEK SANJAY	Male	918767479561	OBC
27	2020015400019261	PATIL AISHWARYA DIPAK	Female	919322180419	OBC
28	2020015400019736	PATIL AKSHAY BHAGWAT	Male	917499201505	OBC



29	2020015400018114	PATIL AKSHAY JAGANNATH	Male	919503530368	OBC
30	2020015400017857	PATIL ANKITA KAILAS	Female	919881614366	OBC
31	2020015400019067	PATIL ANUSHKA UTTAM	Female	917875014496	OBC
32	2020015400019326	PATIL ASHWINI RAJENDRA	Female	919637234926	Open
33	2020015400018137	PATIL AVINASH CHANDU	Male	919518598934	OBC
34	2020015400019477	PATIL BHAGYASHRI RAMDAS	Female	919579357527	OBC
35	2020015400019663	PATIL BHANUPRIYA SUNIL	Female	918208750084	OBC
36	2020015400019825	PATIL CHETAN GOTU	Male	919322469878	OBC
37	2020015400022947	PATIL DEVENDRA SHANKAR	Male	919730322722	OBC
38	2020015400017985	PATIL DIPAK BAPU	Male	919405441756	OBC
39	2020015400022023	PATIL DIPALI CHUDAMAN	Female	919890974487	OBC
40	2020015400017617	PATIL DIPANJALI SURESH	Female	917498638150	OBC
41	2020015400017946	PATIL DIPIKA SANJAY	Female	917020353132	Open
42	2020015400019431	PATIL DIPMALA VIJAY	Female	919579529533	OBC
43	2020015400017664	PATIL DIVYA RAJENDRA	Female	919112939918	OBC
44	2020015400022031	PATIL GANESH BHARATBHAI	Male	917600467237	OBC
45	2020015400017792	PATIL GAYATRI MUKUNDA	Female	919860074815	OBC
46	2020015400017993	PATIL HARSHADA SURYABHAN	Female	919834897974	OBC
47	2020015400019164	PATIL HARSHALI ARVIND	Female	919158011758	OBC
48	2020015400019187	PATIL HEMANGI ARVIND	Female	918007521429	OBC
49	2016015400019936	PATIL JAGRUTI PRABHAKAR	Female	918605538239	OBC
50	2020015400019133	PATIL JAYASHRI PRAVIN	Female	919637886256	OBC
51	2020015400017625	PATIL JEET RAMKRUSHNA	Male	917666068439	OBC
52	2020015400018017	PATIL KAVITA MADHAVRAO	Female	919021232341	OBC
53	2020015400019493	PATIL MANOJ SAHEBRAO	Male	919975350864	OBC
54	2020015400019705	PATIL MAYUR BHAGWAN	Male	919284872471	OBC
55	2020015400019342	PATIL MAYUR PARMESHWAR	Male	919284580737	OBC
56	2020015400019334	PATIL NEHA GORAKH	Female	919579155054	Open
57	2020015400017962	PATIL NEHA LOTAN	Female	919373540841	OBC
58	2020015400017591	PATIL NEHA VASANT	Female	919579149923	OBC
59	2020015400017641	PATIL NIKITA SUNIL	Female	919021450327	OBC
60	2020015400019632	PATIL NIKITA SURESH	Female	919890128839	OBC
61	2020015400022007	PATIL NILESH YUVRAJ	Male	919579420486	OBC
62	2020015400019454	PATIL PANKAJ PREMRAJ	Male	918668443805	OBC







63	2020015400017842	PATIL POOJA DNYANESHWAR	Female	918767583574	OBC
64	201901540002284	PATIL PRATIBHA GOKUL	Female	919922239474	OBC
65	2020015400017656	PATIL PRIYA LAXMAN	Female	919307497846	OBC
66	2020015400019543	PATIL PRIYANKA SUNIL	Female	918459775612	OBC
67	2020015400019195	PATIL RAJ MAHIPAT	Male	917499282253	OBC
68	2020015400017931	PATIL RAJASHRI RAMCHANDRA	Female	919730312214	Open
69	2020015400017881	PATIL ROSHANI LAXMAN	Female	917420914341	OBC
70	2020015400019446	PATIL SAPNA RAVINDRA	Female	919767835901	OBC
71	2020015400021983	PATIL SARITA DNYANESHWAR	Female	919049416679	OBC
72	2020015400022015	PATIL SHITAL SAHEBRAO	Female	918007646347	OBC
73	2020015400017753	PATIL SHUBHAM DHANRAJ	Male	917709521449	Open
74	2020015400017745	PATIL SHUBHAM MACHHINDRA	Male	919370836585	Open
75	2020015400019396	PATIL TANU SATISH	Female	919673270834	OBC
76	2020015400019527	PATIL TEJASWINI ANIL	Female	918087949264	OBC
77	2020015400018161	PATIL TEJASWINI PANDURANG	Female	919823142565	OBC
78	2021015400073553	PATIL UDAY DAYANAND	Male	917038941301	OBC
79	2020015400019206	PATIL VAISHALI SATILAL	Female	919529029533	OBC
80	2020015400019357	PAWAR ANKITA RAMESH	Female	919422618151	OBC
81	2020015400019574	SALI ASHVINI SUNIL	Female	919689038608	SBC
82	2020015400019091	SALUNKHE DIVYA MANOHAR	Female	918788965584	OBC
83	2020015400018153	SHELAR SANJIVANI RANGRAO	Female	917821079739	OBC
84	2020015400017706	SHINDE BHAGYASHRI DADABHAU	Female	919561161232	OBC
85	2020015400017602	SONAR NEHA VALMIK	Female	919403904500	OBC
86	2020015400019462	SONAWANE RITESH PRABHAKAR	Male	919284553509	OBC
87	2020015400017776	SONAWANE UDAY PRUTHWIRAJ	Male	919327833998	OBC
88	2014015400254735	SONWANE DIPALI RAGHUNATH	Female	918806652778	OBC
89	2020015400018996	SURYAWANSHI ANKITA SANJAY	Female	919021538438	OBC
90	2020015400019013	SURYAWANSHI MAMTA JIJABRAO	Female	918975259626	OBC
91	2020015400019075	SURYAWANSHI TEJAL KAUTIK	Female	919765911223	OBC
92	2020015400019512	THAKARE GAYATRI ISHWAR	Female	919422759146	OBC
93	2020015400019841	WAGH PIYUSH RAJIV	Male	919307357705	OBC
94	2020015400019647	WAGH UMESH SUNIL	Male	919665321353	OBC
95	2020015400017633	WANI ASHWINI MAHENDRA	Female	917385593490	OBC



**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai Mahavidyalaya**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil:Parola, State:Maharashtra  
**General Register**

B.A. (with Credits)-Regular-under CBCS [June-2022] Pattern, Sem-I

**Academic Year :2022-2023**

Sr.No	PRN	Student Name	Gender	Contact No.	Category	Caste
1	2022015400246061	AHIRE DIPESH RAVINDRA	Male	918459622129	SC	MAHAR
2	2022015400035826	AHIRE MRUNAL DAGA	Female	918857944012	Open	
3	2022015400047321	AMBHORE DAMINI PRAKASH	Female	918805614688	SC	MATANG
4	2022015400048154	AVACHITE KALPESH PRAKASH	Male	919730617022	SC	MANG
5	2022015400035993	BADGUJAR BHAVANA VALMIK	Female	919359832841	OBC	Badgujar
6	2022015400167852	BADGUJAR GAURAV SURESH	Male	8605630905	OBC	
7	2022015400047777	BADGUJAR KOMAL LAXMAN	Female	918698554208	Open	
8	2022015400027645	BADGUJAR NAMRATA VASANT	Female	918408973146	Open	
9	2022015400037396	BHAGWAT GAURAV AMOI	Male	919075328823	NT-1 (NT-B)	LOHAR
10	2022015400028022	BHIL JYOTI NAGO	Female	919284441350	ST	BHIL
11	2022015400047754	BHILL POOJA GANESH	Female	918459057070	ST	BHIL
12	2022015400047785	BHOI BHAGYASHRI HIRAMAN	Female	918411833699	NT-1 (NT-B)	BHOI
13	2022015400055645	BOBADE MAHESH RAMKRISHNA	Male	919421514094	Open	(BHOI)
14	2022015400035792	BORSE MAHESH KAILAS	Male	919898220509	OBC	KUNBI
15	2022015400028014	CHAUDHARI BHAGYASHRI PRAKASH	Female	919765411508	OBC	TELI
16	2022015400043017	CHAUDHARI ROHIT ARUN	Male	918788198534	OBC	TELI
17	2022015400287227	CHAUDHARI ROSHANI DATTATRAY	Female	919673648472	OBC	TELI
18	2022015400042262	CHAVHAN NIKITA DESHMUKH	Female	917498207463	Open	
19	2022015400047336	DEORE ASHWARYA KAILAS	Female	918975564792	OBC	KUNBI
20	2022015400042293	DESALE TEJSWINI VIJAY	Female	919130674291	Open	
21	2022015400027982	DHANGAR GAYATRI BHAUSAHEB	Female	918446503461	NT-2 (NT-C)	DHANGAR
22	2022015400029427	DHANGAR LALITA RAJENDRA	Female	918788153951	Open	(DHANGAR)
23	2022015400037381	DHOKE VAIBHAV RAVINDRA	Male	917620017078	Open	
24	2022015400047897	GAUR MOHINI CHANDRAPALSING	Female	919890110377	Open	
25	2022015400229476	GAYAKWAD RAKESH PRAKASH	Male	919545081720	ST	BHIL
26	2022015400047731	GIRASE NIKITA PRAVIN	Female	917798405329	Open	
27	2022015400047271	GONDHALI PRIYANKA SANJAY	Female	919309358292	NT-1 (NT-B)	VASUDEV





28	2022015400047762	JADHAV ANKUSH BHARMAL	Male	919890763825	VJ/DT(A)	BANJARA (GOR)
29	2022015400028045	JADHAV ARJUN RAMESH	Male	919970698516	VJ/DT(A)	BANJARA (GOR)
30	2022015400047255	JADHAV RUPESH DHARU	Male	918793110091	VJ/DT(A)	BANJARA (GOR)
31	2022015400027614	JADHAV SHRADDHA DEVENDRA	Female	919561619569	VJ/DT(A)	BANJARA (GOR)
32	2022015400043041	KANDARE MAKHAN TUKARAM	Male	917219675044	SC	BHANGI
33	2022015400042285	KHAIRNAR MEGHA RAVINDRA	Female	919503265152	SC	MAHAR
34	2022015400035834	KHONDE KAMAKSHI UMESH	Female	919545029347	OBC	NAVI (NHAVI)
35	2022015400035784	LOHAR FARHAN IMRAN	Male	919561193103	Open	
36	2022015400029315	MAHAJAN BHAGYASHRI DINESH	Female	919420134839	OBC	MALI
37	2022015400027502	MAHAJAN CHHAYA ADHAR	Female	919156467202	OBC	MALI
38	2022015400028061	MAHAJAN MANASI GOKUL	Female	918329344819	Open	
39	2022015400047313	MAHAJAN PUJA UMESH	Female	919421636495	OBC	MALI
40	2022015400035857	MAHAJAN TEJASWINI DILIP	Female	919699363191	OBC	MALI
41	2022015400047263	MAHALE PRAVIN SANJAY	Male	919356222913	SC	MAHAR
42	2022015400029443	MAHALE SHITAL KRUSHNA	Female	919421514072	SC	MAHAR
43	2022015400042335	MALI DAMINI DINKAR	Female	918459616183	Open	
44	2022015400043056	MALI HARSHADA PRAMOD	Female	919689837207	OBC	MALI
45	2022015400042277	MALI JITENDRA RAMKRUSHNA	Male	919529511591	OBC	MALI
46	2022015400037415	MALPURE SARANG JAGDISH	Male	919552926667	OBC	WANI
47	2022015400047305	MANG TUSHAR NARENDRA	Male	918459012849	SC	MANG
48	2022015400027997	MARATHE DAMINI SITARAM	Female	917387216305	OBC	KUNBI
49	2022015400042343	MARATHE PRASHANT RAVINDRA	Male	919130660069	Open	
50	2022015400029435	MARATHE ROHIT KAILAS	Male	917498784051	Open	
51	2021015400245474	MARATHE SARIKA SAHEBRAO	Female	918010974810	OBC	KUNBI
52	2022015400035842	MARATHE YASH RAVINDRA	Male	917796073449	Open	
53	2022015400043064	MISTARI SAYALI SURESH	Female	918261868488	Open	
54	2022015400246076	MOHAMMAD AMAN IMRANAHEMAD	Male	919834587008	Open	
55	2022015400047932	NIKAM MAYURI SANTOSH	Female	919420787727	SC	MAHAR
56	2022015400042312	PARADHI MAYURI CHHOTU	Female	918263803867	ST	PARDHI
57	2022015400048131	PARADHI PRIYANKA SANJAY	Female	917028667492	ST	PARDHI
58	2022015400042327	PARADHI ROSHANI PRALHAD	Female	917666545079	ST	PARDHI
59	2022015400229453	PATIL AJAY SANTOSH	Male	919172020559	Open	
60	2022015400047955	PATIL ANIKET BHARAT	Male	917620335116	OBC	KUNBI
61	2022015400029296	PATIL ANJALI KISHOR	Female	918010151700	OBC	KUNBI







62	2022015400027606	PATIL ASHWINI BHAGWAT	Female	918390849749	OBC	KUNBI
63	2022015400047971	PATIL ASHWINI PRADIP	Female	919021699674	OBC	KUNBI
64	2022015400047715	PATIL BHUSHAN DILIP	Male	919356010357	Open	
65	2021015400047536	PATIL DIPALI DNYANESHWAR	Female	919373492350	OBC	KUNBI
66	2022015400047746	PATIL DIVYA RAMLAL	Female	918767479259	OBC	KUNBI
67	2022015400029307	PATIL DIVYA YUVARAJ	Female	919737502041	Open	
68	2022015400027653	PATIL GAYATRI BHAGWAT	Female	919322467416	OBC	KUNBI
69	2022015400032333	PATIL GAYATRI GOKUL	Female	917276183415	OBC	KUNBI
70	2022015400047916	PATIL GAYATRI VITHHAL	Female	919730879475	OBC	KUNBI
71	2022015400050435	PATIL GEETANJALI KAILAS	Female	919860781198	OBC	KUNBI
72	2022015400047294	PATIL KAREENA RAJENDRA	Female	919664667661	OBC	KUNBI
73	2022015400027676	PATIL KIRANBAI BHIMRAO	Female	919322214315	OBC	KUNBI
74	2022015400048162	PATIL KOMAL VIJAY	Female	919021255523	Open	
75	2022015400042304	PATIL LINA BALU	Female	919763011451	OBC	KUNBI
76	2022015400043087	PATIL MANASI VINOD	Female	919824924920	Open	
77	2021015400047521	PATIL NAMRATA MOHAN	Female	919370670402	OBC	KUNBI
78	2021015400031104	PATIL NEHA SAHEBRAO	Female	919763532038	OBC	KUNBI
79	2022015400027637	PATIL NIKITA DNYANESHWAR	Female	917620701557	OBC	KUNBI
80	2022015400048146	PATIL NIKITA PANDIT	Female	919545944271	OBC	KUNBI
81	2022015400048177	PATIL POONAM RAVINDRA	Female	919834757135	Open	
82	2022015400037373	PATIL PRIYANKA RAJENDRA	Female	919529201370	OBC	KUNBI
83	2022015400032341	PATIL RAJ DURYODHAN	Male	918180980991	OBC	KUNBI
84	2022015400047924	PATIL RAJASHRI SURYAKANT	Female	919359143413	OBC	KUNBI
85	2022015400047963	PATIL ROHIT ASHOK	Male	917383045344	Open	
86	2022015400027684	PATIL ROSHANI KRUSHNA	Female	917887436246	OBC	KUNBI
87	2022015400043033	PATIL SAVITA GOPAL	Female	918482940572	OBC	KUNBI
88	2022015400028006	PATIL SAVITA SANTOSH	Female	917498828044	OBC	KUNBI
89	2022015400028053	PATIL SHUBHAM RAJENDRA	Male	918261817358	OBC	KUNBI
90	2022015400032356	PATIL SHUBHANGI KALYAN	Female	917769017662	OBC	KUNBI
91	2022015400027622	PATIL TANUJA SOMNATH	Female	919022280535	OBC	KUNBI
92	2022015400043002	PATIL TANUSHRI CHANDRAKANT	Female	918411841814	OBC	KUNBI
93	2022015400027661	PATIL TEJAS SANJAY	Female	918261093445	OBC	KUNBI
94	2022015400050427	PATIL TUSHAR PRADIP	Male	918767537180	Open	
95	2022015400229484	PATIL VAIBHAV DEVENDRA	Male	919923305642	Open	







96	2022015400047901	PATIL VAISHANAVI PRAVIN	Female	918847758267	OBC	KUNBI
97	2022015400029412	PATIL VAISHNAVI GANESH	Female	919284132512	Open	
98	2022015400047947	PATIL VIKAS ISHWAR	Male	918830442465	OBC	KUNBI
99	2022015400035811	PATIL YASH CHANDRAKANT	Male	917498714881	OBC	KUNBI
100	2022015400032325	PATIL YOGESH GULAB	Male	919322831232	OBC	KUNBI
101	2022015400223151	PAWAR BALASAHEB SUDHAM	Male	918793110809	VJ/DT(A)	BANJARA (GOR)
102	2022015400055653	PAWAR GAYATRI SANJAY	Female	918263050579	SC	MAHAR
103	2022015400035803	PAWAR KAJAL VASANT	Female	919545415981	VJ/DT(A)	BANJARA (GOR)
104	2022015400223166	PAWAR MANOJ BHASKAR	Male	917387239166	VJ/DT(A)	BANJARA (GOR)
105	2022015400037423	PAWAR SAGAR RAJENDRA	Male	919689303983	OBC	KUNBI
106	2022015400037407	PAWAR SAPANA BHIVSAN	Female	919370341564	VJ/DT(A)	BANJARA (GOR)
107	2022015400055622	PAWAR SHWETA KISAN	Female	919112790304	VJ/DT(A)	BANJARA (GOR)
108	2022015400229461	PAWAR VIKAS ASARAM	Male	917387235475	VJ/DT(A)	BANJARA (GOR)
109	2022015400055637	PAWAR VISHAL BIJU	Male	919307418006	VJ/DT(A)	BANJARA (GOR)
110	2022015400028037	RATHOD KIRAN GANESH	Male	917498404885	VJ/DT(A)	BANJARA (GOR)
111	2022015400043072	RATHOD PINKI MAUJILAL	Female	917499574352	VJ/DT(A)	BANJARA (GOR)
112	2022015400035776	RATHOD SUNIL ROHIDAS	Male	917620668582	VJ/DT(A)	BANJARA (GOR)
113	2022015400047793	SHIMPI AKSHADA SHRIRAM	Female	919665323086	OBC	SHIMPI
114	2022015400047286	SONAWANE AAKASH CHHOTU	Male	918767829997	SC	MAHAR
115	2022015400037431	SONAWANE AVINASH NANA	Male	919529026079	ST	BHIL
116	2022015400036002	SURYAWANSHI NANDITA VINOD	Female	919324248455	OBC	KUNBI
117	2022015400043025	SUTAR SHAHEDA ANJUM KHALID AHMAD	Female	919730272286	Open	
118	2022015400327246	THAKRE HITESH RAVINDRA	Male	918446589158	Open	
119	2022015400047723	VANJARI VAISHALI SHANTILAL	Female	917498428682	VJ/DT(A)	BANJARA (GOR)





**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai  
Mahavidyalaya**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil:Parola, State:Maharashtra

**General Register**

B.A. (with Credits)-Regular-under CBCS [June-2019] Pattern , Sem-III

**Academic Year :2022-2023**

Sr.No	PRN	Student Name	Gender	Contact No.	Category
1	2021015400031793	BELDAR KARISHMA NANDALAL	Female	917666944721	NT-1 (NT-B)
2	2021015400030944	BELEKAR GAYATRI RAJENDRA	Female	917066132520	OBC
3	2021015400031286	BELEKAR KAVERI BALU	Female	919322038253	OBC
4	2021015400037437	BHILL RAJ NANA	Male	917972298395	ST
5	2021015400032081	BHOI BHARATI PRAKASH	Female	919975940842	NT-1 (NT-B)
6	2021015400074587	BIRHADE AMOL BHASKAR	Male	919325312818	SC
7	2021015400030952	CHAUDHARI ASHWINI PANKAJ	Female	919322215985	OBC
8	2021015400036836	CHAUDHARI DARSHANA RAJENDRA	Female	919765846070	OBC
9	2015015400065903	CHAUDHARI GAJENDRA BHAGWAN	Male	918055182702	OBC
10	2021015400073522	CHAUDHARI SHUBHAM KAILAS	Male	919096930374	OBC
11	2021015400031835	CHAVHAN SHALU SUNIL	Female	919049607805	VJ/DT(A)
12	2021015400031054	DESALE SHRUTI DNYANESHWAR	Female	917820852337	OBC
13	2021015400033103	DESHMUKH KOMAL GANESH	Female	918329609357	OBC
14	2021015400040923	GURAV KAMINI BHANUDAS	Female	919022374200	OBC
15	2021015400033826	JADHAV NIKITA RAJENDRA	Female	919767694469	OBC
16	2021015400031255	JADHAV PRAJAKTA NARENDRA	Female	917709767268	OBC
17	2021015400030991	KUMBHAR SALONI ASHOK	Female	917385737623	OBC
18	2021015400031232	MAHAJAN BHAVIKA ANIL	Female	918180826887	OBC
19	2021015400030983	MAHAJAN KALYANI PARMESHWAR	Female	917066488290	OBC
20	2019015400000745	MAHAJAN RUPALI SAMBHAJI	Female	919763785996	Open
21	2021015400030886	PATIL AACHAL SUNIL	Female	919665896470	OBC
22	2021015400032862	PATIL AARATI MILIND	Female	917028155801	OBC
23	2021015400031031	PATIL ANJALI VIRBHAN	Female	918767958573	OBC
24	2021015400031665	PATIL ARCHANA NANA	Female	917058293658	OBC
25	2021015400031715	PATIL BHAGYASHREE BHAUSAHEB	Female	917820819370	OBC
26	2021015400036964	PATIL BHAGYASHRI DNYANESHWAR	Female	918459241219	OBC
27	2021015400030936	PATIL BHAGYASHRI DNYANESHWAR	Female	917743933804	Open
28	2021015400031592	PATIL BHAGYASHRI MADHUKAR	Female	918767971643	OBC







29	2021015400037704	PATIL DARPANA RAVINDRA	Female	917798216671	OBC
30	2021015400037801	PATIL DURGESH RAMESH	Male	917058003701	OBC
31	2021015400032885	PATIL GAYATRI BALU	Female	918600422485	OBC
32	2021015400031576	PATIL GAYATRI DADABHAU	Female	918421932938	OBC
33	2021015400033045	PATIL JAGRUTI DNYANESHWAR	Female	917620701557	OBC
34	2021015400033076	PATIL JYOTI ASHOK	Female	919322616308	OBC
35	2021015400040915	PATIL KAJAL NAGO	Female	919156946810	OBC
36	2021015400031762	PATIL KAVERI JITENDRA	Female	917558569101	OBC
37	2021015400031626	PATIL MANISHA DAGADU	Female	919325969387	Open
38	2021015400033084	PATIL MAYURI AMAR	Female	918421967312	OBC
39	2021015400031561	PATIL NANDINI GULAB	Female	917498232799	OBC
40	2021015400031271	PATIL NIKITA DNYANESHWAR	Female	917798810190	OBC
41	2021015400031015	PATIL NIKITA SARDEEP	Female	918767518577	OBC
42	2021015400033842	PATIL POONAM ASHOK	Female	917756890471	OBC
43	2021015400034315	PATIL PRIYANKA KAILAS	Female	917498497449	Open
44	2021015400040931	PATIL PRIYANKA RAJENDRA	Female	919970082575	OBC
45	2021015400033513	PATIL RAJESH MAHENDRA	Male	917249326060	OBC
46	2021015400033447	PATIL ROHIT SANJAY	Male	918263821065	OBC
47	2021015400036995	PATIL SACHIN ANANT	Male	919172525381	OBC
48	2021015400031673	PATIL SHITAL BHAUSAHEB	Female	919322010307	OBC
49	2021015400031642	PATIL SONALI SANTOSH	Female	917798635382	OBC
50	2021015400030894	PATIL TRUPTIBEN BHATUBHAI	Female	917620241208	Open
51	2021015400031866	PATIL UMESH DILIP	Male	918080311559	OBC
52	2021015400037004	PATIL VAISHALI SUKALAL	Female	917249229566	Open
53	2021015400031603	PAWAR ASHVINI SANJAY	Female	917350504631	OBC
54	2021015400031634	PAWAR MANDAKINI RAMESH	Female	917498397600	Open
55	2021015400034323	PAWAR SHIVANI BHAUSAHEB	Female	919028445251	VJ/DT(A)
56	2021015400074606	SHAIKH FARJANABI MUNWAR	Female	919699577365	Open
57	2021015400031247	SHIMPI PRERANA SURESH	Female	918788990597	OBC
58	2021015400033061	SONAWANE AASHA BARKU	Female	919356462804	SC
59	2021015400036987	SONAWANE RUPALI ABHIMAN	Female	919970716483	OBC
60	2019015400001114	WANKHEDE GAYATRI SAHEBRAO	Female	919158392972	SC





**Sahajivan Shikshan Prasarak Mandals Rani Laxmibai  
Mahavidyalaya**

Gurav lane, Behind Bus Stand, City: Parola, Pin: 425111, Tehsil:Parola, State:Maharashtra



**General Register**

B.A. (with Credits)-Regular-under CBCS [June-2019] Pattern , Sem-V

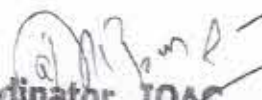
**Academic Year :2022-2023**

Sr.No	PRN	Student Name	Gender	Contact No.	Category
1	2020015400018683	AHIRE GANESH RAMDAS	Male	917387976382	OBC
2	2020015400018571	BELDAR ROSHNI BAPU	Female	919158973109	NT-1 (NT-B)
3	2020015400018586	BHADANE ABHISHEK GULAB BHADANE	Male	918390896080	OBC
4	2020015400018242	BHOI BHAGYASHRI DNYANESHWAR	Female	918767828382	NT-1 (NT-B)
5	2020015400018427	BHOI RAVINDRA ANIL	Male	919370759227	NT-1 (NT-B)
6	2020015400018772	BIRHADE MEGHANA LOTAN	Female	919594527422	SC
7	2020015400018443	DEVARE RAJMAL PRAKASH	Male	917756824702	OBC
8	2020015400018942	GURAV BHAVIKA BHANUDAS	Female	919022374200	OBC
9	2020015400018822	HATKAR PRATIKSHA SHIVAJI	Female	918805438666	NT-2 (NT-C)
10	2020015400019117	KALOSHIYA RUPESH RADHESHAM	Male	918999336896	SC
11	2020015400019744	KASAR JANHAVI RAMCHANDRA	Female	918055235900	Open
12	2020015400018501	KHAIRNAR CHETANA SUDAM	Female	919420899867	OBC
13	2020015400018072	KULKARNI ABHISHEK UDAY	Male	919730928218	Open
14	2020015400019083	KULKARNI UTKARSHA DHANRAJ	Female	919763004777	Open
15	2020015400018474	MAHAJAN ASHWINI RAJENDRA	Female	919322478347	OBC
16	2020015400017923	MAHAJAN ROHIT VASUDEV	Male	917620278731	OBC
17	2020015400018482	MAHALE BHAGYASHRI SUBHASH	Female	918767925131	Open
18	2020015400019817	MALI PAVAN GOVINDA	Male	919145012087	OBC
19	2020015400019655	MALI RUPALI BABULAL	Female	917620329791	OBC
20	2020015400019373	MARATHE TEJASWINI DIPAK	Female	918767238491	OBC
21	2020015400018717	MISTARI NANDINI RAJENDRA	Female	919552401879	OBC
22	2020015400018675	MOHITE SHITAL RAJU	Female	919960199806	NT-1 (NT-B)
23	2020015400018981	PATIL ASHVINI BAPU	Female	919765351405	OBC
24	2020015400018516	PATIL ASHWARYA VILAS	Female	919637947330	OBC
25	2019015400000857	PATIL ASHWINI VIJAY	Female	918530508516	Open
26	2020015400019172	PATIL CHETAN PRAKASH	Male	917387974621	OBC
27	2020015400017896	PATIL CHETAN RAMKRUSHNA	Male	919022221352	OBC





28	2020015400018837	PATIL DIPIKA KHUSHAL	Female	919284147113	OBC
29	2020015400018965	PATIL KAMINI DHARAM	Female	919545314065	OBC
30	2020015400018563	PATIL KU NIKITA MANOHAR	Female	919370660402	OBC
31	2020015400018555	PATIL KU GAYATRI SHANTARAM	Female	919021931118	OBC
32	2020015400018547	PATIL KU MAYURI SUDAM	Female	919309150641	OBC
33	2020015400018636	PATIL MADHURI DILIP	Female	919561491891	OBC
34	2020015400019005	PATIL MAYURI LILADHAR	Female	919021452490	OBC
35	2020015400017737	PATIL NEHA DHANESHWAR	Female	919595653025	OBC
36	2020015400019961	PATIL PRIYANKA ISHWAR	Female	917498022970	OBC
37	2020015400019245	PATIL PUJA PRADIP	Female	917410765589	OBC
38	2020015400019752	PATIL PUJA RAJENDRA	Female	919145163690	OBC
39	2020015400018787	PATIL PUJA SANJAY	Female	919529713195	OBC
40	2020015400018497	PATIL RAHUL BAPU	Male	919075411322	OBC
41	2019015400002601	PATIL ROHIDAS MOHAN	Male	919421531572	OBC
42	2020015400019381	PATIL SAKSHI SANTOSH	Female	917798961311	OBC
43	2020015400018466	PATIL SANJIVNI JITENDRA	Female	919322067350	OBC
44	2020015400021975	PATIL SAVITA RAVINDRA	Female	919637797820	OBC
45	2020015400018451	PATIL SHUBHANGI BHAGWAN	Female	917498008551	Open
46	2020015400019721	PATIL TUSHAR KAUTIK	Male	919579036007	OBC
47	2020015400019976	PATIL UDDHAVI SURESH	Female	918668917306	OBC
48	2020015400018957	PATIL YOGESH GORAKH	Male	919834945797	OBC
49	2020015400018594	PAWAR ANJUBAI ARUN	Female	917387246924	VJ/DT(A)
50	2020015400018377	ROKADE KAVITA PRAKASH	Female	918668511131	OBC
51	2020015400018435	SAIYYAD KAISARKHALID ALI ARMAL ALI	Male	919518525529	Open
52	2020015400017722	SALUNKHE POOJA GULABRAO	Female	917767042223	OBC
53	2020015400018621	WAGH ASHWINI VILAS	Female	919822389000	OBC

  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Jalgaon





सथापना : जुन १९९२

सहजीवन शिक्षण प्रसारक मंडळ(टेह) संचलित..



# राणी लक्ष्मीबाई महाविद्यालय, पारोळा जि. जळगांव

पारोळा-४२५१११ जि.जळगाव फोन : (०२५९७) २९२६६६

Website : [www.ricollegeparola.com](http://www.ricollegeparola.com)

Email : [principalrlcparola@gmail.com](mailto:principalrlcparola@gmail.com)

डॉ.डी.आर.पाटील

एम.एस्सी.,पी.एचडी.

प्र.प्राचार्य

नेक प्रमाणित 'बी' मानांकन

जा. क्र.

दि. 25/03/2022

## 1.3.2 - Number of courses that include experiential learning through project Work / field work/internship during the year 2021-2022

The college conducted following projects and field work for the students.

Sr. No.	Project / Field Work	Class	No. of students
1	Environmental Studies	F. Y. B.A.	143
2	Environmental Studies	F. Y. B.Sc.	137
3	Physics Project Work SEM- I	T. Y. B.Sc.	04
4	Physics Project Work SEM- II	T. Y. B.Sc.	04
		Total =	288

  
Coordinator



  
Principal

Dr. Gokul Punju Eorse  
Research Guide  
R. L. College, Parola  
Dist. Jalgaon  
Coordinator, IQAC  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





नेक प्रमाणित 'बी' मानांकन

# राणी लक्ष्मीबाई महाविद्यालय, पारोळा जि. जळगांव

पारोळा-४२५१११ जि.जळगाव फोन : (०२५९७) २९२६६६

Website : www.ricollegeparola.com

Email : principalrjcparola@gmail.com

डॉ.डी.आर.पाटील

एम.एस्.सी., पी.एच.डी.

प्र.प्राचार्य

जा. क्र.

दि. २८/०३/२०२१

## 1.3.2 - Number of courses that include experiential learning through project Work / field work/internship during the year 2020-2021

The college conducted following projects and field work for the students.

Sr. No.	Project / Field Work	Class	No. of students
1	Environmental Studies	F. Y. B.A.	121
2	Environmental Studies	F. Y. B.Sc.	113
3	Physics Project Work SEM- I	T. Y. B.Sc.	05
4	Physics Project Work SEM- II	T. Y. B.Sc.	05
		Total =	244

Coordinator

**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



Principal

**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

Academic year - 2016-17

Student Names

Projects Title

- 1) Roshni Anita Nandwani - Studies on  $ZrO_2$  Based gas sensors.
- 2) Ankita Rajendra Shindkar - Studies on compositions of  $ZrO_2$  and  $La_2O_3$  based LPG sensors.
- 3) Nikam Harshal Aadhar - Studies on  $La_2O_3$  based gas sensors.
- 4) Priyanka Mohandas Patil - Studies on  $CdO$  based gas sensors.
- 5) Dipika Kaitas Patil - Studies on  $WO_3$  based gas sensors.
- 6) Dipali Rajendra Patil - Studies on  $Bi_2O_3$  based gas sensors.
- 7) Priyanka Sudam Patil - Studies on  $SrO_2$  based petrol vapour sensors.
- 8) Dhanshri Satish choudhari - Studies on  $Al_2O_3$  based gas sensors.
- 9) Swati Devidas Deore - Studies on  $MoO_3$  based gas sensor.
- 10) Punam Sanjay Bhadane - Studies on  $SnO_2$  based gas sensor.



Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

Web : [www.ricollegeparola.org](http://www.ricollegeparola.org)

Email : [principalricparola@gmail.com](mailto:principalricparola@gmail.com)

Outward No. \_\_\_\_\_

Date :     /     /20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

#### **7:-Field Visit and Survey Reports**





Outward No. \_\_\_\_\_

Date : \_\_\_\_\_/\_\_\_\_\_/20\_\_\_\_

## 1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 7.: - Field Visit and Survey Report

Year: - 2018 - 2019

Sr. No.	Department	Place of Visited	Date	Co-ordinator Tour incharge	No. of Participants
1	Chemistry	Vikas Dairy, Jalgaon Dist. Milk Federation	06/08/2018	Dr. G.P.Borse	42
2	Chemistry	Ambika Dairy, Parola	09/08/2018	Dr. G.P.Borse	45
3	Chemistry	Addhinath Agro Parola	15/12/2018	Dr. G.P.Borse	40

### 7.: - Survey Report

Year: - 2018 - 2019

Sr. No.	Department	Place of Survey Visited	Date	Co-ordinator	No. of Participants
1	Geography	Village: -Tehu, Tal- Parola , Dist - Jalgaon	22/09/2019	Mr. Anil S. Mahale & Dr. S. M. Patil	34

  
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 Parola, Dist. Jalgaon

  
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 Rani Laxmibai Mahavidyalaya,  
 PAROLA Dist. Jalgaon



Outward No. \_\_\_\_\_

Date : / / 20


## 1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 7.: - Field Visit and Survey Report

Year: - 2018 - 2019

Sr. No.	Department	Place of Survey Visited	Date	Co-ordinator	No. of Participants
1	Geography	Village: -Tehu, Tal- Parola , Dist - Jalgaon	22/09/2019	Mr. Anil S. Mahale & Dr. S. M. Patil	34

  
 IQAC Co-ordinator, IQAC  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Principal  
 Rani Laxmibai Mahavidyalaya,  
 PAROLA Dist. Jalgaon



Outward No.

Date :

## 1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 7.:- Field Visit and Survey Report

Year: - 2019 - 2020

Sr. No.	Department	Place of Visited	Date	Co-ordinator Four incharge	No. of Participants
1	Chemistry	Vikas Dairy, Jalgaon Dist. Milk Federation	29/09/2019	Dr. G.P.Borse	43
2	Chemistry	Ambika Dairy Parola	04/10/2019	Dr. G.P.Borse	45
3	Chemistry	Addhinath Agro, Parola	18/12/2019	Dr. G.P.Borse	40
4	Geography	Mdhyapradesh	14/01/2020	Mr. Anil S. Mahale & Dr. S. M. Patil	26

  
 IQAC Co-ordinator, IQAC  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Principal  
 Rani Laxmibai Mahavidyalaya,  
 PAROLA Dist. Jalgaon





Outward No. \_\_\_\_\_

Date : \_\_\_\_\_/\_\_\_\_\_/20\_\_\_\_

## 1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 7.:- Field Visit and Survey Report

Year: - 2020-2021

Sr. No.	Department	Place of Visited	Date	Co-ordinator Tour incharge	No. of Participants
1	History Historical Tour	Ajanta Caves	05/01/2021	Dr. R. B. Nerkar & Dr. M. R. Karanje	46

  
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 Parola, Dist. Jalgaon

  
 Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon



Outward No.


Date: \_\_\_\_\_/\_\_\_\_\_/20\_\_


## 1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.

### 7.- Field Visit and Survey Report

Year: - 2021 - 2022

Sr. No.	Department	Place of Visited	Date	Co-ordinator Tour incharge	No. of Participants
1	Chemistry	Vikas Dairy, Jalgaon Dist. Milk Federation	12/08/2021	Dr. G. P. Borse	43
2	Chemistry	Ambika Dairy Parola	26/09/2021	Dr. G. P. Borse	45
3	Chemistry	Addhinath Agro, Parola	28/12/2021	Dr. G. P. Borse	40
4	History Historical Tour	Rajvade Research Center, Dhule	19/09/2021	Dr. R. B. Nerkar & Dr. M. R. Karanje	45
5	History Historical Tour	Ajanta Caves	27/01/2022	Dr. R. B. Nerkar & Dr. M. R. Karanje	32

  
 IQAC Coordinator IQAC  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon

  
 Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon



Outward No.


Date :

**1.3.1: - Institution Integrates Crosscutting Issues Relevant to Professional Ethics, Gender, Human values, Environmental and Sustainability in transacting the Curriculum.**

## 8.- Curriculum and Extra-curricular Activity

**Year: - 2018-2023**

Sr. No.	Name of Activity
1	Tree Plantation
2	Cleanness Drive
3	Blood donation camp
4	Winter special camp of N.S.S.
5	Industrial Visit
6	Workshop On Disaster Management
7	Jal Sandharan Shibir ( water Conservation)
8	Communication Skill workshop
9	Health Checkup
10	No Plastic Campaign
11	Workshop on ChemDraw Sketching Training
12	Honey Bee keeping
13	Modi Lipi Training
14	Solar Plant Installation
15	International Yoga Day
16	Independence Day
17	Constitutional Day

  
 IQAC Coordinator, IQAC  
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 Parola, Dist. Jalgaon

  
 Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon



Established : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

NAAC Accredited "B" Grade

Web : [www.rlcollegeparola.com](http://www.rlcollegeparola.com)  
Email : [principalrlcparola@gmail.com](mailto:principalrlcparola@gmail.com)

## Activity Report

Academic year: 2018-2019

**Title of the Activity:** Study Tour

**Date of Activity:** 06-08-2018

**Coordinator:** Prof. Dr, G. P.Borse ,Prof. P. B. Patil and Mr. P.H.Bhavsar

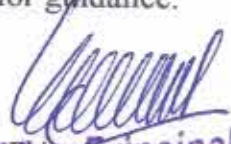
**Report:**

Department of Chemistry Rani Laxmibai Mahavidyalaya, Parola arrange the industrial study tour at the following Industry.

Name of Industry	Number of Participants	Date of visit
Vikas Milk Chilling Plant,	42	06-08-2018
Ambika Milk Dairy, Parola	45	09-08-2018
Aadhinath Agro , Parola	40	15-12-2018

A complete report on industrial visit organised by Rani Lxmibai Mahavidyalaya, Parola , Department of Chemistry for students of T.Y.B.Sc. chemistry (Semester III) in order to get the industrial knowledge about modern technology used in chilling of milk and pasturizing process of milk, Manufacturing of fertilizer and pesticide In this study tour students and faculties were present for guidance.

  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
**Vice Principal**  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon



Photos:



*[Signature]*  
Vice-Principal  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon





**Objective:**

- This industrial visit is useful and helpful to understand the industrial life
- To get practical knowledge about modern technology
- Use of programming in any other industry
- To get information about various machines functions
- To understand flow sheet of industrial process
- To encourage the students for study

*Excellent*  
Vice Principal

Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon

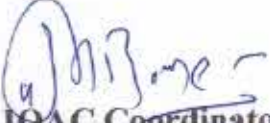


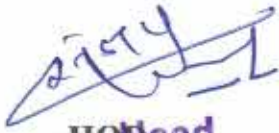


**Conclusion:**

Students got practical knowledge regarding to different industrial process and machineries.

**Thank You!**

  
**IQAC Coordinator**  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
**HOD**  
**Dept. of Chemistry**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

Established : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchali



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Email : [principalrlcparola@gmail.com](mailto:principalrlcparola@gmail.com)

## Activity Report

Academic year: 2019-2020

**Title of the Activity:** Study Tour

**Date of Activity:** 29-09-2019


**Coordinator:** Prof. P. B. Patil and Mr. P. H. Bhavsar and DR.G. P. Borse


**Report:**

Department of Chemistry Rani Laxmibai Mahavidyalaya, Parola arrange the industrial study tour at the following Industry.

Name of Industry	Number of Participants	Date of visit
Vikas Milk Chilling Plant,	43	29-09-2019
Ambika Milk Dairy, Parola	45	04-10-2019
Aadhinath Agro , Parola	40	18-12-2019

A complete report on industrial visit organised by Rani Lxmibai Mahavidyalaya, Parola , Department of Chemistry for students of T.Y.B.Sc. chemistry (Semester III) in order to get the industrial knowledge about modern technology used in chilling of milk and pasturizing process of milk, Manufacturing of fertilizer and pesticide In this study tour students and faculties were present for guidance.

  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

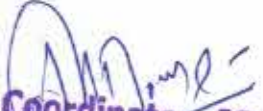
  
✓ **Principal**  
**Vice Principal**  
Rani Laxmibai Mahavidyalaya,  
PAROLA Dist. Jalgaon




**Conclusion:**

Students got practical knowledge regarding to different industrial process and machineries.

**Thank You!**

  
**Coordinator IQAC**  
IQAC Coordinator  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
**HOD Head**  
Dept. of Chemistry  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Established : June 1992

Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalita



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

NAAC Accredited "B" Grade

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Email : [principalrlcparola@gmail.com](mailto:principalrlcparola@gmail.com)

## Activity Report

Academic year: 2021-2022

**Title of the Activity:** Industrial Study Tour

**Date of Activity:** 11-09-2021


**Coordinator:** Prof. P. B. Patil and Mr. P.H.Bhavsar , Dr.G.P.Borse


**Report:**

Department of Chemistry Rani Laxmibai Mahavidyalaya, Parola arrange the industrial study tour at the following Industry.

Name of Industry	Number of Participants	Date of visit
Vikas Milk Chilling Plant,	43	12-08-2021
Ambika Milk Dairy, Parola	45	26-09-2021
Aadhinath Agro , Parola	40	28-12-2021

A complete report on industrial visit organised by Rani Lxmibai Mahavidyalaya, Parola , Department of Chemistry for students of T.Y.B.Sc. chemistry (Semester III) in order to get the industrial knowledge about modern technology used in chilling of milk and pasturizing process of milk, Manufacturing of fertilizer and pesticide In this study tour students and faculties were present for guidance.

  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
**Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalga



**Photos:**



Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola, Dist. Jalgaon





**Objective:**

- This industrial visit is useful and helpful to understand the industrial life
- To get practical knowledge about modern technology
- Use of programming in any other industry
- To get information about various machines functions
- To understand flow sheet of industrial process
- To encourage the students for study

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





**Conclusion:**

Students got practical knowledge regarding to different industrial process and machineries.

**Thank You!**

**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

**HOD**  
**Dept. of Chemistry**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



**Rani Laxmibai Mahavidyalaya,  
Parola Dist: Jalgaon (M.S.)**

Department of Chemistry

Report on Industrial Tour



## Department of Chemistry

### Industrial Visit Report

Name of activity: Industrial Study tour


Year	Sr. No.	Name of Industry	No. of staff members	No. of Participants	Date
2021-2022	1	Vikas Milk Federation, Jalgaon	4	65	11-09-2021
	2	Ambika Milk Dairy, Parola	4	68	15-09-2021
	3	Adinath Agro, Parola	4	63	24-12-2021
2019-2020	1	Vikas Milk Federation, Jalgaon	4	85	29-09-2019
	2	Ambika Milk Dairy, Parola	4	87	04-10-2019
	3	Adinath Agro, Parola	4	83	18-12-2019
2018-2019	1	Vikas Milk Federation, Jalgaon	4	90	06-08-2018
	2	Ambika Milk Dairy, Parola	4	91	09-08-2018
	3	Adinath Agro, Parola	4	93	15-12-2018
2017-2018	1	Vikas Milk Federation, Jalgaon	4	96	12-08-2017
	2	Ambika Milk Dairy, Parola	4	99	26-09-2017
	3	Adinath Agro, Parola	4	96	28-12-2017

Name of Coordinator: Dr. G. P. Borse

Name of Teachers: Mr. P. B. Patil, Dr. S. V. Chavan, Mr. P. H. Bhavsar

A complete report on industrial visit organised by Rani Lxmibai Mahavidyalaya, Parola , Department of Chemistry for students of T.Y.B.Sc. chemistry (Semester III) in order to get the industrial knowledge about modern technology used in chilling of milk and pasturizing process of milk, Manufacturing of fertilizer and pesticide In this study tour students and faculties were present for guidance.

  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon

  
 HOD  
 Head  
 Dept. of Chemistry  
 Rani Laxmibai Mahavidyalaya  
 Parola, Tal. Parola Dist. Jalgaon



**Company profile:**  
**About Organisation**



Jalgaon Jilha Sahakari Dudh Utpadak Sangh Maryadit, Jalgaon also known as Jalgaon Milk Union (JMU) was established in 1971 under the Operation Flood Programme-I of Govt. of India. It is a well-known name in Dairy Sector of India. The JMU sells its products by the name of 'Vikas'. JMU recorded turnover of Rs. 506/- crore in the year 2019-20. JMU procures more than 3.00 lakhs litres of milk per day during the peak season, sells around 2.00 lakh litres of milk per day in retail. The Union has fully automatic SCADA based 5.00 LLPD of milk processing plant, 3.00 LLPD packing and storage facilities. Apart from milk the Jalgaon Milk Union sells Dahi, Lassi, Butter Milk, Paneer, Shrikhand, Flavoured Milk, Khoa, Peda and Ghee. The Union has 15.00 MT powder making facility. The Sangh is known for its quality of White Buter and SMP all over India and it is a well-known brand in and around Jalgaon in milk and ghee. The Union has clear cut goals of uplifting the lot of farmers by giving them their due and making sure that the end user gets best quality milk products at most reasonable prices. In fact, the Sangh has carved out a special niche for itself and its products in the public eye and has become market leader in the region.

**Objective:**

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- To get practical knowledge about modern techonology
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- To get information about various machines functions
- To understand flow sheet of industrial process
- To encourage the students for study

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon

Photos:



  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon

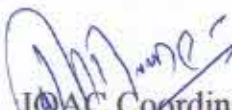





**Conclusion:**

Students got practical knowledge regarding to different industrial process and machineries.

Thank You!

  
IQAC Coordinator  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon

  
HOD  
**Head**  
Dept. of Chemistry  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

  
AA  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
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ESTD. 1992

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**Notice**

All students are informed that, the department of History..... is going to organize the Historical tour to be conducted on 05.10.2021 . Therefore all students take the benefit of the programme.

*M. V. Patel*  
 Head  
 Dept. of History  
 Rani Laxmibai Mahavidyalaya  
 Parola, Tal. Parola Dist. Jalgaon



*[Signature]*  
 Principal  
**PRINCIPAL**  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon



S.S.P.M's  
RANI LAXMIBAI MAHAVIDYALAYA  
PAROLA, DIST - JALGAON  
Attendance Sheet



Name of Resource Person:

Topic : Historical Tour

Day : \_\_\_\_\_

Date : 05/01/2021

Time : \_\_\_\_\_

Sr. No.	Name of Participants	Signature
1)	Ashwini Vilas Wagh	<u>Awagh</u>
2)	Anju Atun Pawar	<u>Pawar</u>
3)	Puja Rajendra Patil	<u>Patil</u>
4)	Bhavika Bhanudas Gurear	<u>Gurear</u>
5)	Usha Dhanraj Kulkarni	<u>Kulkarni</u>
6)	Bhagyashri Subhash Mahale	<u>Mahale</u>
7)	Gayatri Shantaram Patil	<u>Patil</u>
8)	Nikita Manohar Patil	<u>Patil</u>
9)	Mayuri Sudam Patil	<u>Patil</u>
10)	Janhavi Ramchandra Kasar	<u>Kasar</u>
11)	Aishwarya Vilas Patil	<u>Patil</u>
12)	Chetana Sudam Khairnar	<u>Khairnar</u>
13)	Bhagyashri Niraman Bhoi	<u>B.h. Bhoi</u>
14)	Patil Priyanka Kailas	<u>Patil</u>
15)	Patil Mayuri Amar	<u>Patil</u>
16)	Patil Sonali Santosh	<u>Patil</u>
17)	Patil Tanushri Chandokant	<u>Patil</u>
18)	Kamini Bhanudas Gurear	<u>Gurear</u>
19)	Suloni Ashok Kumbhar	<u>Kumbhar</u>
20)	Kalyani Parameshwari Mahajan	<u>Mahajan</u>
2)	Rajal Nago Patil	<u>Patil</u>





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ESTD- 1992



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Name of the Department:

**HISTORY**

Report of activity/workshop

Name of the program:

**HISTORICAL TOUR to 'Ajanta'**

Date/Period

: **05/01/2021**

Time

: **8:30 AM to 6:00 PM**

Venue

: Department of **HISTORY**.....

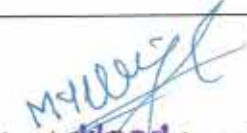
Number of participants:

Objectives

- :
  1. To know students about historical place,
  2. To study 'Buddhism'
  3. To observe nature near by
  4. To know about the ancient art
  5. of sculptor and paintings

Summary and Conclusion

The student enjoyed the tour very much it was great pleasure for students to visit the place they eagerly knew about the ancient art, they also know about Buddhism

  
Head of Department

Dept. of History  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
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### Notice

All students are informed that, the department of History is going to organize the Research toy to be conducted by department on 19/09/2021 Therefore all students take the benefit of the benefit of the program.

  
Head of Department  
Dept. of History  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



  
Principal  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



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### Attendance Report

Name of Activity/Program: Visit to Historical Research Center

Class: S.V.B.O / T.V.R.D

Sr. No	Name Of Student	Sign
1]	Sakshi Sandosh Patil	<u>Sakshi</u>
2]	Tejaswini Dipak Marathe	<u>Marathe</u>
3]	Bhagyashri Subhash Mahale	<u>Bmahale</u>
4]	Bhavika Bhansudas Gureav	<u>BGureav</u>
5]	Nandini Rajendra Mistari	<u>NRMistari</u>
6]	Shital Raju Mohite	<u>SMohite</u>
7]	Gayatri Shantaram Patil	<u>GPatil</u>
8]	Nikita Manohar Patil	<u>NPatil</u>
9]	Mayuri Sudam Patil	<u>MPatil</u>
10]	Mayuri Amar Patil	<u>MPatil</u>
11]	Briyanka Kailas Patil	<u>BKPatil</u>
12]	puja Rajendra Patil	<u>Patil</u>
13]	Darshana Rajendra Chaudhari	<u>DChaudhari</u>
14]	Nikita Rajendra Jadhav	<u>NJadhav</u>
15]	Shital Bhausaheb Patil	<u>SPatil</u>
16]	Archana nana Patil	<u>APatil</u>
17]	Kajal Nagesh Patil	<u>KPatil</u>
18]	Kamini Gureav	<u>KGureav</u>
19]	Priyanka Patil	<u>PPatil</u>
20]	Saloni Ashok Kubhar	<u>SKubhar</u>
21]	Kalyani Parmeshwar Mahajan	<u>KMahajan</u>
22]	Bhagyashri Bhusind Patil	<u>BPatil</u>

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon

Sign of teacher in charge

  
Dr. C. B. N. N. N.





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
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Name of the Department: *History*

Report of activity/workshop

Name of the program: *visits to the 'Research Centre' based histo*

Date/Period : *13/09/2021*

Time : \_\_\_\_\_

Venue : Department of *History*

Number of participants:

- Objectives :
1. To know about ancient weapons
  2. To know about the research facilities
  3. Students should inspire to boost
  4. the ancient's documentation.
  5. To enhance their skill of observation and analysis.

Summary and Conclusion

we visited at Dhule with the students. The department of history has arranged the historical trip. Students very eagerly visited the place and gained the knowledge

*[Signature]*  
 Head Of Department  
 Dept. of History  
 Rani Laxmibai Mahavidyalaya  
 Parola, Tal. Parola Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
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## Activity Report

Sr.No.	Activity	Details
1	Title of Activity	Historical study tour
2	Date of Activity	Yearly for History Special Students
	Name of Resource Person	Mr.Sripad Nandedkar Dhule, Manager
3	Coordinator	Dr.R.B.Nerkar, Mr. Karanje M.R.
5	Report	Historical Educational trips are organized by the history Department for history special students. The main objective of these historical trips is to acquaint the students about our history and historical events. It motivates the students. And our history lives on.



**Historical study tour: - At V.K.Rajwade Historical Research Centre, Dhule**

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Jalgaon Dist. Jalgaon

## Activity Report



Sr.No.	Activity	Details
1	Title of Activity	Study tour Geography
2	Date of Activity	14/01/2020
3	Coordinator	Mr.A.S.Mahale, Mr. Patil Sunil M.
4	Report	An educational trip was organized for the geography special students to Mahashwar, Omkareshwar, Indore and Mandavgarh in Madhyradesh. A total of 26 students participated in this trip. The main purpose of the educational trip is to introduce the students to the natural, social, and cultural elements, by going to the actual field along with the classroom education. The aim was to understand the differences in natural landforms, types of rocks, cultural differences, social customs, differences in crops, clothing and dialect.
5	No. of Participants	26+ 2 teacher+ 1 attendance
6	List of Participants	Attached
7	News	---
8	Photos	Attached



### Study tour Geography

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jaigaon



## Activity Report

Sr.No.	Activity	Details
1	Title of Activity	Village Survey (Tehu Village, Tal. – Parola)
2	Date of Activity	22/02/2019
3	Coordinator	Mr.A.S.Mahale, Dr.S.M.Patil
4	Report	Field study and field trips are included along with classroom teaching for students of geography in SYBSc class. The main purpose of this is to take the students to the actual field to identify and familiarize themselves with the natural, social and cultural factors. In this academic year, we conducted a social and cultural survey of Tehu, village 5 kilometers from Parola city. From this survey, we obtained family information, educational, economic, and marital status, caste system and agricultural information.
6	No. of Participants	34+ 2 Teacher
7	List of Participants	Attached



**Village Survey (Tehu Village, Tal. – Parola)**

  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola, Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
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### Notice

All students are informed that, the department of *Zoology* is going to organize the *Activity*..... to be conducted on *11<sup>th</sup> Feb 2022*. Therefore all students take the benefit of the programme.

*Ax*

Head of Department  
Dept. of Zoology  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



*Principal*

**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



S.S.P.M's  
RANI LAXMIBAI MAHAVIDYALAYA  
PAROLA, DIST - JALGAON  
Attendance Sheet



Name of Resource Person: Prof. Dr. Kiran Ahirrao

Topic: Hemoglobin Estimation & Importance of Blood donation

Day: Friday

Date: 11<sup>th</sup> / FEB / 2022

Time: 12:30 Onwards

Sr. No.	Name of Participants	Signature
1)	Ashwini Sunil Gali	Aali
2)	Divya Manohar Salunkhe	DVS
3.	Raj mahipat Patil	Rajl.
4.	Piyush Rajiv Wagh	PW
5]	Divya Rujendra Patil.	DPatil
6]	Nikita Suresh patil	NPatil
7)	chelana Adhikrao patil	APatil
8)	divya Nana patil	NPatil
9)	Charitali sanjay patil	SPatil
10)	Sejal Dattatray patil	SPatil
11]	Chandrakant Rajendra Patil	CPatil
12]	Mayuri Dipakrao Nikam	MDam
13]	Pranali Ghanshyam shinde	PShinde
14]	Pankaj Vilas Suryawanshi	PSuryawanshi
15]	Vivek Arun Patil	VPatil
16]	Patil Shubham machhindra	SPatil
17)	Patil Vaishali Satilal	VPatil

Acting Professor

Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola, Dist. Jalgaon

133



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**PAROLA, DIST - JALGAON, 425111**



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Website: [collegeparola.com](http://collegeparola.com) Email: [principal@collegeparola.com](mailto:principal@collegeparola.com) Tel: +91 259 292666 Fax: +91 259 292665

### Notice

All students are informed that, the department of History..... is going to organize the Historical Page to be conducted by department on 27/01/2021. Therefore all students take the benefit of the benefit of the program.

  
Head  
Head Of Department of History  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



  
PRINCIPAL  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**

ESTD: 1992



Website: ricollegeparola.com, Email: principalrparola@gmail.com, Tel: +91-259-292666 Fax: +91-259-292665

### Attendance Report

Name of Activity/Program: Historical Tours

Class: S.Y.B.A. / T.Y.B.A.

Sr. No	Name Of Student	Sign
1	Bhagyashri Subhash Mahale	Bmahale
2	Bhavika Bhanudas Gurav	BGurav
3	Nandini Rajendra Mistani	NMistani
4	Shital Raju Mohite	SRMohite
5	Gayatri Shantaram Patil	GPatil
6	Nikita Manohar Patil	NPatil
7	Mayuri Sudam Patil	MPatil
8	Tejaswini Dipak Morathe	DMorathe
9	Sakshi Santosh Patil	SPatil
10	Matuhi Amar Patil	MPatil
11	Priyanka Kailas Patil	PKPatil
12	Puja Rajendra Patil	PPatil
13	Darshana Rajendra Chaudhari	DRChaudhari
14	Archana Nana Patil	ANPatil
15	Kalyani Parmeshwar Mahajan	KMahajan
16	Shital Bhausaheb Patil	SBPatil
17	Nikita Rajendra Jadhav	NJadhav
18	Kajal Naga Patil	KNPatil
19	Kamini Gurav	KGurav
20	Priyanka Patil	PPatil
21	Bhagyashri Bhausaheb Patil	BPatil
22	Sahani Kubhar	SKubhar
23	Aishwarya Vilas Patil	AVPatil

Sign of teacher in charge

*[Signature]*  
Dept. of History  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**

ESTD- 1992



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Name of the Department: History

Report of activity/workshop

Name of the program: Visit to the 'Ajanta' caves as world's heritage

Date/Period : 27/01/2022

Time :


Venue : Department of History

Number of participants:

- Objectives :
1. To visit archaeological place such as AJ
  2. To know the students of Indian glo
  3. To observe nature of the place
  4. To study the drawing and painting of the ancient time.
  5. To know about 'Buddhism'

Summary and Conclusion

The students studied the various aspects the caves.  
The students asked questions related to the caves and  
... satisfactorily answered their questions.

  
Head of Department  
Head  
Dept. of History  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

Web : [www.ricollegeparola.org](http://www.ricollegeparola.org)  
Email : [principalrcparola@gmail.com](mailto:principalrcparola@gmail.com)

Outward No. \_\_\_\_\_

Date :    /    / 20

# **Criterion No. 1**

## **Curricular Aspects**




### **1.3. Curricular Enrichment**

#### **8:- Curriculum and Extra-curricular Activity**



Sr. No	Name of active type & Date of implementaon	Addressed issue	Representative Photos
1	Tree Plantation	At Adapted village Bodarade Tehsil Parola, Through our NSS unit, a tree plantation campaign was carried out during the camp along with various activities.	
2	Cleanness Drive	The Mahavidyalaya campus cleaned through the NSS volunteer in the occasion of NSS Day. From which the students know the importance of hard work, discipline and awareness of cleanliness	
3	Blood donation	In the adopted village NSS unit organized Various programs for social service. Out of that blood donation organized for the social responsibilities to the volunteers.	

  
 Acting Principal  
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 Parola, Tal. Parola Dist. Jalgaon

4	Winter Special Camp (Every year)	According to norms and rules of KBC, NM University NSS camp is organized at adopted village. In the adopted village NSS unit organized Various programs for social, Environmental and health service.	
5	Industrial visit	Department of chemistry organized industrial visit every semester to awareness industrial life.	
6	Workshop on Disaster management	The Mahavidyalaya conducts workshops on disaster management for students, through which demonstration are given on how to deal and prepare with various disasters.	


  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola, Dist. Jalgaon




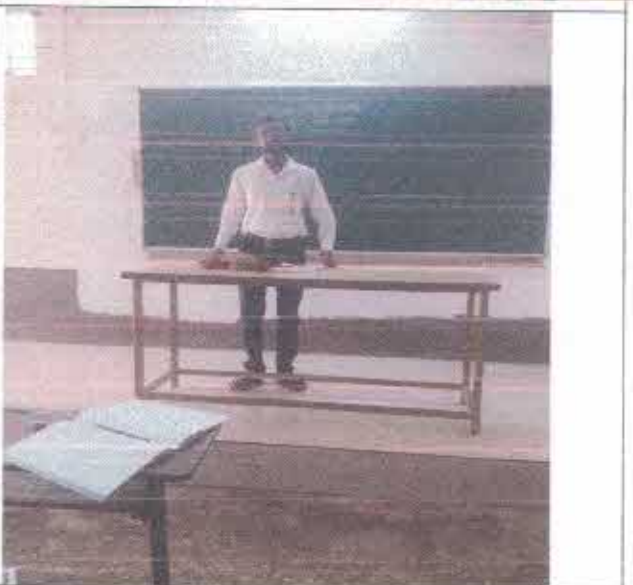
7	Jal Sandharan Shibir ( Water Conservation )	According to norms and rules of KBC, NM University NSS camp is organized at adopted village. In the adopted village NSS unit organized Various programs for social, Environmental and health service out of that water conservation program for social responsibilities.	 <p style="text-align: right;">GPS Map Camera</p> <p>Shelave Bk., Maharashtra, India                  Parola Bahadurpur Amalner Road, Shelave Bk., Maharashtra 425111, India                  Lat 20.898893°                  Long 75.086118°                  20/01/23 11:46 AM GMT +05:30</p>
8	Communication Skill workshop	As most of the students in our Mahavidyalaya belong to rural areas and they are very shy, the Mahavidyalaya administration organizes communication skill workshops for all such students, which helps them to increase their self-confidence	
9	Health Check-up	According to norms and rules of KBC, NM University NSS camp is organized at adopted village. In the adopted village NSS unit organized Various programs for social, Environmental and health service	 <p style="text-align: right;">GPS Map Camera</p> <p>Shelave Bk., Maharashtra, India                  Parola Bahadurpur Amalner Road, Shelave Bk., Maharashtra 425111, India                  Lat 20.898893°                  Long 75.086118°                  23/01/23 03:09 PM GMT +05:30</p>

  
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 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon





10	No plastic Campaign	Various programs are implemented in parola city through NSS unit of our Mahavidyalaya and one of them is plastic free campus and city.	
11	Workshops on chem. & Sketch Drawing	Department of chemistry organized various training programs, out of that chem. draw training organized in the department for T.Y.B.Sc students. It helps to write and draw chemical compound structure and chemical equation.	

  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon

12	Honey keeping Bee	<p>Honey Bee keeping program is implemented in the Mahavidyalaya so that the students of the Mahavidyalaya are attracted towards self-employment, through which the students are given guidance and training. For this, the experts Professors of the department of Zoology provide guidance.</p>	
13	Modi Training lipi	<p>College organize various training programmes for student personality development out of Modi lipi training is one of programme organized. It is important for student to learn ancient writing skill in India.</p>	

  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jaipur



14	Solar Plant Installation	College has installed the solar plates to conserve the energy and utilize the natural resources which is cost effective.	
15	International Yoga Day	<ul style="list-style-type: none"><li>• "Yoga enthusiasts worldwide mark International Yoga Day with serene celebrations"</li><li>• "In a bid for harmony and balance, millions gather to observe International Yoga Day"</li><li>• "Health-conscious individuals come together to promote well-being on International Yoga Day"</li></ul>	

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon





16	Independence Day	<p>College has commemorate the day that symbolizes liberty and independence, it is a perfect time to reflect on the values that unite us as a nation.</p> <p>Whether you are expressing your patriotism, honouring the sacrifices of our forefathers, or simply rejoicing in the blessings of freedom, these carefully crafted captions and quotes will encapsulate the essence of Independence Day and add an extra touch of meaning to your celebrations.</p>	
17	Constitutional Day	<p>“We must not question or interfere with constitution but we must follow it without any doubts. Wishing a very Happy Indian Constitution Day.”</p> <p>“College had organized Indian Constitution Day, I wish that we always make good citizens of India who respect and follow the constitution.”</p>	

  
Acting Principal  
Rani Laxmibai Mahavidyalaya,  
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18	Voters Day	<p>College has organize voter day at Shevge Bk. Tehsil Parola It's more essential now than ever to cast your ballot. While the importance of voting has probably been hammered into your head since the day you turned 18, some of you probably still wonder, <i>what's the point?</i> These insightful voting quotes are here to remind you why it's your civic duty to get out there and vote. Election results can often come down to a select few who decided voting is worth the effort. Not sure you're registered to vote? Head to <a href="http://vote.org">vote.org</a> to check your voter registration status. Simply search by your state of residence and provide basic information like name, birthday and zip code. If your information doesn't pop up, take a few minutes to register to vote and if needed, request an absentee ballot. Then when it's time to vote, read these election quotes one more time, soak in their words of wisdom, and head to the polls.</p>	
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*[Handwritten Signature]*  
**Acting Principal**  
**Rani Laxmibai Mahavidyalaya,**  
**Parola, Tal. Parola Dist. Jalgaon**




19	Workshop on reading & writing	College Campus	 <p>2022-9-30 11:17</p>
20	Tobaco Campus Free	<p>According to the <i>World Health Organization (WHO)</i>, "college has yearly organize the celebration informs the public on the dangers of using tobacco, the business practices of tobacco companies, what WHO is doing to fight the tobacco epidemic, and what people around the world can do to claim their right to health and healthy living and to protect future generations."</p>	 <p>REDMI NOTE 5 PRO MI DUAL CAMERA</p>
21	NSS Day	<p>College unit of NSS Organized and Celebrating the NSS day, volunteerism is one of the most selfless acts that we can become involved in. Non-profits around the world need more volunteers to carry out their missions and make the biggest difference possible. Engage your volunteers and remember to demonstrate that their contributions make a big difference.</p>	 <p>GPS Map Camera</p> <p>Mal Nigeria</p> <p>google</p> <p>null 24/09/22 11:12 PM GMT +05:30</p>

*[Handwritten Signature]*  
 Acting Principal  
 Rani Laxmibai Mahavidyalaya,  
 Parola, Tal. Parola Dist. Jalgaon





22	Aids Awareness Oath	College and management has organized world AIDS awairness day, here we have given World AIDS Day Quotes Message Shayari, World AIDS Day Slogan Caption FB WhatsApp Video Status Instagram Reels, World AIDS Day HD images Poster Banner Wallpaper Pictures Vishva AIDS Diwas Shayari Nare Status to spread awareness about this disease. By sharing World AIDS Day Quotes 2022 Wishes Message Slogan images Pictures Banner Poster Status Video poems on social media, make people aware of the misconceptions about this disease.	
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Acting Principal  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Sahajiyon Shikshan Prasarak Mandal (Tehu) Sanchalit  
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**PAROLA, DIST - JALGAON, 425111**



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23/11/2021

**Notice**

All students are informed that, the department of *Political scie* is going to organize the *Pledge of Indian constitution* to be conducted on *26/11/2021*. Therefore all students take the benefit of the programme.

*[Signature]*  
 Head of Department  
**Head**  
 Dept. of Political Science  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon



*[Signature]*  
**PRINCIPAL**  
 Rani Laxmibai Mahavidyalaya  
 Parola, Dist. Jalgaon



S.S.P.M's  
RANI LAXMIBAI MAHAVIDYALAYA  
PAROLA, DIST - JALGAON  
Attendance Sheet



Name of Resource Person:

Topic : Pledge of Indian Constitution

Day : Friday Date : 26/11/2021

Time : 10.00 AM

Sr. No.	Name of Participants	Signature
1)	Kalpesth sunil Nikumbh	<u>sunilnikumbh</u>
2)	Devendry shankar patil	<u>patil</u>
3)	Vishal Tukarram Desale	<u>Desale</u>
4)	Avinash Chandu Patil	<u>Patil</u>
5)	chetan Gotu patil	<u>patil</u>
6)	shubham Dhanraj patil	<u>patil</u>
7)	Umesh Sunil Bhalgh	<u>Bhalgh</u>
8)	Nikita Suresh patil	<u>patil</u>
9)	Divya Rajendra patil	<u>patil</u>
10)	Harshada Suryabhan patil	<u>patil</u>
11)	Dipali chudaman patil	<u>patil</u>
12)	Ashwini Sunil Guli	<u>Guli</u>
13)	Gayatri Ishwar Thakate	<u>thakate</u>
14)	Rajashri Ramchandra Patil	<u>Patil</u>
15)	Bhagyashri Dadabhau Shinde	<u>Bdshinde</u>
16)	patil Anushka Uttam	<u>Patil</u>
17)	Patil Gayatri Mukunda	<u>Patil</u>
18)	chaudhari vaishali kishor	<u>chaudh.</u>
19)	Chaudhari Ruchika Mahesh	<u>Rmc</u>
20)	Kasare Monali Girish	<u>Kasare</u>
21)	Dipali Dnyaneshwar Mahajan	<u>Mahajan</u>





Sahajivan Shikshan Prasarak Mandal (Telhu) Sanchalit  
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ESTD: 1992



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Name of the Department: Political Scie  
Report of activity/workshop

Name of the program: Pledge of Indian Constitution

Date/Period : 26/11/2021

Time : 8.30 AM

Venue : Department of Political Scie. & R.L. college

Number of participants:

Objectives :  
→ 1. TO dedicate their lives to the  
2. Service of India, the Indian  
3. People and the Humanity at large  
→ 4. For Social Economic and Political  
5. Justice.

Summary and Conclusion We the people of India have solemnly committed to transform India into a sovereign Socialist secular, democratic Republic and to ensure the following ~~of~~ to all of citizens social economic and political Justice thought expression, belief, faith and worship are all protected under the constitution

  
Head Of Department

**Head**  
**Dept. of Political Science**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



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**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**

ESTD. 1992



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10/01/2022

### Notice

All students are informed that, the department of 12/01/22 is going to organize the NCC to be conducted on NSS. Therefore all students take the benefit of the programme.  
Yuva DIN

  
Head of Department  
**Head**  
**Dept. of Marathi**  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon



  
Principal  
**PRINCIPAL**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon





S.S.P.M's  
RANI LAXMIBAI MAHAVIDYALAYA  
PAROLA, DIST - JALGAON  
Attendance Sheet



Name of Resource Person: Dr. R. B. Neykar

Topic: Yuvakanfudhi' Avhane

Day: \_\_\_\_\_ Date: 12/01/2022

Time: 11.00 AM

Sr. No.	Name of Participants	Signature
1)	Jyoti Ashok Patil.	<u>Patil</u>
2)	Nandini Gulab Patil	<u>NPatil</u>
3)	Nikita Rajendra Jadhav	<u>NJadhav</u>
4)	Shivani Bhausaheb Pawar	<u>Pawar</u>
5)	Rupali Sambhaji Mahajan	<u>Sm</u>
6)	Vaishali Suralal Patil	<u>V.S.P.</u>
7)	Poonam Ashok Patil	<u>Patil</u>
8)	Shruti Dnyaneshwar Desale	<u>Desale</u>
9)	Anjali Vibhah Patil	<u>Patil</u>
10)	Aareti Milind Patil	<u>A.M. Patil</u>
11)	Priyanka Rajendra Patil	<u>Patil</u>
12)	Gayatri Rajendra Belkar	<u>Belkar</u>
13)	Darpana Ravindra Patil	<u>D. R. Patil</u>
14)	Kamini Bhanudas Guear	<u>Guear</u>
15)	Saloni Ashok Kumber	<u>SKumber</u>
16)	Kalyani Rammeshwar Mahajan	<u>Mahajan</u>
17)	Kajal Nago Patil	<u>Nago</u>
18)	Raj mahipat Patil	<u>Raj.</u>
19)	Nilesh Yuvraj Patil	<u>Patil</u>
20)	Abhishek Sanjay Koli	<u>ASK</u>
21)	Ganesh Bhavatbhai Patil	<u>Patil</u>







Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit  
**RANI LAXMIBAI MAHAVIDYALAYA**  
**PAROLA, DIST - JALGAON, 425111**

ESTD 1992



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Name of the Department:

NSS

Report of activity/workshop

Name of the program:

Yuva Din

Date/Period

: 12/01/2022

Time

: 11.00 am

Venue

: Department of .....NSS.....

Number of participants:

43

Objectives

- : 1. To create Awareness the thoughts  
2. of Swami Vivekanand.  
3. Responsibility of youth in  
4. the nation Building.  
5.

Summary and Conclusion

43 students participate in this programme.  
Lecture was very informative for this  
student.

Head Of Department  
Head

Dept. of Marathi  
Rani Laxmibai Mahavidyalaya  
Parola, Tal. Parola Dist. Jalgaon

Established: June 1992

Sahajvan Shikshan Prasarak Mandal (Tehu) Sanchalit



**Rani Laxmibai Mahavidyalaya Parola**

Dist. Jalgaon 425111 Tel: (02597) 292666

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Email : [principatrcparola@gmail.com](mailto:principatrcparola@gmail.com)

Outward No.

Date : / / 20

# **Criterion No. 1**

## **Curricular Aspects**

### **1.3. Curricular Enrichment**

#### **9:- Institutional Infrastructure**





Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA  
PAROLA, DIST - JALGAON, 425111**


ESTD: 1992




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### INFRASTRUCTURE FACILITIES AVAILABLE IN THE COLLEGE

1. The college has its own campus area of 2.2 Acres.
2. The institution aims to achieve the primary objective of providing the student can education complete with personality development and personality development and professional training.
3. To facilitate the same, a policy making mechanism that ensures transparency and efficient distribution of funds is in place.
4. For conducting effective delivery of its curriculum institution set up college in the heart of city Parola in its own campus area 2.2 acers (9956 Sq. Mtr).
5. The college has 17 spacious classrooms including 02 seminar halls, 04 ICT enabled classrooms, 01 Computer Lab, 07 Science Laboratories, 04 LCD Projectors and department offices for effective curriculum delivery.
6. In the college well equipped practical laboratories of Physics, Chemistry, Botany, Zoology, Computer Science, Geography, and Mathematics Etc.
7. Solar panel is fixed on the top of Physics Department, which is capable of generating 14 KW.
8. In addition to Library, Principal Cabin, Vice-Principal's Cabins, Department of Physical Education and Sports, NSS Department are also well equipped.
9. Spacious Staff room, NAAC Room, and counselling room are also available in the premises.
10. R. O. drinking water system for students is fixed just behind the college staff room and one point of R. O. is fixed in the staff room.
11. Life long learning department, Earn and Learn, Student Welfare Department, Career Katta etc. are also working in the college for students personality development.
12. The college has a Botanical garden; there is kind of plants, Herbs and trees of various ornamental and medicinal plants.
13. A separate common room for girls students is also available for spend half time.
14. The campus of college has also 200 Mtr. track and field with all major interior and outdoor sports facilities including Kabaddi, Badminton, and Kho-Kho etc.
15. Physics, Chemistry and Mathematics Laboratories are recognized as a research laboratory.
16. Computer labs is well equipped with high speed broadband internet with Wifi facility.
17. The library facilities with distribution counter, Newspapers, Journals, Magazines, etc.
18. The college has spacious playground of area 6175 Sq. Meter.


  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



- **The available facilities with measurement are:**
  - Total Campus Area: 2.2 Acres (9956 Sq. Mtr).
  - Total built Area: 2091 Sq. Mtr.
  - Play ground: 6175 Sq. Mtr.
  - Area of Garden: 2240 Sq. Ft.
  - Well-furnished administrative sections:
  - Well-equipped Computer Laboratory with LAN Network.
  - Spacious Playground and Sports department.
  - Two Seminar Halls.
  - Girls Common Room.
  - Student Consumer with Xerox Facility.
  - Well maintained Botanical garden
  - Generator-01
  - LAN System of administrative work.
  - Parking Area-Yes
  - Green Campus-Yes.
  - Vermi Composting Unit-Yes.

  
**Coordinator, IQAC**  
Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



  
**Acting Principal**  
Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
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### Infrastructure Detail

Sr. No.	Wing	Detail	Dimension (Sq. ft)	Total Area (Sq. ft)
1.	A- Ground Floor	Principal Cabin	12*20	240
2.	A- Ground Floor	Office/ Administration	19.9*30.5	606
3.	A- Ground Floor	Computer Lab	31*20	620
4.	A- Ground Floor	Lecture Hall No. 06	30*20	600
5.	A- Ground Floor	Department of Geography	31*20	620
6.	A- Ground Floor	Department of Botany+ Corridor	23*10+10*30	530
7.	A- Ground Floor	Department of Zoology	15*10+10*30	450
8.	A- Ground Floor	Account Room	6.5*15.5	100
9.	A- Ground Floor	Store Room	10.3*15.5	160
10.	A- Ground Floor	Record Room	10.3*15.5	160
11.	A- Ground Floor	NAAC Room	18.7*15.5	290
12.	A- Ground Floor	Exam section	20*15.5	310
13.	A- Ground Floor	Staff Room	15.5*15.5	241
14.	A- Ground Floor	Vice Principal Cabin	15.58*15.58	242.73
15.	A-First Floor	Lecture Hall No.7 (Dept. of English)	20*16	320
16.	A-First Floor	Lecture Hall No. 8 (Dept. of History)	20*16	320
17.	A-First Floor	Lecture Hall No.9 (Dept. of Marathi)	20*16	320
18.	A-First Floor	Lecture Hall No.10	16*10	160
19.	A-First Floor	Guest Room	25.15*13.76	346

  
Coordinator

**Coordinator, IQAC**

Rani Laxmibai Mahavidyalaya  
Parola, Dist. Jalgaon



  
Principal

**Acting Principal**

Rani Laxmibai Mahavidyalaya,  
Parola, Tal. Parola Dist. Jalgaon



Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
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**Infrastructure at a Glance**

Sr. No.	Building Name	Detail	Dimension (Sq. ft)	Total Area (Sq. ft)
1.	Building No. 1 (B Wing)	Ground floor (B Wing)	180*58	10440
2.	Building No. 2 (A Wing)	Ground Floor (A Wing)	180*55	9990
3.	Student Consumer	B wing	14*10.9	152.6
4.	Gymkhana			
5.	Canteen	Behind Sports Ground	30*20	600
6.	Botanical Garden	A Wing	1. 24*81=1944 2. 26.3*13.5=355	2299
7.	Parking		35*21	735
8.	Vermi Composting Unit		21*22	462
9.	Toilet's No.1 to No. 6	No.1: Ladies Staff (B Wing) No. 2: Girls (sports Ground ) No.3: Boys (Sports Ground) No 4: Gents Staff No. 5: Disabled students No.6: Principal Cabin	3.9*6.9 20*14 15*14 25*7 15*8.5 6*3	74.3 280 210 175 127.5 18
10.	Store Room No. 2	Sports ground	16*14	224
11.	Porch		20*24	480
12.	Generator room		11*11.8	129.8
13.	Office Varanda		5*11.46	616.31
14.	RO Water Room	A Wing	14.5*7.5	108.75
15.	Stage	In Front of Chemistry Deptt.	16*25.5	408
16.	Play Ground			66467

  
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Acting Principal  
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Sahajivan Shikshan Prasarak Mandal (Tehu) Sanchalit

**RANI LAXMIBAI MAHAVIDYALAYA**  
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ESTD. 1992



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**Water Facilities:**

**College have Own Bore-well System = 02**

**(01 Near Main Gate & 01 in Botanical garden)**

Sr. No.	Building	Tank Type	Capacity	No. of Tanks
1.	A wing (Guest Room)	Plastic	1000 L	01
2.	A Wing (Botany)	Plastic	750 L	01
3.	A Wing (Office)	Plastic	1. 500 L 2. 1500 L 3. 2000 L 4. 2000 L	04
4.	B Wing (Chemistry Lab)	Plastic	1. 2000 L 2. 1500 L 3. 1500 L	03

  
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### Infrastructure Details

Sr. No.	Wing	Detail	Dimension (Sq. ft)	Total Area (Sq. ft)
1.	B-Ground Floor	Lecture Hall No.1 (Dept. of Chemistry)	40*30	1200
2.	B-Ground Floor	Chemistry Research Lab/ Physical Chemistry Lab	15*20	300
3.	B-Ground Floor	Girls Room	30.14*10.16	306
4.	B-Ground Floor	Lecture Hall No. 2	30*40	1200
5.	B-Ground Floor	Lecture Hall No. 3	30*40	1200
6.	B-Ground Floor	Lecture Hall No. 4	30*40	1200
7.	B-Ground Floor	Lecture Hall No. 5	30*40	1200
8.	B-Ground Floor	Lecture Hall No. 6	30*20	600
9.	B- Ground Floor	Student Consumer Corner	12.62*10.30	130
10.	B-First Floor	Department of Physics	40*30	1200
11.	B-First Floor	Physics Research Lab	15*20	300
12.	B-First Floor	Library	32.17*30.73	988.69
13.	B-First Floor	Seminar Hall (Multipurpose Hall)	30*48	1440
14.	B-First Floor	Lecture Hall No. 11	22*20	440
15.	B-First Floor	Lecture Hall No.12	22*20	440
16.	B-First Floor	Lecture Hall No.13	22*20	440
17.	B-First Floor	Lecture Hall No.14	22*20	440
18.	B-Ground Floor	Lecture Hall No.15	22*19	418
19.	B-Ground Floor	Lecture Hall No.16	22*19	418
20.	B-Ground Floor	Lecture Hall No.17	22*19	418
21.	B-Ground Floor	Lecture Hall No.18 (Department of Maths.)	22*19	418
22.	B-Ground Floor	Store Room	22.5*20.33	456
23.	B-Ground Floor	Management Office	22.5*20.33	456

  
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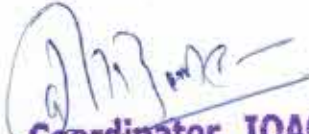
  
**Acting Principal**  
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### Infrastructure Details

#### ICT Enabled Classrooms, Seminar Halls & Laboratories

Sr. No.	Name of Classrooms, Laboratories, & Seminar Halls with ICT Enabled Facilities	Room No.	Type of ICT Facilities
1.	Seminar Hall/ F. Y. B. A Classroom	Lecture Hall No. 06	Projector Set up
		Lecture Hall No. 09	Projector Set up
		Department of Comp. Sci.	Projector Set up
		Lecture Hall No. 04	Projector Set up
2.	Multipurpose Hall	-	Projector Set up

  
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Sr. No.	Infrastructure	Availability
1.	Classrooms	16
2.	Laboratories	07
3.	Research Labs	03
4.	Yoga Center	01
5.	Sport Department	01
6.	Canteen	01
7.	No. of Toilets	06

  
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### Indoor Games

Sr. No.	Name of Sport/ Game	Equipment/Qty.	Size/ Area
1.	Carom Board	02	Standard
2.	Weight Lifting	06	5 Kg, 10 Kg, 15 Kg
3.	Chess Board	05	Standard

### Outdoor Games

Sr. No.	Name of Sport/ Game	Equipment/Qty.	Size/ Area
1.	Athletics:	-	
	a. Long Jump	01	Standard
	b. Short Put	04	Standard
	c. Javelin	02 M+02 W	Standard
	d. Discuss	04	Standard
	e. Spick	05	Standard
	f. Cones	10	Standard
	g. Measuring Tape	02	Standard
	h. Running Track	01	200 Mtr.
2.	Volley Ball	08	9*18 Mtr.
3.	Kabaddi (Men)	01	13*10 Mtr.
4.	Kabaddi (Women)	01	13*10 Mtr.
5.	Kho-Kho (Men & Women)	01	27*16 Mtr.
7.	Yoga & Pranayam	Yes	Multipurpose Hall
8.	Mallakhamb/ Rope-Mallakhamb	01+01	Standard size
9.	Net Ball (Men & Women)	01	50*30 ft.
10.	Floor Ball (Men & Women)	01	40*20 Ft.
11.	Foot Ball (Men & Women)	Half Ground	80*120 Yard
12.	Hockey (Men & Women)	Half Ground	50*100 Mtr.

  
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