**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Physical Geography I ( Lithosphere partI)**

Course Code: **Gg 101**

Pattern: **CBCS**

Name of the Subject Teacher: **Prof. R. A. More**

| Sr. No | Objective |
|---|---|
| 1 | To study of process and pattern in the Natural Environment. |
| 2 | To understand the surface of the Earth. |
| 3 | To understand the basic concept of Physical Geography. |
| 4 | To understand the process change the surface of the earth. |
| 5 | To acquaint the students with utility and application of Physical Geography in different areas. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Physical Geography II (Atmosphere)**

Course Code: **Gg 102**

Pattern: **CBCS**

Name of the Subject Teacher: **Mrs. D. S. Thakare**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge of atmosphere, weather and climate. |
| 2 | To understand different characteristics and process of atmosphere |
| 3 | To understand the basic concept of Physical Geography. |
| 4 | To understand various application of climatology |
| 5 | To acquaint the basic knowledge of elements of process in atmosphere |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Physical Geography ( Lithosphere part II )**

Course Code: **Gg 201**

Pattern: **CBCS**

Name of the Subject Teacher: **Prof. R. A. More**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge of Physical Environment. |
| 2 | To study landforms associated with these forces. |
| 3 | To understand the basic concept, Principle and Geographical Processes |
| 4 | To understand impact of human activities on Environment |
| 5 | To enable students to acquire knowledge of the Physical Environment |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Physical Geography (Hydrosphere)**

Course Code: **Gg 202**

Pattern: **CBCS**

Name of the Subject Teacher: **Mrs. D. S. Thakare**

| Sr. No | Objective |
|---|---|
| 1 | To understand properties and movement of ocean water |
| 2 | To introduce the students to the basic concept of Oceanography |
| 3 | To understand the basic concept regarding Hydrosphere |
| 4 | To get the information regarding marine Deposits and Coral Reefs |
| 5 | To introduce the origin and effects of tsunami. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Environmental Geography I**

Course Code: **Gg 231**

Pattern: **CGPA**

Name of the Subject Teacher: **Prof. P. S. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To create the environment awareness amongst the students. |
| 2 | To acquaint the students with fundamental concept 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. |
| 5 | To make aware the students about the judicious use of resources |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Physical Geography of India**

Course Code: **Gg 232**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr. V. C. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with basic knowledge of our country |
| 2 | To aware the students about physiography of india |
| 3 | To aware the natural resources available in the country |
| 4 | To aware the need of conservation and protection of Natural Resource |
| 5 | To make the students ready for competitive Examinations. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Environmental Geography II**

Course Code: **Gg 241**

Pattern: **CGPA**

Name of the Subject Teacher: **Prof. P. S. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with Environmental Problems |
| 2 | To aware the Students about the causes and effect of environmental Problems |
| 3 | To acquaint the students with Environmental Hazards and Disaster Management |
| 4 | To acquire the knowledge of conservation of recourses |
| 5 | To aware the students about various environmental Acts. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Economic Geography of India**

Course Code: **Gg 242**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr. V. C. Patil**

| Sr. No | Objective |
|---|---|
| 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 |
| 3 | To aware the natural resources available in the country |
| 4 | To aware the need of conservation and protection of Natural Resource |
| 5 | To make the students ready for competitive Examinations. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Environmental Geography II**

Course Code: **Gg 241**

Pattern: **CGPA**

Name of the Subject Teacher: **Prof. P. S. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with Environmental Problems |
| 2 | To aware the Students about the causes and effect of environmental Problems |
| 3 | To acquaint the students with Environmental Hazards and Disaster Management |
| 4 | To acquire the knowledge of conservation of recourses |
| 5 | To aware the students about various environmental Acts. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Economic Geography of India**

Course Code: **Gg 242**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr. V. C. Patil**

| Sr. No | Objective |
|---|---|
| 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 |
| 3 | To aware the natural resources available in the country |
| 4 | To aware the need of conservation and protection of Natural Resource |
| 5 | To make the students ready for competitive Examinations. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Geomorphology**

Course Code: **Gg 311**

Pattern: **CBCS**

Name of the Subject Teacher: **Prof.Dr.R.J.Borse**

| Sr. No | Objective |
|---|---|
| 1 | To understand the origin of various landforms |
| 2 | To study the processes of landform development. |
| 3 | To help the students for preparation of competitive examinations |
| 4 | To understand the various geomormphic processes and their important |
| 5 | To understand the relief features and their typeas |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Climatology**

Course Code: **Gg312**

Pattern: **CBCS**

Name of the Subject Teacher: **Mr.P.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with basic knowledge of atmosphere , weather and climate |
| 2 | To know the fundamental concept of climatology |
| 3 | To understand the various weather phenomena |
| 4 | To identified the climatic dedifferentiation on the earth |
| 5 | To acquaint the the knowledge of weather forcasting |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Oceanography**

Course Code: **Gg 313**

Pattern: **CBCS**

Name of the Subject Teacher: **Prof. C.D.Ahire**

| Sr. No | Objective |
|---|---|
| 1 | To promote cross disciplinary, multiscale research and education in marine sciences |
| 2 | Improve understanding of the Indian ocean and its various inter related processes |
| 3 | To understand the importance of ocean and marine processes |
| 4 | To study the ocean relief features |
| 5 | To get the knowledge of marine resources |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **water resource management**

Course Code: **Gg 314**

Pattern: **CBCS**

Name of the Subject Teacher: **Dr.V.M.Agone**

| Sr. No | Objective |
|---|---|
| 1 | To understand significance of water recourse for human development |
| 2 | To generalize the concept of water resource management and planning |
| 3 | To conclude the water resource management through scientific planning |
| 4 | To aware the students about the important of water |
| 5 | To get the knowledge about the conservation of water resources |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Disaster Management**

Course Code: **Gg 315**

Pattern: **CGPA**

Name of the Subject Teacher: **Dr.V.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with basic knowledge of natural and manmade disasters. |
| 2 | To understand the impact of disasters |
| 3 | To create awareness among students about disaster manangement |
| 4 | To know the fundamental concept of disaster management |
| 5 | To acquire the knowledge of preparedness and mitigation |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**
Department: **Geography**

Name of Course: **Remote sensing and Gis**

Course Code: **Gg 316**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr. P. S. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge about use of satellite technology in geography |
| 2 | To get the understanding of working GIS, GPS and remote sensing |
| 3 | To educate the students about application of RS, GIS & GPS in different Field |
| 4 | To acquire the basic knowledge of GIS and Remote sensing among the students |
| 5 | To build the knowledge about Indian progress & development of Remote Sensing among the students |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Soil Geography**

Course Code: **Gg321**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr.P.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To understand the relationship between geographical condition and soil development |
| 2 | To generalize the significance of soil and soil degradation |
| 3 | To study the general distribution and classification of soils in India |
| 4 | To help the students for preparation of competitive examinations |
| 5 | To understand the soil forming processes |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Biogeography**

Course Code: **Gg 322**

Pattern: **CGPA**

Name of the Subject Teacher: **Mr. P. S. Patil**

| Sr. No | Objective |
|---|---|
| 1 | To understand the concept of Biogeography |
| 2 | To get the knowledge about various biomes of the world |
| 3 | To understand the human impact on various species |
| 4 | To aware the students about the climatic change on the basis of antropogenic |
| 5 | To understand the relationship between agriculture and animal domestication |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Economic Geography**

Course Code: **Gg 323**

Pattern: **CGPA**

Name of the Subject Teacher: **Dr.V.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To understand the various economic activities of the peoples |
| 2 | To get the knowledge about the various economic resources |
| 3 | To understand the problems of trade and transportation |
| 4 | To understand the relationship between the economic activities and physiography |
| 5 | To get the knowledge about Indian Economy and their problems |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Agricultural Geography**

Course Code: **Gg 324**

Pattern: **CGPA**

Name of the Subject Teacher: **Prof.C.D.Ahire**

| Sr. No | Objective |
|---|---|
| 1 | Agriculture is an important occupation of peoples of India, so give the knowledge about Indian agriculture to students |
| 2 | To get the knowledge of role of agriculture in Indian Economy |
| 3 | To acquaint the students with agricultural problems |
| 4 | To aware the students about various agricultural regions in the world |
| 5 | To acquire the knowledge of decreasing fertility of soil |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Population Geography**

Course Code: **Gg 325**

Pattern: **CGPA**

Name of the Subject Teacher: **Dr.R.J.Borse**

| Sr. No | Objective |
|---|---|
| 1 | To understand the population is an important resource |
| 2 | To get the knowledge of sources of population data |
| 3 | To understand the spatial and structural dimensions of population |
| 4 | To understand the recent problems of population in the world as well as nation |
| 5 | To familiarize the students with different theories of population growth |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Regional Geography of Maharashtra**

Course Code: **Gg 326**

Pattern: **CGPA**

Name of the Subject Teacher: **Dr.V.M.Agone**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with basic knowledge of Maharashtra state |
| 2 | To make the students ready for competitive examinations |
| 3 | To aware the students with available natural resources nad need of conservation and protection in the state of maharshtra |
| 4 | To understand the physiographic of Maharashtra in relation to culture |
| 5 | To aware the students about the Environmental problems of the state |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Name of Course: **Principles of economic Geography**

Course Code: **Gg111**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.V.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To understand the various economic activities of the peoples |
| 2 | To get the knowledge about the various economic resources |
| 3 | To understand the problems of trade and transportation |
| 4 | To understand the relationship between the economic activities and physiography |
| 5 | To get the knowledge about Indian Economy and their problems |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Principles of Population and Settlement Geography**

Course Code: **GG 112**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.M.G.Bachhav**

| Sr. No | Objective |
|---|---|
| 1 | To understand the population is an important resource |
| 2 | To get the knowledge of sources of population data |
| 3 | To understand the spatial and structural dimensions of population |
| 4 | To understand the recent problems of population in the world as well as nation |
| 5 | To understand the pattern and types of settlements |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Principles of Climatology**

Course Code: **Gg 113**

Pattern: **CBCS**

Name of the Subject Teacher: **Dr.V.M.Agone**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint the students with basic knowledge of atmosphere, weather and climate |
| 2 | To know the fundamental concept of climatology |
| 3 | To understand various weather phenomena |
| 4 | To identify climatic differentiation on the earth |
| 5 | To acquire the knowledge of weather forecasting |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Principles of Geomorphology**

Course Code: **Gg 114**

Pattern: **60+40**

Name of the Subject Teacher*:* **Mr.P.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To understand the origin of various landforms |
| 2 | To study the processes of landform development. |
| 3 | To help the students for preparation of competitive examinations |
| 4 | To understand the various geomormphic processes and their important |
| 5 | To understand the relief features and their typeas |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Geographical Thoughts**

Course Code: **Gg211**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.B.P.Choudhari**

| Sr. No | Objective |
|---|---|
| 1 | To Know the Contribution of Geographer in the field of Geography |
| 2 | To understand the Dualism in Geography |
| 3 | To Understand the various approaches of the study of Geography |
| 4 | To know the Conceptual Development in Geography |
| 5 | To get ready to students for NET & SET Examinations |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Social & Cultural Geography**

Course Code: **Gg 212**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.V.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge about group categorization and different groups in society |
| 2 | To get the understanding the various social theories |
| 3 | To understand the concept of cultural complex |
| 4 | To acquire the knowledge about different tribes and their distribution |
| 5 | To understand the origin and growth of culture |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Remote Sensing & GIS**

Course Code: **Gg 213**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.M.G.Bachhav**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge about Remote Sensing Techniques |
| 2 | To get the understanding the history of Indian Remote Sensig |
| 3 | To understand the concept of remote sensing and their types |
| 4 | To acquire the knowledge about GIS techniques |
| 5 | To understand the Aerial Photography techniques |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Geo Statistical Techniques**

Course Code: **Gg 214**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.R.J.Borse**

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge about Geo Statistical Methods and their application in Geography |
| 2 | To get the understanding Sampling and sample planning |
| 3 | To understand parametric and non parametric statistic in geography |
| 4 | To understand the regression analysis |
| 5 | To know the application of statistics in geographical research |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Regional Geography of USA**

Course Code: **Gg311**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.M.G.Bachhav**

| Sr. No | Objective |
|---|---|
| 1 | To discuss the geography of the United States as a field of regional study |
| 2 | To understand the major geographical regions of the United States |
| 3 | To illustrate Natural Resources, Agriculture and Transportation |
| 4 | To illustrate and define regions as a means of interpreting the complexity of the United States |
| 5 | To understand the various natural resources in United States |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Environmental Geography**

Course Code: **Gg 312**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.C.D.Ahire**

| Sr. No | Objective |
|---|---|
| 1 | To create the environment awareness amongst the students. |
| 2 | To acquaint the students with fundamental concept 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. |
| 5 | To make aware the students about the judicious use of resources |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Geographical Information System**

Course Code: **Gg 313**

Pattern: **60+40**

Name of the Subject Teacher : Mr.M.G.Bachhav

| Sr. No | Objective |
|---|---|
| 1 | To get the knowledge about use of satellite technology in geography |
| 2 | To get the understanding of working GIS, GPS and remote sensing |
| 3 | To educate the students about application of RS, GIS & GPS in different Field |
| 4 | To acquire the basic knowledge of GIS and Remote sensing among the students |
| 5 | To build the knowledge about Indian progress & development of Remote Sensing among the students |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Watershed Management & Planning**

Course Code: **Gg 314**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.V.M.Agone**

| Sr. No | Objective |
|---|---|
| 1 | To acquaint students with basic concept and practices in hydrology and watershed management |
| 2 | To aware students with need , uses, import ants & conservation of water |
| 3 | To supply and securing of clean and sufficient drinking water for the population. |
| 4 | To learn the techniques of water conservation |
| 5 | To prepare the students for better planning of watershed |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Fluvial Geomorphology**

Course Code: **Gg 411**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.V.S.Patil**

| Sr. No | Objective |
|---|---|
| 1 | To introduce basic concepts of river process, form and function |
| 2 | To create awareness among the students on environmental problems related to river system |
| 3 | To develop the sense of responsibility amongst the students about the river system |
| 4 | To understand the various fluvial geomorphic features |
| 5 | To get the knowledge about the fluvial landforms |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Tropical Geomorphology**

Course Code: **Gg 412**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.V.M.Agone**

| Sr. No | Objective |
|---|---|
| 1 | To understand tropical environment |
| 2 | To introduce transformation in tropical environment |
| 3 | To examine process of weathering in tropics |
| 4 | To study the process of denudation and associated in the tropics |
| 5 | To prepare the students for better planning of watershed |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Research Mothodology**

Course Code: **Gg 413**

Pattern: **60+40**

Name of the Subject Teacher: **Mr.M.G.Bachhav**

| Sr. No | Objective |
|---|---|
| 1 | To create an awareness about research in the field |
| 2 | To make a scientific view about the geographical phenomenon |
| 3 | To develop the research ability and get solution on various problems |
| 4 | To understand the knowledge of research methodology |
| 5 | To understand the various techniques of research |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: **Geography**

Name of Course: **Coastal Geomorphology**

Course Code: **Gg 414**

Pattern: **60+40**

Name of the Subject Teacher: **Dr.R.J.Borse**

| Sr. No | Objective |
|---|---|
| 1 | To enable students to acquire knowledge of coastal geomorphology |
| 2 | To understand basic concepts of coastal geomorphology |
| 3 | To study landforms associated with erosion and deposition of coast |
| 4 | To understand the applied geomorphology |
| 5 | To get the knowledge about various coastal landforms |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc.

Course Code: MTH-101 (Matrix Algebra)

Pattern: [60-40] CBCS

Name of the Subject teacher: Ms. Sonali Patil and Ms. Rupali Ahire.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand concept on matrix operation . |
| 2 | To solve the the system of linear equation. |
| 3 | To understand the basic knowledge of eigen values and vectors. |
| 4 | To apply Cayley Hamalton theorem. |
| 5 | To know matrix transformation and its application. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : : F.Y.B.Sc

Course Code: MTH-102(Calculus)

Pattern: CBCS [60-40]

Name of the Subject teacher: Ms. Hemangi Chaudhari

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | Understnd basic concept of limit and continuity |
| 2 | Understand use of differentiation in various theorems |
| 3 | Know the mean value theorem and its application |
| 4 | Make the application of Taylor's theorem |
| 5 | Know the application of calculas |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc

Course Code: MTH 103(A)(Co-Ordinate Geometri)

Pattern: [40-60] CBCS

Name of the Subject teacher: Ms. Vaishnvi Bhavsar.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | Understand basic concept of Graph, Simple graph. |
| 2 | Understand definition and some properties of trees. |
| 3 | To understand use of differential equation. |
| 4 | To learn first order and higher order differential equations. |
| 5 | To understand Cauchy's d.e. and Legenders equation. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc

Name of the Subject teacher :Ms. Bhavsar Vaishnavi

Course Code: MTH-103[B](Graph Theory)

Pattern : CBCS [60+40]

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | Understand concept on Graph,Subgraph |
| 2 | Understand type of Graphs |
| 3 | Solve examples on Handshaking lemma |
| 4 | Aplication of graphs in real life examples |
| 5 | Understand Dijkstra's algorithm. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : :F.Y.B.Sc

Course Code: MTH -201(Ordinary Differential Equations)

Pattern: CBCS [60+40]

Name of the Subject teacher:Ms. Chudhari Hemangi and Ms.Sonali Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | Understand basic concept in differential eqution s |
| 2 | Understand method of solving differential eqution s |
| 3 | Understand use of differential eqution in various fields |
| 4 | Examples on reducible to homogeneus LDE |
| 5 | |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc.

Course Code: MTH-202(Theory Of Equations)

Pattern: [60+40] CBCS

Name of the Subject teacher: Mr.M.D. Suryawanshi and Mr.A.S. Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To study divisibility of numbers and roots of equation. |
| 2 | To study relation between roots and coefficients. |
| 3 | To understand roots of cubic equation by Cardon's method. |
| 4 | To understand Biquadratic equation. |
| 5 | To study roots of polynomials by Newton's method. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc.

Course Code: MTH-203(A)(Laplace Transform

Pattern: [60+40] CBCS.

Name of the Subject teacher: Ms. Bhavsar Vaishnavi

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the concept of Laplace transformation. |
| 2 | To understand the inverse laplace transformation. |
| 3 | To understand the convolution theorem. |
| 4 | To understand the solution by partial fraction. |
| 5 | To understand the Heaviside unit step function. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : F.Y.B.Sc

Course Code: MTH-203(B)(Numerical Analysis)

Pattern: [60+40] CBCS

Name of the Subject teacher: Ms. Priyanka Bagul.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the basic numerical analysis. |
| 2 | To understand finding of zero's of algebraic equation. |
| 3 | To understand interpolation, curve fitting . |
| 4 | To understand Euler's method. |
| 5 | To understand Runge Kutta methods . |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc

Course Code: MTH- 231(Calculus of Several Variables)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr.M.D. Suryawanshi and Ms. Zarreen Ansari

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | Limits and Continuity of function of several variable. |
| 2 | Fundamental Concept of Composite function &Chain Rule. |
| 3 | Series Expansion of function. |
| 4 | Extreme point of function. |
| 5 | How to solve double and triple integral. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc.

Course Code: MTH-232(A)(Algebra)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr. A.S.Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To underestand group and their types. |
| 2 | To understand Lagrange ,Euler and Fermat theorem. |
| 3 | To understand concept of automorphism of group. |
| 4 | To understand concept of automorphism and isomorphism. |
| 5 | To understand properties of rings and their type. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc.

Course Code: MTH-232(B)(Theory of Groups)

Pattern: [60+40] CGPA

Name of the Subject teacher:Ms. Sonali Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand group structures and their properties. |
| 2 | To understand solution of polynomial equation. |
| 3 | To understand permutation group. |
| 4 | To understand concept of homomorphisms. |
| 5 | To understand basic concepts in codding theory. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc.

Course Code: MTH-241( Complex Variables)

Pattern: [60+40] CGPA

Name of the Subject teacher:Mr. M.D Suryawanshi and Ms. Zarreen Ansari.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce thre theory of complex variable. |
| 2 | To understand the concept of Analytic function. |
| 3 | Student will understand the Cauchy Riemann Equation. |
| 4 | Sudent will understand the Complex integration. |
| 5 | Student will understand the Calculus of Residue. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc.

Course Code: MTH-242(A)(Differential Equations)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr.A.S.Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the various methods of differential equation. |
| 2 | To understand the concept of lipschitz condition. |
| 3 | To understand method of variation of parameters. |
| 4 | To understand Pfaffian differential equation and their solution. |
| 5 | To understand beta and gamma function. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : S.Y.B.Sc.

Course Code: MTH-242(B)(Differential and Difference Equations)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms. Priyanka Bagul.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand lipschit condition. |
| 2 | To learn method of parameters. |
| 3 | To understand method of multipliers. |
| 4 | To understand pfaffian differential equation. |
| 5 | To understand difference equation. |

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S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-351(Topics in Metric Space)

Pattern: [60+40] CGPA

Name of the Subject teacher:Mr. M.D.Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic of metric spaces and their limits. |
| 2 | To understand continuous functions on metric space. |
| 3 | To understand connectedness and completeness. |
| 4 | To understand compactness of metric space. |
| 5 | To understand uniform continuity. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-352(Integral Calculus)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms. Bhavsar Vaishnavi

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the refinement of partition and sum of integral. |
| 2 | To understand Mean value theorem of integral calculus. |
| 3 | To understand improper integral. |
| 4 | To understand legendre polynomials. |
| 5 | To understand laplace 's definite integral; for p(x). |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-353( Modern Algebra)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr.M.D. Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand normal subgroup and isomorphism. |
| 2 | To understand permutations and cycles. |
| 3 | T o understand quotient rings . |
| 4 | To learn ideals and prime ideals. |
| 5 | To understand the polynomial rings. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-354(Lattice Theory)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms. A.S.Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the poset and chains. |
| 2 | To understand sublattice and semi lattice. |
| 3 | To understand modular and distributive lattice. |
| 4 | To learn ideal and homomorphism. |
| 5 | To learn complemented and relative complemented lattice. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-355(B)(Elementary Number Theory)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr.A.S.Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand prime numbers and diophantine equation. |
| 2 | To understand linear congruence and the Chinese remender thm. |
| 3 | To understand wilson's theorem. |
| 4 | To understand fermat's and perfect numbers. |
| 5 | To understand Fibonacci and finite continued fraction. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc

Course Code: MTH-356 Vector Calculus

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms.Rupali Ahire

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce about vector integration. |
| 2 | To inform Del , Gradient ,Curl. |
| 3 | To solve the Greens theorem. |
| 4 | To solve the line integral ,Surface integral. |
| 5 | To prove the Stokes theorem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-361( Measure and integration theory)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms.Bhavsar Vashnavi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce about inner and outer measure of a sets. |
| 2 | To understand about real valued measurable function. |
| 3 | To understand about Lebesgue integral for bounded function. |
| 4 | To know about Lebesgue Dominated Convergence theorem. |
| 5 | To know about Schwartz ,Minkowski inequality. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-362(Method of real Analysis)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms. Sonali Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce the Sequence of real numbers. |
| 2 | To understand the convergence and absolute convergence. |
| 3 | Student will understand the pointwiese convergence of series. |
| 4 | Student will understand the fourier series . |
| 5 | Student will introduce Abel's summability. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-363(Linear Algebra)

Pattern: [60+40] CGPA

Name of the Subject teacher: Mr.M.D.Suryawanshi

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand the concept of vector space. |
| 2 | To understand the basis and dimension. |
| 3 | To know about the lineat transformation. |
| 4 | To understand about eigen values and eigen vector. |
| 5 | To know about Cayley Hamilton theorem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

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Course Code: MTH-364(Ordinary & Partial Differential Equations)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms. Himangi Chaudhri

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce about solution of exact differential equation. |
| 2 | To understand the complete solution of differential equation. |
| 3 | To understand power series solutions. |
| 4 | To understand linear homogeneous difference equation. |
| 5 | To know the solution and formation of difference equation. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : T.Y.B.Sc.

Course Code: MTH-365(A):Optimization techniques

Pattern: [ 60+40] CGPA

Name of the Subject teacher: Mr.A.S.Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce about linear programming problem. |
| 2 | To introduce about formation of transportation problem. |
| 3 | To understand about assignment problem. |
| 4 | To undertand about reasons for simulation. |
| 5 | To know about investment decision. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course :T.Y.B.Sc

Course Code: MTH-366(A)(Applied Numerical Method)

Pattern: [60+40] CGPA

Name of the Subject teacher: Ms.Rupali Ahire

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To introduce about method of factorization or triangulation. |
| 2 | To understand about lagrange's interpolation formula. |
| 3 | To understand about newton's forword and backword formula. |
| 4 | To know about Romberg ,trapezoidal rule. |
| 5 | To know about picard's ,taylor', miline's method. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MTH-101(Advance Real Analysis)

Pattern: [60+40]

Name of the Subject teacher: Ms. Pornima Shisode

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Measurable sets. |
| 2 | To understand Borel sets. |
| 3 | To understand Riemann and Lebesgue integrals. |
| 4 | To understand Lebesgue differentiation theorem. |
| 5 | To understand fundamental theorem for integral calculus for lebesgue integral. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.SC-I

Course Code: MT-102(Topology)

Pattern: [60+40]

Name of the Subject teacher: Mr. M.D. Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Topological spaces. |
| 2 | To understand basic concept of closed and open set. |
| 3 | To understand connectedness and compactness. |
| 4 | To understand Urysohn Lemma and Urysohn Metrization theoem. |
| 5 | To understand Tychnoff Theorem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MTH-103(Abstract Algebra)

Pattern: [60+40]

Name of the Subject teacher: Mr. M.D.Suryawanshi and Mr. M.M.Pawar.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic concept of class equation . |
| 2 | To understand Cauchy's Theorem. |
| 3 | To understand solvable groups and sylow's theorem. |
| 4 | To find example of polynomial rings. |
| 5 | To understand Noetherian rings and Hilbert basis theorem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MT-104(Ordinary & Partial Differential Equations

Pattern: [60+40]

Name of the Subject teacher: Mr. Tushar Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic theory of linear differential equation. |
| 2 | To find example of homogeneous and non-homogeneous equation. |
| 3 | To understand Cauchy-Euler Theorem. |
| 4 | To finding example of C.F and P.I for non-homogeneous. |
| 5 | To understand lalplace transformation and canonicl forms of equation. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MT-105(Theory of Fuzzy sets)

Pattern: [60+40]

Name of the Subject teacher: Ms. Himangi Chaudhri.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic concept of fuzzy set . |
| 2 | To understand operation on fuzzy sets. |
| 3 | To understand fuzzy number and arithmetic operation. |
| 4 | To understand fuzzy ordering relation |
| 5 | To understand basic concept of fuzzy logic. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MT-201(General Measure Theory)

Pattern: [60+40]

Name of the Subject teacher: Mr.M.M.Pawar. and Ms.Zarreen Ansari and Ms. Pornima Shisode.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand measures and outer measure and extension. |
| 2 | To understand Jensen's inequality ,Holders,Minkowski inequality |
| 3 | To understand Convergence in measure. |
| 4 | To understand The Jorden Decomposition. |
| 5 | To understand Measurability in a product space |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-I

Course Code: MT -202(Complex Variables)

Pattern: [60+40]

Name of the Subject teacher: Ms. Pornima Shisode.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Power series ,Mobius Transmation. |
| 2 | To understand Taylors fundamental theorem. |
| 3 | To learn about Maximum Modulus Theorem. |
| 4 | To learn about Cauchy integral theorem. |
| 5 | To learn about Casorati –Weierstrass theorem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-I

Course Code: MT-203(Linear Algebra)

Pattern: [60+40]

Name of the Subject teacher: Ms.Sonali Patil

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand module,submodule |
| 2 | To understand Rank ,Structure theorem |
| 3 | To understand Jorden and Rational canonical form |
| 4 | To understand localization of ring |
| 5 | To understand local ring and module,Noetherian module |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course :M.Sc I

Course Code: MT-204(Mathematical Methods)

Pattern: [60+40]

Name of the Subject teacher: Ms. Zarreen Ansari.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand linear boundary value problems |
| 2 | To understand principle of superposition |
| 3 | To understand fourier seriesand half range fourier series |
| 4 | To understand boundary value problem |
| 5 | To understand Bessel's function |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : MSC- I

Course Code: MT-205(Number Theory)

Pattern: [60+40]

Name of the Subject teacher: Mr. A.S.Patil .

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Arithmatic functions |
| 2 | To understand Quadratic residues and Quadeatic Recipeocity law |
| 3 | To understand Principle of cross classification |
| 4 | To understand Diophantine equations |
| 5 | To understand Primitive Roots |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc -II

Course Code: MT-301(Topics in Functional Analysis)

Pattern: [60+40]

Name of the Subject teacher: Ms. Pornima Shisode.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Banach space and Quotient space. |
| 2 | To understand Open mapping theorem. |
| 3 | To understand the Orthogonal complements. |
| 4 | Example of fourier expansion. |
| 5 | To understand Brouwer's fixed point theorem |

Department: Mathematics

Name of Course :M.Sc- II

Course Code: MTH-302(Statistical Techiniques)

Pattern: [60+40]

Name of the Subject teacher: Mr. M.D.Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand concept of arithmetic mean, geometric mean. |
| 2 | To understand Mathematical theory of probability. |
| 3 | To understand Baye's theorem. |
| 4 | To understand Binomial,poisson and Normal distributions. |
| 5 | To understand Karl Pearson's method. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-II

Course Code: MT-303(Topics in Field Theory)

Pattern: [60+40]

Name of the Subject teacher: Mr.M.D.Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Algebraic extensions. |
| 2 | Example of Splitting fields. |
| 3 | To understand basic concept of Galois extensions. |
| 4 | To understand Fundamental theorem of Galois theory. |
| 5 | To understand concept of separable and Inseparable extension. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-II

Course Code: MT-306(Theory of Lattices)

Pattern: [60+40]

Name of the Subject teacher: Ms. Himangi Chaudhari

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic concept of poset . |
| 2 | To understand the homomorphism theorem. |
| 3 | Solve example of Ideal and dual ideal. |
| 4 | To understand basic concept Boolean lattice. |
| 5 | To understand Standard and Neutral elements. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc-II

Course Code: MT-307(Elements of Graph Theory)

Pattern: [60+40]

Name of the Subject teacher: Mr. Tushar Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand basic concept of graphs. |
| 2 | To understand definition of graph , trails, paths and Cycles. |
| 3 | To find matrix representation of graphs. |
| 4 | To understand Kruskal 's algorithm and prim's algorithm. |
| 5 | To understand Max-Flow, Min-Cut Theorem. |
| | |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-II

Course Code: MT-401(Advanced Mathematical Methods)

Pattern: [60+40]

Name of the Subject teacher: Ms. Bhavsar Vashnavi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Fredholm's equations and voltera's equation. |
| 2 | To understand complex form of fourier integral. |
| 3 | To understand Calculus of variation. |
| 4 | To understand Z-transformation. |
| 5 | To understand the simple Isopermatic Problem. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-II

Course Code: MT-402(Operations Research)

Pattern: [60+40]

Name of the Subject teacher: Mr. S.M. Patil.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand Phase of project management and Network. |
| 2 | To understand Queuing Models. |
| 3 | To understand about kendell's notation for queing model. |
| 4 | To inform about M/M/C:FCFS//Multichanel. |
| 5 | To understand about Hurwitz and Laplace criteria. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-II

Course Code: MT-403(Commutative Algebra)

Pattern: [60+40]

Name of the Subject teacher: Ms. Himangi Chaudhari.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand about Modules, Free Modules. |
| 2 | To understand about Noetherian Ring. |
| 3 | To understand about Artinian modules. |
| 4 | To understand about Integral Extention. |
| 5 | To understand about Discrete valuation rings. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-II

Course Code: MT-405(Advanced Numerical Methods)

Pattern: [60+40]

Name of the Subject teacher: Mr. Tushar Patil .

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand about System of linear equation. |
| 2 | To understand about Numerical differentiation using forward. |
| 3 | To understand Initial value problem. |
| 4 | To understand Linear BVP,Shooting method. |
| 5 | To understand about solution of elliptic equation. |

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Mathematics

Name of Course : M.Sc.-II

Course Code: MT-406(Algebraic Topology

Pattern: [60+40]

Name of the Subject teacher: Mr. M.D. Suryawanshi.

| Sr.No | Objective/Outcomes |
|---|---|
| 1 | To understand about Geometric Complexes. |
| 2 | To understand about Cycles ,Boundries,Chains. |
| 3 | To understand about Euler's theorem . |
| 4 | To understand about Homlogy group. |
| 5 | To understand about Homotopic paths . |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Basic Mechanics

**Course Code**: PHY-101

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

Miss.Priyanka U.Khonde.

| Sr.No. | Objective/ Outcomes |
|---|---|
| 1 | Learners will be able to apply the concept of use of knowledge of mechanics to real life problems. |
| 2 | Learners will be able to understand the concept of Force along the three Newton's laws of motion. |
| 3 | Learners will be able to understand the term motion as a relative term and classification of motion. |
| 4 | Learners will be able to understand the basic concept of work done along with its mathematical analysis and classification of work. |
| 5 | Learners will be able to understand the concept of centre of mass and centre of gravity of body. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Dynamics and Elasticity

**Course Code**: PHY-102

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Ujwal D.Patil

Miss.Nisha D.Varma

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to apply the concept of use of knowledge of mechanics to real life problems. |
| 2 | Learners will be able to understand the concept of gravitation along the Newton's gravitation law and Kepler's law. |
| 3 | Learners will be able to understand the term elasticity and plasticity as well as classification of modulus. |
| 4 | Learners will be able to understand the basic concept of viscosity along with its types |
| 5 | Learners will be able to understand the concept of stress and strain. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Electricity and Electrostatics

**Course Code**: PHY-201

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

Miss.Priyanka U.Khonde

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to apply the concept of use of knowledge of Electricity and magnetism to real life problems. |
| 2 | Learners will be able to understand the concept of charge along with Gauss law and its applications. |
| 3 | Learners will be able to understand the term scalar and vector product along with Gauss,Divergence and Stokes theorem. |
| 4 | Learners will be able to understand the network theorems along with its types. |
| 5 | Learners will be able to understand the concept of Mechanical power along with its Practical and SI units. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Magnetism and Electromagnetism

**Course Code**: PHY-202

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Ujjwal D.Patil

Miss.Nisha D.Varma

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to apply the concept of use of knowledge of Electricity and magnetism to real life problems. |
| 2 | Learners will be able to understand the concept of dielectric along with capacitors and its types. |
| 3 | Learners will be able to understand the concepts of magnetism along with its parameters. |
| 4 | Learners will be able to understand the Faradays laws and Lenz law used in electromagnetic induction. |
| 5 | Learners will be able to understand Maxwell equation and its application. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Waves and Oscillations

**Course Code**: PHY-231

**Pattern**: Credit-Grade Based Performance and Assessment (CGPA)

**Name of the Subject Teacher**: Mr.V.V.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of waves and oscillations to real life problems. |
| 2 | To make the learners to understand the concept of wave motion. |
| 3 | To make the learners to understand the concept of SHM along with its different applications |
| 4 | To make the learners to understand the basic concept of resonance and its types along with its mathematical analysis. |
| 5 | Learners will be able to understand the concept of sound and Doppler effect. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Electronics-I

**Course Code**: PHY-232(A)

**Pattern**: Credit-Grade Based Performance and Assessment (CGPA)

**Name of the Subject Teacher**: Mr.V.V.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Electronics. |
| 2 | To make the learners to understand the concept of P-N junction diode and Zener diode with its characteristics. |
| 3 | To make the learners to understand the concept of rectifiers and filters. |
| 4 | To make the learners to understand the basic concept of transistor amplifier and oscillator circuits |
| 5 | Learners will be able to understand the concept of numbers and digital circuit. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Instrumentation-I

**Course Code**: PHY-232(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Dr.S.B.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand concept of instrumentation . |
| 2 | Learners will be able to understand the basic concept of measurements and its types along with error. |
| 3 | Learners will be able to understand the different methods used for measuring temperature. |
| 4 | Learners will be able to understand the different methods used for measuring pressure. |
| 5 | Learners will be able to understand the basic concept of acoustics along with different microphone. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Modern Physics

**Course Code**: PHY-241

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of modern physics to real life problems. |
| 2 | Learners will be able to understand the concept of photocell and its types along with photovoltaic cell. |
| 3 | Learners will be able to understand the basic concept of LASER and its different types. |
| 4 | Learners will be able to understand the Bohr's and Sommerfield theories of hydrogen atom. |
| 5 | Learners will be able to understand the basic concept of matter waves and uncertainty principle. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Optics

**Course Code**: PHY-242

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Asawari R. Bopshetti.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of optics like incidence, reflection, refraction and transmission. |
| 2 | Learners will be able to understand the concept of interference and its types along with thin film. |
| 3 | Learners will be able to understand the basic concept of diffraction and its different types. |
| 4 | Learners will be able to understand the basic about Lenses and its application. |
| 5 | Learners will be able to understand the basic concept polarization along it types and prism. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College,Dhule

**Department:** Physics

**Name of the Course**: Mathematical Methods for physics

**Course Code**: PHY-351

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the mathematical concept to physics. |
| 2 | Learners will be able to understand the concept of gradient divergence, curl and its theorems. |
| 3 | Learners will be able to understand the basic concept of differential equation and its different types. |
| 4 | Learners will be able to understand the special function which are used in quantum mechanics and electrodynamics |
| 5 | Learners will be able to understand the special theory of relativity and relation between mass and energy. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Classical Mechanics.

**Course Code**: PHY-352

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of classical mechanics problems to real life problems. |
| 2 | Learners will be able to understand the Newton's laws of motion and basic concept about the forces and its types. |
| 3 | Learners will be able to understand the Lagrangian equation and D'Aleberts principle and relation between them. |
| 4 | Learners will be able to understand the Hamiltonian's canonical equation of motion and definition and properties of Poisson Bracket. |
| 5 | Learners will be able to understand the Concept of central force, Equation of an orbit and Kepler's laws of planetary motion. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Atomic and molecular physics

**Course Code**: PHY-353

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Pratiksha Bhavsar

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of atomic and molecular physics to atoms and molecule. |
| 2 | Learners will be able to understand the concept Quantum numbers and Pauli's exclusion Principle and L-S coupling. |
| 3 | Learners will be able to understand the basic concept of Magnetic dipole moment and Zeeman Effect. |
| 4 | Learners will be able to understand the basics about origin and nature of x-ray. |
| 5 | Learners will be able to understand the Molecular spectra and Raman spectra. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Electronics-II

**Course Code**: PHY-354(A)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of Electronics. |
| 2 | Learners will be able to understand the concept of Field Effect Transistor (FET) and Metal Oxide Field Effect Transistor (MOSFET). |
| 3 | Learners will be able to understand the basic concept of Silicon Control Rectifier (SCR) and Uni-Junction Transistor (UJT). |
| 4 | Learners will be able to understand the basics of differential amplifier and its configuration. |
| 5 | Learners will be able to understand the operational amplifier and its application. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Instrumentation-I

**Course Code**: PHY-354(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Dr.S.B.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Instrumentation. |
| 2 | Learners will be able to understand the basic concept about instruments and its types. |
| 3 | Learners will be able to understand the converters like Digital to analog converters and analog to digital. |
| 4 | Learners will be able to understand the special function which are used in quantum mechanics and electrodynamics |
| 5 | Learners will be able to understand data presentation elements like display, recorders and indicating elements. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Solid State Physic

**Course Code**: PHY-355

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Asavari R.Bopshetti.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of Solid State Physics to solids. |
| 2 | Learners will be able to understand the concept of crystal and lattices used in solid state physics |
| 3 | Learners will be able to understand the X-ray diffraction and diffraction method used for structure of solid |
| 4 | Learners will be able to understand the Lattice vibrations and Thermal Properties. |
| 5 | Learners will be able to understand the Band theory of solids used for conductor, semiconductor and insulator. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Refrigeration and Air conditioning- I

**Course Code**: PHY-356(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of Refrigeration and Air conditioning. |
| 2 | Learners will be able to understand the vapour compression and vapour absorption refrigeration system. |
| 3 | Learners will be able to understand the refrigerant used in refrigeration system. |
| 4 | Learners will be able to understand the basic components of refrigeration system |
| 5 | Learners will be able to understand the use of solar energy in solar refrigeration system. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Classical Electrodynamics

**Course Code**: PHY-361

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand basics about Classical Electrodynamics |
| 2 | Learners will be able to understand the concept of charge, Coulumbs law and Gauss Law with its application. |
| 3 | Learners will be able to understand the basic concept of dielectrics, capacitor and polarization |
| 4 | Learners will be able to understand the magntostatics and laws used in it. |
| 5 | Learners will be able to understand the Maxwell equation and Poynting Vector. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Quantum Mechanics

**Course Code**: PHY-362

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to use the concept of Quantum Mechanics. |
| 2 | Learners will be able to understand the concept of Wave function and its Physical interpretation. |
| 3 | Learners will be able to understand the basic about applications of Schrödinger steady state equation. |
| 4 | Learners will be able to understand the Quantum theory of Hydrogen atom |
| 5 | Learners will be able to understand the operators used in Quantum Mechanics. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Nuclear Physics

**Course Code**: PHY-363

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Praful Pawar

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Nuclear Physics. |
| 2 | Learners will be able to understand the concept of Nucleus and Nuclear Forces |
| 3 | Learners will be able to understand the basic concept of Radioactivity and Nuclear Models. |
| 4 | Learners will be able to understand the Nuclear Reactions and Nuclear Energy. |
| 5 | Learners will be able to understand the Nuclear Detectors and Accelerators. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Statistical Mechanics and Thermodynamics.

**Course Code**: PHY-364

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Pratiksha Bhavsar.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Statistical Mechanics and Thermodynamics |
| 2 | Learners will be able to understand the concept of Basic concepts of probability and Probability distribution |
| 3 | Learners will be able to understand the basic concept of Macroscopic and Microscopic states and Phase Space. |
| 4 | Learners will be able to understand the Statistical Thermodynamics. |
| 5 | Learners will be able to understand the Probability distribution and Partition Function. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Elements of Material Science.

**Course Code**: PHY-365

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Dr.S.B.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Elements of Material Science. |
| 2 | Learners will be able to understand the Classification of materials and Organic Materials (Polymers). |
| 3 | Learners will be able to understand the Properties of Materials like Mechanical and Thermal. |
| 4 | Learners will be able to understand the Atomic disorder in materials. |
| 5 | Learners will be able to understand Diffusion of solid material and Phase diagram. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Refrigeration and Air conditioning-II

**Course Code**: PHY-366(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Refrigeration and Air conditioning. |
| 2 | Learners will be able to understand the basic concept about air conditioning |
| 3 | Learners will be able to understand the Psychrometry and psychrometic properties. |
| 4 | Learners will be able to understand the Air Conditioning equipments. |
| 5 | Learners will be able to understand the Air Conditioning Control systems. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Mathematical methods for Physics

**Course Code**: PHY-101

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Vector space and Inner product space with its properties. |
| 2 | Learners will be able to understand the basic concept about matrix with it types and eign value and eign vector. |
| 3 | Learners will be able to understand the concept of Fourier series and its application. |
| 4 | Learners will be able to understand the Laplace and Fourier Transform. |
| 5 | Learners will be able to understand the special function like Legendre Polynomial and Bessel's Function. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Classical Mechanics

**Course Code**: PHY-102

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Komal Baviskar.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Classical Mechanics. |
| 2 | Learners will be able to understand the basic concept of Conservation of linear and angular momentum of system of particles and Scattering of Particles. |
| 3 | Learners will be able to understand the concept of Hamilton's function and Hamilton's equations. |
| 4 | Learners will be able to understand the basic concept of Principle of Least Action and Hamilton's principle. |
| 5 | Learners will be able to understand the Canonical transformations and Hamilton - Jacobi theory |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Quantum Mechanics

**Course Code**: PHY-103

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Ujjwal D.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Quantum Mechanics. |
| 2 | Learners will be able to understand the basic concept of Operator methods used in quantum mechanics. |
| 3 | Learners will be able to understand the concept of Matrix formulation of Quantum Mechanics. |
| 4 | Learners will be able to understand the basic concept of Angular Momentum and angular momentum matrix. |
| 5 | Learners will be able to understand the Approximation Methods used in Quantum Mechanics**.** |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Solid State Physics

**Course Code**: PHY-104

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.A.A.Ansari

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Solid State Physics. |
| 2 | Learners will be able to understand the basic concept of Band theory of Solids. |
| 3 | Learners will be able to understand the concept of theory of dielectrics, piezoelectricity and ferroelectrics**.** |
| 4 | Learners will be able to understand the basic concept of Classification of magnetic materials and theory of magnetism. |
| 5 | Learners will be able to understand the basic concept of superconductivity and BCS theory of superconductivity**.** |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Statistical Mechanics.

**Course Code**: PHY-201

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Ujjwal D.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Statistical Mechanics. |
| 2 | Learners will be able to understand the basic concept of Phase Space and Ensembles**.** |
| 3 | Learners will be able to understand the concept of classical and quantum statistical mechanics. |
| 4 | Learners will be able to understand the basic concept of Bose Einstein condensation. |
| 5 | Learners will be able to understand the concept of phase transition and critical phenomena. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Classical Electrodynamics.

**Course Code**: PHY-202

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.Rakesh B.Meshram.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Electrodynamics and Relativity. |
| 2 | Learners will be able to understand the basic concept of monopole, dipole and quadrupole with its potential and field. |
| 3 | Learners will be able to understand the concept of boundary conditions used in electrostatics and magneto statics. |
| 4 | Learners will be able to understand the concept of moving charge and potential and field of charge. |
| 5 | Learners will be able to understand the concept of Lorentz transformation used in electrodynamics. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Material Science.

**Course Code**: PHY-203

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Dr.S.B.Patil

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the basic concept of Material Science. |
| 2 | Learners will be able to understand the basic concept of phase diagram for different solid structure**.** |
| 3 | Learners will be able to understand the concept of phases in alloys and phase transformations. |
| 4 | Learners will be able to understand the applications and processing of metals and alloys. |
| 5 | Learners will be able to understand the concept of applications and processing of ceramics. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Electronic Instrumentation.

**Course Code**: PHY-204(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Electronic Instrumentation. |
| 2 | Learners will be able to understand the basic concept of Periodic signals and modulated signals. |
| 3 | Learners will be able to understand the concept of analog and digital meters along with cathode ray oscilloscope (CRO). |
| 4 | Learners will be able to understand the applications of bio-electric signals and electrodes. |
| 5 | Learners will be able to understand the concept of Multiplexer and Telemetry System. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Atomic and Molecular Physics

**Course Code**: PHY-301

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Mr.V.V.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Atomic and Molecular Physics. |
| 2 | Learners will be able to understand the concept of Vector atom models for two, three and more valence electrons, complex spectra and hyperfine structure. |
| 3 | Learners will be able to understand the basic concept of Classification of molecular spectra with rotational spectra. |
| 4 | Learners will be able to understand the basic about Vibrational spectra and Rotation-vibrational spectra. |
| 5 | Learners will be able to understand the concept of RAMAN spectra and NMR spectroscopy. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Material Synthesis Methods

**Course Code**: PHY-302(A)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Dr.S.B.Patil.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the methods used for method synthesis. |
| 2 | Learners will be able to understand the concept of deposition techniques used for thin films. |
| 3 | Learners will be able to understand the basic concept of Sputtering and its processes**.** |
| 4 | Learners will be able to understand the concept of Chemical Bath Deposition Technique (CBDT). |
| 5 | Learners will be able to understand the Importance of growing single crystals and their uses. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Systematic Material Analysis.

**Course Code**: PHY-303(A)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Nisha D.Varma

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the characterization techniques used for materials. |
| 2 | Learners will be able to understand the concept of Infrared Spectroscopy. |
| 3 | Learners will be able to understand the basic concept of Ultra-Violet and Visible-Spectroscopy |
| 4 | Learners will be able to understand the concept of x-ray diffraction and electron microscope. |
| 5 | Learners will be able to understand the Scanning Tunneling Microscopy (STM). |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Nuclear Physics

**Course Code**: PHY-401

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.M.S.Chaudhari.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the concept of Nuclear Physics. |
| 2 | Learners will be able to understand the General Properties of Nuclei. |
| 3 | Learners will be able to understand the different types of nuclear model. |
| 4 | Learners will be able to understand the concept of Nucleon – Nucleon Interaction**.** |
| 5 | Learners will be able to understand the basic about Interaction of charged particle and EM radiations with matter and Particle accelerators and Radiation Detectors. |

# S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: LASER and its Applications.

**Course Code**: PHY-402(B)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**: Miss.Asawari R.Bopshetti.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the about LASER and its Applications. |
| 2 | Learners will be able to understand the basic about laser like Absorption, Spontaneous and Stimulated emission. |
| 3 | Learners will be able to understand the Basic components of laser and its operation. |
| 4 | Learners will be able to understand the concept of Laser Systems and it Types. |
| 5 | Learners will be able to understand the applications of lasers for different field. |

## S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule

**Department:** Physics

**Name of the Course**: Renewable Energy Sources.

**Course Code**: PHY-403(A)

**Pattern**: Choice Based Credit System (CBCS)

**Name of the Subject Teacher**:Miss.Monali D.Borse.

| Sr.No. | Objective/Outcomes |
|---|---|
| 1 | Learners will be able to understand the about Renewable Energy Sources. |
| 2 | Learners will be able to understand the basic about Solar Energy conversion systems and their applications and photo-voltaic cell. |
| 3 | Learners will be able to understand the biomass energy conversion technologies used in daily life. |
| 4 | Learners will be able to understand the concept of Wind energy and ocean energy. |
| 5 | Learners will be able to understand the emerging trends in renewable energy like fuel cell and hydrogen energy. |

S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Department of Chemistry

Name of Course: Industrial Chemistry

Course Code: CH: 355

Pattern: 60/40

Name of the Subject Teacher: Dr. C. B. Patil

| Sr. No. | Objective |
|---|---|
| | In this course student will learn Introduction, Basic requirements of industrial chemistry, General Aspects of industrial Chemistry chemical production, raw materials, unit process and unit operations, quality control, quality assurance, process control, research and development. |
| | **After completion of the particular course the students will able to understand** |
| | In particular for Sugar Industry Introduction, Sugar Industries in Maharashtra and India, Manufacture of cane sugar and Refining of cane sugar Grades of Sugar etc.<br>In particular for Fermentation Industry Introduction, Alcohol Fermentation, Uses of alcohol, Theory making alcoholic beverages, Manufacture of Beer, Manufacture of Spirit, Alcohol from Cane Sugar Molasses, Rectified spirit, Absolute alcohol, Fusel oil, Proof spirit, Denatured alcohol etc.<br>In Fertilizers Plant Nutrients, Nutrient functions, Fertilizer types, Need for fertilizers, Essential requirements, Classification of fertilizers, Natural inorganic fertilizers, Artificial-fertilizers Importance of Bio-fertilizers is expected to understand by student.<br>Introduction and Aspects of Small Scale Industries, different small scale industries.<br>How to Remove Stains is expected to understand by students. |

**S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

Department: Department of Chemistry

Name of Course: Industrial Chemistry

Course Code: CH: 365

Pattern: 60/40

Name of the Subject Teacher: Dr. C. B. Patil

| Sr. No. | Objective |
|---|---|
| | In this course student will expected to learn Introduction of various industries and working of operational procedures. Preparation and application of products. In particular Petroleum Industry Products and their Industrial Organic Synthesis from Petroleum, Soaps and Detergents industry, Drugs and Pharmaceuticals industry, Dyes, Pigments and paints industry. |
| | **After completion of the particular course the students will able to understand** |
| | **In Petroleum Industry student will study** Occurrence of Petroleum and producer countries in the world, Exploration Methods, Composition of Petroleum, Refining or Distillation of Petroleum, Manufacture of Petrol or Gasoline and Cracking process.<br>**In Industrial Organic Synthesis from Petroleum**, students will learn It is expected to learn how to manufacture various petrochemicals industrially, their industrial production setup in particular methanol, Isopropanol Glycerol Acetone with flow sheet diagrams.<br>**In Soaps and Detergents**, Soaps, Surfactants and its Importance, Raw Materials used in Soap Manufacture, Manufacture of Soaps, Cleansing action of Soap, Classification of Soaps, Detergents, Principal group of Synthetic Detergents, Detergents builders and Additives, Comparison between Soap Detergent.<br>**Drugs and Pharmaceuticals** Introduction, Importance, Qualities of good drugs, Functional and chemotherapeutic drugs, Meaning of the terms: Prescriptions, Doses some pharmaceutical terms.<br>**In the Dyes,**<br>**Dyes:** Introduction, properties of dyes, Otto Witts theory only, Classification of dyes according to their mode of application and Chemical Constitution. Synthesis and Uses of dyes<br>**In Paints:** Introduction of paints, ingredients and classification, new technologies; properties of coatings; solvents, plasticizers, dyes and bioactive additives.<br>In **Pigments,** Introduction, classification and general physical properties |

# S.S.V.P.Sanstha's L. K.

# Dr. P. R. Ghogrey Science College, Dhule

**Department : Department of Chemistry**

**Name of Course : Spectroscopic method in structure determination (M.sc.II)**
**Course Code : CH-351**

**Pattern : 60+40**

**Name of the Subject Teacher : Prof. K. M. Borse**

| Sr. No. | Objective<br>**This course will give an**<br>• Introduction to modern spectroscopic techniques such as UV, IR, $H^1$NMR, $C^{13}$NMR Spectroscopy and Mass spectrometry<br>• Theory and application to chemical research problems including mass spectrometry, ultraviolet and visible spectroscopy, infrared spectroscopy, nuclear magnetic resonance spectroscopy<br>• Deduce organic structures using spectroscopic methods<br>• Learning data analysis, handling and interpretation of spectra |
|---|---|
| | **Outcomes:**<br>**On completion of the course, the student should be able to:** |
| **1** | Perform the most commonly used NMR experiments and to interpret, document their results |
| **2** | Identify organic compounds by analysis and interpretation of spectral data. |
| **3** | Explain common terms in NMR spectroscopy such as chemical shift, coupling constant, and anisotropy and describe how they are affected by molecular structure |
| **4** | Analyze and interpret 1D and 2D NMR spectra. |
| **5** | The ability to investigate and determine the structure of typical organic chemical compounds using suitable nuclear magnetic resonance experiments |
| **6** | Use spectroscopic equipment such as MS, IR, NMR spectrometers. |

# S.S.V.P.Sanstha's L. K.

# Dr. P. R. Ghogrey Science College, Dhule

**Department : Department of Chemistry**

**Name of Course : Inorganic Chemistry (I)(M.sc.I) Course Code :CH 130**

**Pattern : 60+40**

**Name of the Subject Teacher : Dr.R.G.Mahale**

| Sr. No. | Objective<br>**This course will give an**<br>• Introduction to modern Molecular symmetry and it's operations.<br>• Theory and application to Molecular Orbital Theory. For Diatomic ,Linear triatomic, Trigonal planar and Tetrahedral Molecules.<br>• Organometallic compound of transition metal and count election<br>• Learning procedure to determine the point group. |
|---|---|
| | **Outcomes:**<br>**On completion of the course, the student should be able to:** |
| **1** | Perform the most common examples counting the elections use 18 election rules. |
| **2** | Identify symmetry element and operation |
| **3** | Explain common terms in MOT and transition metal Carbonyls and related compounds. |
| **4** | Drow MO diagrams for triatomic, Trigonal, Tetrahedral, Trigonal and angular tried atomic molecules. |
| **5** | The ability to investigate and determine the structure of typical molecules from molecular orbital theory. |
| **6** | Use procedure to determine the point groups. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department : Chemistry

Name of Course: Organic Reaction Mechanism

Course Code : CH-350

Pattern: CGPA 60/40

Name of the Subject Teacher:

Ms. Savita Chintaman Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To develop creative regrarding various mechanistic pathway of oraganic rections |
| 2 | To know different rection intermediat use of different reagents in various name reaction |
| 3 | To inclucate reaserch aplitute in students to make them familir with tha basic ideas of the subject of reserch |
| 4 | To impact the techniques of understanding oraganic rection |
| 5 | To develop scientific approvch towords the oraganic rection in students |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department : Chemistry

Name of Course: Physical Chemistry

Course Code : CH-351

Pattern: 60-40

Name of the Subject Teacher: Dr. Jayant T. Pawar

| Sr. No. | Objective |
|---|---|
| 1 | To expose and develop interest in the field of chemistry |
| 2 | To develop ability and to acquire the knowledge of terms, facts, concepts, techniques and principles of chemistry. |
| 3 | To develop problem solving skills. |
| 4 | To know the different types of electrodes and cells. |
| 5 | To develop the skills to handle the instrument s. |

Outcomes

Student are interested to know new branches of chemistry.

They are able to write mathematical equations of different laws.

Student are able to solve veriety of numerical based on theories and principles.

They are happy and ready to measure PH and EMF of the solutions.

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department : Chemistry

Name of Course: Organic Chemistry

Course Code : CH-150

Pattern: 60:40

Name of the Subject Teacher: Dr. P. S. Shisode

| Sr. No. | Objective |
|---|---|
| 1 | In this course students are expected to study Basic Organic Chemistry as Stereochemistry in details as Sterochemical principles, enantiomeric relationship, distereomeric relationship, R andS, E and Z of various organic copmounds |
| 2 | The syllabus covers Prochiralrelationship, stereospecific and stereoselective reactions, optical activity in biphenyls, spiranes,allenes Conformational analysis of cyclic mono substituted and acyclic compounds. |
| 3 | To understand Aromatic nucleophilic and electrophilic substitution reactions |
| 4 | To study Addition and Elimination reaction |
| | Outcome |
| 1 | The students understand detailed stereochemistry along with prochiralrelationship, stereospecific and stereoselective reactions, optical activity in biphenyls, spiranes, allenes |
| 2 | They studied SNAr, SN1, Benzyne and SNR1 reactions, effect of substrate structure, leaving group, solvent and attacking nucleophilealong with Various EAS reactions |
| 3 | The student also go through Friedel crafts alkylation and acylation, nitration, halogenation, formylation, chloromethylation, sulphonation, diazo coupling |
| 4 | The students understand addition reaction in detailed as Structural effects and reactivity of Halogenations, Hydrohalogenation, Hydration, Hydroxylation, Hydroboration, Epoxidation, Carbene addition, Hydrogenation, Ozonolysis. |
| 5 | They studied various elimination reactions as E1, E2, E1CB mechanisms and their stereochemistry |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department : Chemistry

Name of Course: Organic Chemistry

Course Code : CH-250

Pattern: 60:40

Name of the Subject Teacher: Dr. P. S. Shisode

| Sr. No. | Objective |
|---|---|
| 1 | In this course students are expected to study Synthetic Reagents |
| 2 | The syllabus Rearrangement reactions |
| 3 | To understand various name reactions in organic chemistry |
| 4 | To study UV, IR, NMR spectroscopy |
| | Outcome |
| 1 | The students understand detailed oxidizing agents as CrO3, PDC, PCC(Corey's reagent), KMnO4, MnO2, Swern oxidation, SeO2, Pb(OAc)4, Pd-C, OsO4, m-CPBA, O3,NaIO4, HIO4, chloranil, DDQ, Oppenauer oxidation |
| 2 | They understood Reducing agents like LiAlH4, NaBH4, NaCNBH3,MPV reduction, Na/liquor NH3, H2/Pd-C, Willkinsons catalyst, DIBALH andWolffKishner reduction, Zn-Hg/H2O/HCL, Catalytic Reduction, Bu3SnH |
| 3 | The student came to know various name reactions as Bayer- Villiger Oxidation, Stobbe condensation, Dieckmann condensation, Reimer Tiemann, reformatsky and Grignard reaction, Diels Alder Reaction, Robinson annulation, Michael, Mannich, Stork enamine, Sharpless asymmetric epoxidation, Ene, Barton |
| 4 | The students also understood reaarengements suh as Hofmann, Curtius, Smith, Wolff, Lossen, Sommelet, Favorskii, Benzil-benzilic acid, Fries, Claisen, Cope. |
| 5 | The students understood Factors affecting UV absorption and interpretation of UV spectra, Basic ideas about IR frequencies, interpretation of IR spectra and also PMR: Fundamentals of PMR, factors affecting chemical shift, integration coupling (1st order analysis) and Introduction to CMR and mass spectrometry |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: F.Y.B.Sc.

CourseCode: CS-101

Pattern: 60-40

Name of the Subject Teacher: Prof.Amit.D.Umbre

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To aware of Computer. |
| 2 | Students know Operating System, viruses and Networking. |
| 3 | Give Students in-depth understanding of why computers are essential components in business |
| 4 | Introduce Fundamental of Computing DevicesAnd computer vocabulary. |
| 5 | Provide foundational or "computer literacy". |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: F.Y.B.Sc.

CourseCode: CS-102

Pattern: 60-40

Name of the Subject Teacher: Ms. Sayali S.Nandan

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students can develop small project by using C Programming Language. |
| 2 | Understand how to write and use functions, how the stack is used to implement function calls, and parameter passing options. |
| 3 | Use an integrated development environment. |
| 4 | The course is designed to provide complete knowledge of C language. Students will be able to develop logics which will help them to create programs, applications. |
| 5 | By learning the basic programming constructs they can easily switch over to any other language in future. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: F.Y.B.Sc.

CourseCode: CS-201

Pattern: 60-40

Name of the Subject Teacher: Prof.Amit D.Umbre

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students are able to develop own web page. |
| 2 | Applying foundational knowledge, graduates analyze and solve problems of both practical and theoretic nature. |
| 3 | To get familiar with basics of the Internet Programming. |
| 4 | Implement interactive web page(s) using HTML, CSS and JavaScript. |
| 5 | To acquire knowledge and skills for creation of web site considering both client and server side. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: F.Y.B.Sc.

CourseCode: CS-202

Pattern: 60-40

Name of the Subject Teacher: Ms. SayaliNandan

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students can develop software by using C Programming Language with advanced features. |
| 2 | Students will be able to develop logics which will help them to create programs, applications in **C.** |
| 3 | By learning the basic programming constructs they can easily switch over to any other language in future. |
| 4 | This course involves a lab component which is designed to give the student hands-on experience with the concepts. |
| 5 | Identify situations where computational methods and computers would be useful. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS-211

Pattern: 60-40

Name of the Subject Teacher: Dr.S.P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students can Develop Knowledge of Application. |
| 2 | Also improve to ability to implement algorithm. |
| 3 | To Compute Complexity of various Algorithm |
| 4 | Develop Application using data structure Algorithm |
| 5 | Implement Appropriate sorting /searching technique |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS-212

Pattern: 60-40

Name of the Subject Teacher: Mr.Ashok .A.Pawar

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students can develop greater understanding of issue involve in programming language |
| 2 | Students can develop small Projects. |
| 3 | Students implement projects requiring the implementation of the above data structures |
| 4 | The prime purpose of C++ programming was to add object orientation to the C programming language, which is in itself one of the most powerful programming language. |
| 5 | C++ programming developes the skill of students application skills. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS- SEC-I(Skill Enhancement Course-I)

Pattern: 60-40

Name of the Subject Teacher: Mr.Rahul.D.Chaaudhari

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Develop Software/Hardware Installations Skills. |
| 2 | It is helpful for students for practical knowledge. |
| 3 | Effective knowledge get from various softwares. |
| 4 | It also developes students skill power. |
| 5 | Effective skill enhancement becomes more capable and confident in their performance. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS-221

Pattern: 60-40

Name of the Subject Teacher: Dr.S.P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand and Remember Algorithm and Analysis Procedure. |
| 2 | Student can use that for research. |
| 3 | Students develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. |
| 4 | Students develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure. |
| 5 | Students implement projects requiring the implementation of the data structures. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS-222

Pattern: 60-40

Name of the Subject Teacher: Mr.Ashok .A.Pawar

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To understand the advanced features of programming language c++. |
| 2 | Tounderstand the graphics and file system. |
| 3 | Students implement projects requiring the implementation of the above data structures. |
| 4 | Students can develop small Projects. |
| 5 | To learn the syntax and semantics of the C++ programming language. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: S.Y.B.Sc.

CourseCode: CS- SEC-II(Skill Enhancement Course-II)

Pattern: 60-40

Name of the Subject Teacher: Mr.Rahul.D.Chaaudhari

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To understand the Network Security Precautions. |
| 2 | Explain the concepts of confidentiality, availability, and integrity (CIA) in context of Information . |
| 3 | Explain key networking protocols, and their hierarchical relationship in the context of a conceptual model, such as the OSI and TCP/IP framework. |
| 4 | Build multiple host and network architectures, given business requirements and constraints; student will configure operating systems. |
| 5 | Developes basic understanding of cyptography technique. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 311

Pattern: 60-40

Name of the Subject Teacher: Dr.Rupali.P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand Basic Components of Operating System. |
| 2 | To Interactions Among the Various Components. |
| 3 | To understand the fundamental concepts and techniques. |
| 4 | To understand concepts of memory management and dead locks. |
| 5 | Ability to compare various file systems and its operating system. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 312

Pattern: 60-40

Name of the Subject Teacher: Miss. Sayali.S. Nandan

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand Data Base Concepts And Structures, query languages. |
| 2 | To know Database Designing . |
| 3 | Describe the fundamental elements of relational database management systems. |
| 4 | The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS. |
| 5 | Design ER-models to represent simple database application scenarios. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 313

Pattern: 60-40

Name of the Subject Teacher: Dr.S.N.Kotkar.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To knowing software development process. |
| 2 | To Learning Different Strategies for software development. |
| 3 | To develop small software by using any programming language. |
| 4 | Give the basic knowledge in software engineering process focusing on the different process models. |
| 5 | Constuct design consists of different modules. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 314

Pattern: 60-40

Name of the Subject Teacher: MssVaishali.S.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To know the graphics designing. |
| 2 | To understand Analyzing Utilizing Designing process. |
| 3 | Analyze, synthesize, and utilize design processes and strategy from concept to delivery to creatively solve communication problems. |
| 4 | Apply graphic design principles in the ideation, development, and production of visual messages. |
| 5 | To learn basic principle of 3-dimensional computer graphics. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 315

Pattern: 60-40

Name of the Subject Teacher: Mr.J.B.kapade.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To know vb.net programming |
| 2 | Understand framework and can realize some of the major enhancement. |
| 3 | Able to develop programs using controls. |
| 4 | Understand .NET Framework and describe some of the major enhancements to the new version of Visual Basic. |
| 5 | Describe the basic structure of a Visual Basic.NET project and use main features of the integrated development environment (IDE). |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 316

Pattern: 60-40

Name of the Subject Teacher: Mr.Amit.D.Umbre

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To learn core java programming language |
| 2 | Implemented Object Oriented For Designing |
| 3 | Designing desktop And Web Application |
| 4 | Introduces object-oriented design techniques and problem solving. Emphasizes development of secure, well-designed software projects . |
| 5 | Read and make elementary modifications to Java programs that solve real-world problems. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 321

Pattern: 60-40

Name of the Subject Teacher: Dr.Rupali.P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Involve Factual Information. |
| 2 | To Develop Basic Skills For Projects And Quiz Design. |
| 3 | To understand the main components of OS And their functions. |
| 4 | To understand the process management policies and scheduling of process by CPU. |
| 5 | Evaluate requirements for process synchronization. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 322

Pattern: 60-40

Name of the Subject Teacher: Miss. Sayali.S. Nandan

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To understand Indexing And Hashing Technique. |
| 2 | Write complex SQL queries to retrieve information for business decision making from databases with many tables. |
| 3 | Design and implement schema for given problem-domain. |
| 4 | To Understanding database schemas and concepts |
| 5 | To understanding major SQL components and their functions. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 323

Pattern: 60-40

Name of the Subject Teacher: Dr.S.N.Kotkar.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students are able to develop their own web page |
| 2 | To Analyzing To Solve Various Database Task. |
| 3 | Analyze and solve common Web application tasks by writing PHP programs. |
| 4 | Create PHP programs that use various PHP library functions, and that manipulate files and directories. |
| 5 | Semantics and syntax of the PHP language, including discussion on the practical problems that PHP solves. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 324

Pattern: 60-40

Name of the Subject Teacher: Miss Vaishali.S.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To understand Social Platform Interactive Environment. |
| 2 | An ability to identify, formulate, and develop solutions to computational challenges |
| 3 | An ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals |
| 4 | An ability to apply design and development principles in the construction of software systems of varying complexity. |
| 5 | An ability to use appropriate techniques, skills, and tools necessary for computing practice. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 325

Pattern: 60-40

Name of the Subject Teacher: Mr.J.B.kapade.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To aware about computer networking . |
| 2 | To Design the Data link /Networking layer. |
| 3 | Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking. |
| 4 | Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation. |
| 5 | Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: T.Y.B.Sc.

CourseCode: CS- 326

Pattern: 60-40

Name of the Subject Teacher: Mr.Amit.D.Umbre.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To understand advanced java programming features. |
| 2 | To able to use various components in applications. |
| 3 | This course gives the student a basic understanding of the Java language and its role in the objectoriented world. |
| 4 | Java is a platform-independent object-oriented programming language used to create stand-alone applications and applets for the World Wide Web. |
| 5 | At the end of this course students will be able to create simple applications. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-101

Pattern: 60-40

Name of the Subject Teacher:Mr.Kishore G.Desale

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To learn how to design classes for code reuse. |
| 2 | To learn syntax and semantics of language. |
| 3 | Understand advanced concepts for handling runtime errors using stack unwinding, uncaught exception and automatic cleanup. |
| 4 | Understand applications of C++ like Smart Pointer , Generic Pointer , Object Validation and Reference Counting |
| 5 | Study advanced concepts of C++ by resolving ambiguities and duplicate sub object in virtual base classes. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-102

Pattern: 60-40

Name of the Subject Teacher: Dr.Swati P. Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | TCS Launches free digital learning course to build career skills. |
| 2 | Apply knowledge in developing tools for language processing or text processing. |
| 3 | Apply knowledge in designing or enhancing compilers. |
| 4 | The correctness of algorithms using inductive proofs and invariants. |
| 5 | To explain what competitive analysis is and to which situations it applies. Perform competitive analysis. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-103

Pattern: 60-40

Name of the Subject Teacher: Mr.Ashok A.Pawar

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Students will able to implement page replacement and memory management algorithms. |
| 2 | To Analyze the asymptotic performance of algorithms. |
| 3 | An ability to apply design and development principles in producing software systems of varying complexity using various project management tools. |
| 4 | A recognition of the need for and an ability to engage in life-long learning and continuing professional development. |
| 5 | An ability to perform experiments to analyze and interpret data for different applications. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-104

Pattern: 60-40

Name of the Subject Teacher: Mr.Jitendra B.Kapade

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To analyze image transformation and image enhancement. |
| 2 | To Understands various compression techniques. |
| 3 | To study the image fundamentals and mathematical transforms necessary for image processing. |
| 4 | To study the image enhancement techniques. |
| 5 | Analyze images in the frequency domain using various transforms. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-301

Pattern: 60-40

Name of the Subject Teacher: Dr. Shamkant N. Kotkar

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Ability to acquire and apply new knowledge as needed using appropriate S/W. |
| 2 | It provides project rich learning experiences to educate regarding software development. |
| 3 | Model the structure and behavior a software system the UML class diagrams and state diagrams. |
| 4 | To Design a solution to a given problem using one or more design patterns and implement the design in a programming language. |
| 5 | To Understand common lifecycle processes including waterfall (linear), incremental approaches (such as Unified process), and agile approaches. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-302

Pattern: 60-40

Name of the Subject Teacher: Dr. Rupali P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To learn efficient computational procedures to solve optimization problems. |
| 2 | Understand to Metlab to implement important optimization method. |
| 3 | To Learn efficient computational procedures to solve optimization problems. |
| 4 | Develop critical thinking and objective analysis of decision problems. |
| 5 | Be able to model engineering minima/maxima problems as optimization problems. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-303

Pattern: 60-40

Name of the Subject Teacher: Mr.Rahul D.Chaudhari

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Designing desktop And Web Application. |
| 2 | Implement Object Oriented For Designing. |
| 3 | To study the impact of Internet in facilitating a truly distributed, wide area and highly accessible computing environment. |
| 4 | To explore various web-related technologies and to gain appreciative knowledge of how these technologies synergize with one another to enable ubiquitous access of information. |
| 5 | To examine the analysis, design and implementation techniques required to develop the network, enterprise and Internet based information systems. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-304

Pattern: 60-40

Name of the Subject Teacher: Mr.Kishor G.Desale

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To develop windows presentation foundation. |
| 2 | To develop applications using tools like MS Visual Studio. |
| 3 | Design, develop and test software systems for world-wide network of computers to provide solutions to real world problems. |
| 4 | To develop programming attitude to serve as software developer in IT industry. |
| 5 | To provide advanced and in-depth knowledge of Information Technology and its applications. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-201

Pattern: 60-40

Name of the Subject Teacher: Mr.Rahul.D.Chaudhari

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand Advance Concept in Data Management. |
| 2 | To Understand Data Base Concepts And Structures, query languages. |
| 3 | To Develop programs using java collection API as well as java Standard Library. |
| 4 | Create animation & events based upon advanced java concepts. |
| 5 | To inculcate knowledge on Java Programming concepts. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-202

Pattern: 60-40

Name of the Subject Teacher: Mr.Kishor .G.Desale

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Ability To Apply Knowledge, Representation, Reasoning And Machine Learning Technique To solve Real World Problem. |
| 2 | Design and evaluate various machine learning algorithm. |
| 3 | Use machine learning methods for multivariate data analysis in various scientific fields. |
| 4 | To Acquire fundamental knowledge of learning theory. |
| 5 | To apply appropriate Machine Learning Techniques for analysis, forecasting, categorization and clustering of the data. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-203

Pattern: 60-40

Name of the Subject Teacher: Dr.Swati.P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Learn Basic Data Structure Used In Compiler Construction. |
| 2 | To learn Software Tools Used In Compiler Construction Lexical Analyser. |
| 3 | Students will get the concepts of different Parsing techniques and Construction of syntax. |
| 4 | An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession. |
| 5 | An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computational systems. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-204

Pattern: 60-40

Name of the Subject Teacher: Mr.Ashok.A.Pawar.

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | Ability To Analyze The Performance Of Algorithm. |
| 2 | Ability To Chose Algorithm Design For Solving Problems. |
| 3 | An ability to design, implement and evaluate computer-based systems, processes, components or programs to meet desired needs within realistic constraints of time and space. |
| 4 | A recognition of the need for and an ability to engage in life-long learning and continuing professional development. |
| 5 | An ability to analyze a problem and identify and define the computing requirements appropriate for its solution under given constraints. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-401

Pattern: 60-40

Name of the Subject Teacher: Mr.Jitendra B.Kapade

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand current methods for statistical approaches to machine translation. |
| 2 | Understanding semantics and pragmatics of English language for processing. |
| 3 | Writing programs in Python to carry out natural language processing. |
| 4 | Students will gain an in-depth understanding of the computational properties of natural languages and the commonly used algorithms for processing. |
| 5 | The course examines NLP models and algorithms using both the traditional symbolic and the more recent statistical approaches. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course:M.Sc.

CourseCode: CS-402

Pattern: 60-40

Name of the Subject Teacher: Ms.Vaishali S. Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To Understand basic network terminology. |
| 2 | To learn higher abstraction web services. |
| 3 | To study data link layer concepts design ,issues and protocols. |
| 4 | To classify the routing protocols and analyze how to assign the Ip address for given network. |
| 5 | Gain core knowledge of networking. |

S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule

Department: Computer Science

Name of Course: M.Sc.

CourseCode: CS-403

Pattern: 60-40

Name of the Subject Teacher: Dr.Rupali P.Patil

| Sr. No. | Objective / Outcomes |
|---|---|
| 1 | To get Knowledge Data Processing and Data Quality. |
| 2 | Students can solve real world problems. |
| 3 | Understand the functionality of the various data mining components. |
| 4 | Describing different methodologies used in data mining. |
| 5 | Develop skill in selecting data mining algorithms for solving problems. |

# Course objective & learning outcomes

## F. Y. B. Sc. Biotechnology (W.E.F. 2018-19)

| SEMESTER- I | |
|---|---|
| **BT101: Cell Biology (Theory)** | |
| **Faculty Name: Ms. Sunita P. Pawar** | |
| **Course Objective** | To introduce biotechnology and its various applications in various fields of human life and to apprise about basic concepts in cell biology. |
| **Learning outcome** | **Students are expected to:**<br>• Learn basic knowledge pertinent to cell as unit, cell organelles and its architecture.<br>• Know the structural and functional details of cell.<br>• Find answers related to the scope of biotechnology.<br>• Understand how science works.<br>• Aware about biotechnology and its application in various fields. |
| **BT102: Biochemical Tools (Theory)** | |
| **Faculty Name: Mr. Harshal M. Bhamare** | |
| **Course Objective** | To complement the students with routine biochemical tools adopted in biotechnology studies. |
| **Learning outcome** | • Demonstrate theory and practical skills in different types of microscopy and their handling techniques and staining procedures<br>• Understand the fundamental biochemical concepts and familiarize with standard solution, buffer and reactions<br>• Describe the concepts of pH and its biological significance, buffers, Henderson- Hasselbalch equation, biological buffer systems and their importance<br>• Know the terms and terminologies related to basic biochemical aspects |
| **SEMESTER- II** | |
| **BT 201: Biomolecules (Theory)** | |
| **Faculty Name: Ms. Sunita P. Pawar** | |
| **Course Objective** | To complement the students with the basic concept about biomolecules |
| **Learning outcome** | • Overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function of the above mentioned biomolecules<br>• Specify the biological significance of biomolecules in metabolism |
| **BT 202: Basic Microbiology B (Theory)** | |
| **Faculty Name: Mr. Harshal M. Bhamare** | |
| **Course Objective** | To complement the students with fundamental concepts in Microbiology |
| **Learning outcome** | • **Students are expected to:** |

| | |
|---|---|
| | • Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and familiarize the structural similarities and differences among various microbes.<br>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization<br>• Know general bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae<br>• Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively.<br>• Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement. |

# Course objective & learning outcomes

## S. Y. B. Sc. Biotechnology (W.E.F. 2018-19)

| SEMESTER-III | |
|---|---|
| **BT: 231 Cell Biology And Cell Metabolism (Theory)** | |
| **Faculty Name: Ms. Jagruti Z. Baviskar** | |
| **Course Objective** | To complement the students with the cell biology and concept of metabolism. |
| **Learning outcome** | **Students will be able to:**<br>• Understand basic cell biology and transportation system.<br>• Study basics of enzyme technology.<br>• Learn various aspect of metabolism and metabolic pathways.<br>• Understand the models of transportation. |
| **BT 232: Molecular Biology (Theory)** | |
| **Faculty Name: Vikas C. Patil** | |
| **Course Objective** | To understand the fundamentals of molecular biology & related process. |
| **Learning outcome** | • To study the basics of genetics gene, DNA and Chromosomes.<br>• Understand basic of prokaryotic DNA.<br>• Knowledge regarding DNAA damage and repair system..<br>• Understand the process of transcription and translation process. |
| **SEMESTER-IV** | |
| **BT 241: Biophysics (Theory)** | |
| **Faculty Name: Mr. Harshal M. Bhamare** | |
| **Course Objective** | To study principle applications of biophysics. |
| **Learning outcome** | • Explain the different spectrophotometric methods.<br>• To study different chromatography thechniques and its application. |

| | |
|---|---|
| | • Aware different electrophoresis techniques and its application in analysis. |
| **BT 342: Immunology and Bioprocess Technology (Theory)** | |
| **Faculty Name: Ms. Sujata N. Patil** | |
| **Course Objective** | To complement the students with basics human immunology and related response. |
| **Learning outcome** | • Know the cellular ontogeny and organ involvement in immunity<br>• Explain the principles of self-tolerance and autoimmunity<br>• Know how the immune system can fight infections and cancer, including examples of immunodeficiency diseases<br>• Understand what antigens are and how they are presented.<br>• Understand the mechanisms involved in control of immune responses. |

# Course objective & learning outcomes

## T. Y. B. Sc. Biotechnology (W.E.F. 2017-18)

| **SEMESTER- V** | |
|---|---|
| **BT-351 (Theory) : Genetics** | |
| **Course objective** | To complement the students to learn basics in genetics |
| **Learning outcome** | • To understand basics in genetics concepts<br>• To understand laws in genetics<br>• To understand concepts of genetic interactions and quantitative inheritance<br>• To understand genetic basis of linkage and crossing over<br>• To understand population genetics |
| **BT-352 (Theory) : Agricultural Biotechnology** | |
| **Course objective** | To complement the students to learn interrelation between agriculture and Biotechnology |
| **Learning outcome** | • To understand concept of $N_2$ fixation<br>• To understand the mechanism of $N_2$ fixation in microbes<br>• To understand concept of inoculum preparation of biofertilizer<br>• To understand plant pathology and control methods of plant diseases<br>• To understand concept, production and economics of SCP and mushroom production |
| **BT-353 (Theory) : Animal Biotechnology** | |
| **Course objective** | To complement students to learn about animal cell culture and applications |
| **Learning outcome** | • To understand basics in cell culture<br>• To understand the types of media in animal cell culture<br>• To understand cloning and transgenic organisms concept |

| | |
|---|---|
| | • To understand cell transformation methods and ethics in transformation |
| **BT-354 (Theory) : Industrial Biotechnology** | |
| **Course objective** | To complement students to learn about role of biotechnology in industrial forum |
| **Learning outcome** | • To understand a core account on Bioprocess technology<br>• To understand techniques used in bioprocesses<br>• To understand roles of inhibitors<br>• To understand key role of quality control in bioprocess maintenance |
| **BT-355 (Theory) : Food Biotechnology** | |
| **Course objective** | To complement students to learn about various food processes in context to industries |
| **Learning outcome** | • To understand concepts in dairy technology<br>• To understand mode of contamination by means of microbes and physiochemical way<br>• To understand food safety and fermented food<br>• To understand concept of food spoilage and preservation strategies |
| **BT-356 (Theory ) : Environmental Biotechnology** | |
| **Course objective** | To complement students to learn about various strategies for sustaining environmental problems |
| **Learning outcome** | • To understand concepts in waste water treatment<br>• To understand various methods in bioremediation<br>• To understand xenobiotics and pestiside degradation |
| **SEMESTER- II** | |
| **BT-361 (Theory) : Gene biotechnology and bioinformatics** | |
| **Course objective** | To complement students to learn basic concepts in genetic engineering and gene accession with bioinformatics |
| **Learning outcome** | • To understand role of enzymes in genetic engineering<br>• To understand concept of vectors and transformation principle<br>• To understand various techniques in gene and protein analysis<br>• To understand role of bioinformatic databases |
| **BT-362 (Theory) : Plant Biotechnology** | |
| **Course objective** | To complement students to learn plant tissue culture |
| **Learning outcome** | • To understand concepts in plant tissue culture<br>• To understand concept of embryogenesis<br>• To understand various methods in developing plant transgenics<br>• To understand concept of horticulture and floriculture |
| **BT-363 (Theory) : Immunology** | |
| **Course objective** | To complement students basics in immunology |

| | |
|---|---|
| **Learning outcome** | • To understand basic concepts in immunology<br>• To understand role of humoral and cell mediated immunity<br>• To understand techniques in immunology for clinical diagnosis<br>• To understand immunization and role in disease control |
| **BT-364 (Theory) : Advanced Bioprocess technology** | |
| **Course objective** | To complement students to understand industrial aspect of bioprocess technology |
| **Learning outcome** | • To understand concept of biotransformation<br>• To understand concept of biofuels<br>• To understand various ethical terms in IPR<br>• To understand patenting procedure |
| **BT-365 (Theory) : Pharmaceutical Biotechnology** | |
| **Course objective** | To complement students to understand concepts in pharmaceutical industrial aspect |
| **Learning outcome** | • To understand concept of metabolites and antimicrobial agents and mechanism of action<br>• To understand concept of antibiotics and its mechanism of action<br>• To understand concept of chemotherapeutic agents<br>• To understand concept of drug discovery |
| **BT-366 (Theory) : Biodiversity and Biometry** | |
| **Course objective** | To complement students to understand taxonomy, bioprospecting and biostatistics |
| **Learning outcome** | • To understand concept of taxonomy and bioinformatics<br>• To understand concept and causes of biodiversity loss<br>• To understand concepts bioindicators and biomonitoring<br>• To understand Biostatistics concepts for data analysis |

# Course objective & learning outcomes

## M. Sc.- Part I Biotechnology (W.E.F. 2018-19)

| **SEMESTER- I** | |
|---|---|
| **BT 101: Microbial Physiology and Diversity** | |
| **Course Objective** | To complement students with microbial diversity and related physiology and its interaction with environment system. |
| **Learning outcome** | • To aware students with criteria's of microbial classification.<br>• To study growth patterns and kinetics.<br>• To aware students with host microbial interaction and related application.<br>• Know how metabolism and nutrient transport mechanism take place in microbes. |

| | |
|---|---|
| **BT 102: Biochemistry** | |
| **Course Objective** | To study biomolecules and biosynthesis in living system. |
| **Learning outcome** | • To Study anabolism and catabolism of carbohydrate and lipids.<br>• Know the structure of nucleic acid at their molecular level<br>• Understand role of bioenergetics in metabolism.<br>• Understand mechanism of enzyme catalysis and inhibition. |
| **BT 103: Immunology** | |
| **Course objective** | To complement students basics in immunology |
| **Learning outcome** | • To understand basic concepts in immunology<br>• To understand role of humoral and cell mediated immunity<br>• To understand techniques in immunology for clinical diagnosis<br>• To understand immunization and role in disease control |
| **SEMESTER-II** | |
| **BT 201: Molecular Biology** | |
| **Course Objective** | To complement the student with concepts of Molecular Biology. |
| **Learning outcome** | Students will be able to:<br>• Understand basic structure of DNA<br>• Understand central dogma of molecular biology.<br>• Understand the process of replication, transcription, translation.<br>• Learn regulation of all molecular processes. |
| **BT 202: Biophysical Chemistry and Biostatistics** | |
| **Course Objective** | To study principle applications of biophysics and Biostatistics. |
| **Learning outcome** | • Explain the functioning, maintenance and safety aspects of the basic apparatus used in a Biotechnology lab.<br>• Explain the principles and applications of Bioanalytical instrumentation<br>• Utilize the knowledge for the separation of proteins/peptides by selecting appropriate separation techniques<br>• Enable the students to understand all aspects of Bioinstrumentation and tools and techniques used therein.<br>• To study basics of Biostatistics. |
| **BT 203: Bioprocess Technology** | |
| **Course Objective** | To complement students to understand industrial aspect of bioprocess technology |
| **Learning outcome** | • To understand concept of biotransformation<br>• To understand concept of biofuels<br>• To understand various ethical terms in IPR<br>• To understand patenting procedure |

# Course objective & learning outcomes

## M. Sc.- Part II Biotechnology (W.E.F. 2016-17)

| SEMESTER- III | |
|---|---|
| **BT-301 - Recombinant DNA Technology** | |
| **Faculty Name: Mr. Harshal M. Bhamare** | |
| **Course Objective** | To complement the students with various aspects of Recombinant DNA Technology |
| **Learning outcome** | • To understand enzymes and vectors used in rDNA technology.<br>• To aware various methods of gene transfer and its mechanism.<br>• To study different methods selection of recombinant.<br>• To understand sequencing and mapping methods for rDNA technology. |
| **BT-302 – Plant Biotechnology** | |
| **Faculty Name: Ms. Sujata N Patil** | |
| **Course Objective** | To complement the students with different aspects of plant tissue culture. |
| **Learning outcome** | • To understand principles of plant tissue culture laboratory designing.<br>• To aware basic concepts of micropropagation.<br>• Understand various principles of protoplast isolation and preservation techniques.<br>• Use of rDNA technology in PTC. And transgenic plants |
| **BT-303: Advanced Environmental Biotechnology** | |
| **Faculty Name: Ms. Sunita P. Pawar** | |
| **Course Objective** | To study environment critics and Biotechnological overcomes. |
| **Learning outcome** | • To aware various types of pollutions.<br>• To study bioremediation and biodegradation in environment regulation.<br>• To study various aspects of environment monitoring.<br>• To study sustainable perspective of biotechnology in environment. |
| **SEMESTER-II** | |
| **BT- 401 Food and Pharmaceutical Biotechnology** | |
| **Faculty Name: Ms. Jagruti Z. Baviskar** | |
| **Course Objective** | To complement students to learn about various food processes in context to industries |
| **Learning outcome** | • To understand concepts in dairy technology<br>• To understand mode of contamination by means of microbes and physiochemical way<br>• To understand food safety and fermented food<br>• To understand concept of food spoilage and preservation strategies |
| **BT - 402: Bioinformatics** | |

| | |
|---|---|
| **Faculty Name: Mr. Vikas C. Patil** | |
| **Course Objective** | To complement students with various aspects of biostatistics, proteomics and genomics. |
| **Learning outcome** | • To accession of sequence by using biological database.<br>• To understand phylogenetic analysis tools.<br>• The impact of bioinformatics and functional genomics on biology in the 'Post genomic era.<br>• Concept of Proteomics, application, advantages and limitations of Expressional Proteomics.<br>• Concept of Data Mining and its application in Bioinformatics. |
| **BT-403: Industrial and Business Biotechnology** | |
| **Faculty Name: Dr. Yuvraj D. Adsul** | |
| **Course Objective** | To complement students with various industrially important product w.r.t. isolation and purification and various aspects of management. |
| **Learning outcome** | • To study different organic acids and solvents using microorganisms.<br>• To study different vitamins and antibiotic w.r.t. production and purification.<br>• To understand biotransformation process and biotransformation of steroids.<br>• Understand principles of management, Marketing concepts and functions, Advertising and promotion, Principles of sales management.<br>• To Study bioethics, biosafety and different intellectual property rights |

**S.S.V.P.Sanstha's Late Karmveer P. R. Ghogrey Science College, Dhule.**

Department: **Zoology**
Name of the Course: **FYBSc** Sem ICC A-I Theory Paper – I Animal Diversity I
Course Code: ZOO 101
Pattern: CBCS (60 : 40)
Name of the Subject Teacher: **Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil /Mr.A.B.Vasave/ Miss.V.D.Patil/**

**Miss Kazi Amrin Bano**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to know taxonomy,morphology,classifiacation of animals |
| 2 | Knowledge get studnts different character of animals |
| 3 | Students get job opportunities by subject knowledge |

Department: **Zoology**
Name of the Course: **FYBSc** Sem ICC A-I Theory Paper – IIAnimal Diversity II
Course Code: ZOO 102
Pattern: CBCS (60 : 40)
Name of the Subject Teacher: **Dr.D.L.Phand//Dr.D.V.Ahirrao/Dr.I.S.Ahirrao/ Dr.S.M.Shinde**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get detail information taxonomy ,morphology, classifiacation of animals |
| 2 | Knowledge get studnts different character of animals |
| 3 | Student get information about diversification pf animals |

Department: **Zoology**

Name of the Course: **FYBSc** Sem ICC A-I Practical Animal Diversity I& II

Course Code: ZOO 103

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.D.V.Ahirrao/Dr.I.S.Ahirrao /Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil / Mr.A.B.Vasave/ Miss.V.D.Patil/ Miss Kazi Amrin Bano**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Skills, Knowledge, and job opportunities as mentioned in their |
| | Theory course |

Department: **Zoology**

Name of the Course: **FYBSc** Sem IICC A-II Theory Paper – I Comparative Anatomy ofVertebrates

Course Code: ZOO 201

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will know to come anatomy of the vertebrate |
| 2 | They compare the anatomy of vertebrate |

Department: **Zoology**

Name of the Course: **FYBSc** Sem IICC A-II Theory Paper – IIDevelopmental Biology of Vertebrates

Course Code: ZOO 202

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.D.V.Ahirrao / Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to getting information about development biology |
| 2 | They getting information about developmental process, development stages |
| 3 | Job opportunites |

Department: **Zoology**

Name of the Course: **FYBSc** Sem IICC A-II Practical

Comparative Anatomy & Developmental Biology ofVertebrates

Course Code: ZOO 203

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.D.V.Ahirrao/Dr.I.S.Ahirrao /Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil / Mr.A.B.Vasave/ Miss.V.D.Patil/ Miss Kazi Amrin Bano**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Skills , Knowledge and job opportunities as mentioned in their theory courses |

**S.S.V.P.Sanstha's Late Karmveer P. R. Ghogrey Science College, Dhule.**

Department: **Zoology**
Name of the Course: **SYBSc** Sem IIIDSC 1-C CC A-III Theory Paper – I Nonchordates II
Course Code: ZOO 231
Pattern: CBCS (60 : 40)
Name of the Subject Teacher: **Dr.M.V.Amrutsagar/Dr.P.N.Mahale/ Miss.V.D.Patil/Miss Kazi Amrin Bano**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students study the details of anatomy of Sea star and marine fishreis |
| 2 | Studnts get knowledge about marine animal like sea star and their life cycle stages |
| 3 | Knowledge get students for future job opportunities like museum an marine fishreis |

Department: **Zoology**
Name of the Course: **SYBSc** Sem IIIDSC 1-C CC A-III Theory Paper – II Medical zoology
Course Code: ZOO 232
Pattern: CBCS (60 : 40)
Name of the Subject Teacher: **Dr.I.S.Ahirrao/Dr.S.M.Shinde/ Dr.S.A.Patil/Mr.A.B.Vasave**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Studnts get the skills of various diseases,their pathogenicity |
| 2 | Student have to know about various tests and dignosis |
| 3 | Student get knowlwdge about medical zoology and apply it jobs related to this field like Pathology lab |

Department: **Zoology**

Name of the Course: **SYBSc** Sem IIIDSC 1-C CC A-III Practical Nonchordates and Medical Zoology

Course Code: ZOO 233

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand/Dr.D.V.Ahirrao/Dr.I.S.Ahirrao /Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil / Dr.S.M.Shinde/Mr.A.B.Vasave**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**

Name of the Course: **SYBSc** Sem IVDSC 1-D CC A-IV Theory Paper – I Chordates-I

Course Code: ZOO 241

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.M.V.Amrutsagar/Dr.P.N.Mahale/ Miss.V.D.Patil/Miss Kazi Amrin Bano**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students study the details of Columba live (Pigeion) |
| 2 | They get Knowledge about their anatomical structure |
| 3 | They get knowledge about Columba for future research |

Department: **Zoology**
Name of the Course: **SYBSc** Sem IVDSC 1-D CC A-IV Theory Paper – II Applied zoology( Apiculture)
Course Code: ZOO 243
Pattern: CBCS (60 : 40)
Name of the Subject Teacher: **Dr.I.S.Ahirrao/Dr.S.M.Shinde/ Dr.S.A.Patil/Mr.A.B.Vasave**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to get knowledge and skill about Apiculture |
| 2 | Students gets the knowledge about honey bee- life cycle and developement |
| 3 | Student get opportunities to artificialy rearing of honeybee to obtain their products |

Department: **Zoology**

Name of the Course: **SYBSc** Sem IVDSC 1-D CC A-IV Practical Chordate and Applied zoology

Course Code: ZOO 243

Pattern: CBCS (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand/Dr.D.V.Ahirrao/Dr.I.S.Ahirrao /Dr.M.V.Amrutsagar/ Dr.P.N.Mahale/Dr.S.A.Patil / Dr.S.M.Shinde/Mr.A.B.Vasave**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

**S.S.V.P.Sanstha's Late Karmveer P. R. Ghogrey Science College, Dhule.**

Department: **Zoology**
Name of the Course: **TYBSc** Sem V Theory Paper – I Non-chordates III
Course Code: ZOO 351
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.M.V.Amrutsagar**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to know anatomy and physiology of nonchordates |
| 2 | Student get the knowledge about diiffernt characters betnween |
| | Grasshoper and leech |

Department: **Zoology**
Name of the Course: **TYBSc** Sem V Theory Paper – II Cell and Molecular biology
Course Code: ZOO 352
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.D.L.Phand/ Mr.A.B.Vasave**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get the knowledge about Cell , cell structure and function |
| 2 | Student get the information about different cell organelles |
| 3 | They get knowledge for future job opportunities |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Theory Paper – III Mammalian Histology and Physiology I

Course Code: ZOO 353

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the skills of histology and their corresponding |
| | Physiology of different tissues of mammels |
| 2 | Students get the job opportunities in Biochemistry and reearch centre |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Theory Paper – IV Biochemistry

Course Code: ZOO 354

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the skill about biochemical process, their reaction |
| | And rheir role in life |
| 2 | Job opportunities in Biochemical and food industries |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Theory Paper – V Systematics, Evolution and Palaeontology

Course Code: ZOO 355

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the knowledge about Classification of animals, |
| | Study of Fossils and geographical distribution |
| 2 | Job opportunities in zoological parks,musium |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Theory Paper – VI B) Pest management

Course Code: ZOO 356 (B)

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get knowledge of different pest its nature |
| 2 | Student get the knowledge about different types of pest and their control in nature |
| 3 | Job opportunities in agriculture feild |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Paper – VII Practical Paper – I Practicals related to Zoo351 and Zoo 353

Course Code: ZOO 357

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.M.V.Amrutsagar/Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Paper – VIII Practical Paper – II Practicals related to Zoo352 and Zoo 355

Course Code: ZOO 357

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand/Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **TYBSc** Sem V Paper – IX Practical Paper – III Practicals related to Zoo354 and Zoo 356

Course Code: ZOO 358

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.V.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**
Name of the Course: **TYBSc** Sem VI Theory Paper – I Chordates III
Course Code: ZOO 361
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.M.V.Amrutsagar**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to know anatomy and physiology of Chordates |
| 2 | Student get the knowledge about diiffernt characters and general information about chordate animals |
| 3 | For future jo opportunities |

Department: **Zoology**
Name of the Course: **TYBSc** Sem VI Theory Paper – II General Embryology
Course Code: ZOO 362
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to getting information about development biology, embryology |
| 2 | They getting information about developmental process, development stages |
| 3 | Job opportunites |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Theory Paper – III Mammalian Histology and Physiology II

Course Code: ZOO 363

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the skills of histology and their corresponding |
| | Physiology of different tissues of mammels |
| 2 | Students get the job opportunities in Biochemistry and reearch centre |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Theory Paper – IV Research Methodology

Course Code: ZOO 364

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student wiil come to know skills and knowledge about Research |
| 2 | Knoledge get about scientific study about variuos research method |
| 3 | Job opportunities in research and survey |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Theory Paper – V Microtechnique

Course Code: ZOO 365

Pattern: CGPA (60 : 40)

Name of the Subject Teacher:**Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | To study preparation permanent - whole mount, microscopic slides and staing process |
| 2 | Knowledge about cell tissue structure |
| 3 | Job opportunities in health istitutes hospitals |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Theory Paper – VIC) Applied Zoology III(Vermiculture, Poultry&Fisheries

Course Code: ZOO 366 (C)

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Get knowledge about Biofertilizer, Vermicompost production |
| 2 | Rearing and production of birds and aquatic life animals |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Paper – VII Practical Paper – I Practicals related to Zoo361 and Zoo 363

Course Code: ZOO 367

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.S.A.Patil** /**Dr.M.V.Amrutsagar**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Paper – VIII Practical Paper –II Practicals related to Zoo362 and Zoo 365

Course Code: ZOO 368

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.I.S.Ahirrao** / **Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**

Name of the Course: **TYBSc** Sem VI Paper – IX Practical Paper –III Practicals related to Zoo 364, Zoo 366 andProject work

Course Code: ZOO 369

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand** / **Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

**S.S.V.P.Sanstha's Late Karmveer P. R. Ghogrey Science College, Dhule.**

Department: **Zoology**

Name of the Course: **MSc I SemI** Theory Paper – I Structure and Function of Invertebrates

Course Code: ZOO 101

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.S.A.Patil / Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to the get the knowledg about structure and |
| | Function of invertebrates |
| 2 | On the basis of that they get jobs in various field like apiculture , pearl culture, lac culture. |

Department: **Zoology**
Name of the Course: **MSc I Sem I** Theory Paper – II Cell and Developmental Biology
Course Code: ZOO 102
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.D.L.Phand /Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to getting information about cell, cell structure ,cell cycle cell signalin |
| 2 | Students get the knowledge about development biology and various developemental stages in organisms |
| 3 | They apply this knowledge in job opportunities and research centres |

Department: **Zoology**

Name of the Course: **MSc I Sem I** Theory Paper – III Quantitative Biology

Course Code: ZOO 103

Pattern: CGPA (60 : 40)

Name of the Subject Teacher:Dr. **M.V. Amrutsagar / Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the skills about the application and uses of statistic |
| 2 | The get knowledge of quantitative biology |
| 3 | Job opportunities instatistcal department, Gst department |

Department: **Zoology**

Name of the Course: **MSc I Sem I** Practical I

Course Code: ZOO 104

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.P.N.Mahale/Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **MSc I Sem I** Practical II

Course Code: ZOO 105

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.V.Ahirrao/Dr.I.S.Ahirrao /Dr.M.V.Amrutsagar**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **MSc I Sem II** Theory Paper – I Structure and Function of Vertebrates

Course Code: ZOO 201

Pattern: CGPA (60 : 40)

Name of the Subject Teacher:

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student will come to the get the knowledg about structure and |
| | Function of vertebrates |
| 2 | On the basis of that they get jobs in various field like in Zoo Park, Fisheries, musium. |

Department: **Zoology**

Name of the Course: **MSc I Sem II** Theory Paper – II Biochemistry and Enzymology

Course Code: ZOO 202

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.I.S.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get skills in basics of Biochemistry and biomolecule & |
| | Their significance and enzyme properties |
| 2 | Job opportunities in the biochemistry lab |

Department: **Zoology**

Name of the Course: **MSc I Sem II** Theory Paper – III Tools and Techniques for Biology

Course Code: ZOO 203

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: : **Dr.D.L.Phand** / **Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get the knowledge about tools and techniques for |
| | Perticularin microscope,analytical instrument |
| 2 | It helps students in future job opportunities |

Department: **Zoology**
Name of the Course: **MSc I Sem II** Practical I
Course Code: ZOO 204
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: **Dr.D.V.Ahirrao /Dr.M.V.Amrutsagar/ Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **MSc I Sem II** Practical II

Course Code: ZOO 205

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.I.S.Ahirrao /Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

**S.S.V.P.Sanstha's Late Karmveer P. R. Ghogrey Science College, Dhule.**

Department: **Zoology**
Name of the Course: **MSc II Sem III** Theory Paper – I (A) Entomology – I
Course Code: ZOO 301
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: Dr. M.V. Amrutsagar/ Dr.S.A.Patil

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get knowledge about insect classification , their comparative anatomy hosyology and for insect identification |
| 2 | Knowledge to the students insect taxanomy |
| 3 | Future job opportunities as entomologist ,pesticide company |

Department: **Zoology**

Name of the Course: **MSc II Sem III** Theory Paper – II Immunology and Molecular Biology

Course Code: ZOO 302

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: : **Dr.I.S.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get knowledge about skills in immunological techniques |
| 2 | They know the techniques like ELISA, (HIV) ISOLATION ESTIMATION in molecular biology |
| 3 | They apply their knowledge in future job opportunities |

Department: **Zoology**

Name of the Course: **MSc II Sem III** Theory Paper – III Genetics

Course Code: ZOO 303

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: : **Dr.D.L.Phand / Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get the knowledge about heredity and variation and |
| | Get the knowledge about gene concepts, mutation, bllod group systems |
| 2 | Job opportunities in genetic laboratory |

Department: **Zoology**
Name of the Course: **MSc II Sem III** Practical 301 + 302
Course Code: ZOO 304
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: : **Dr. M.V. Amrutsagar/ Dr.S.A.Patil/ Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **MSc II Sem III** Practical 302 + 303

Course Code: ZOO 305

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.D.V.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

Department: **Zoology**

Name of the Course: **MSc II Sem IV** Theory Paper **–** I (A) Entomology – II

Course Code: ZOO 401

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: : **Dr. M.V. Amrutsagar/ Dr.S.A.Patil**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Students get knowledge about insect classification , their comparative anatomy hosyology and for insect identification |
| 2 | Knowledge to the students type of pest and its control |
| 3 | Future job opportunities as entomologist ,pesticide company |

Department: **Zoology**

Name of the Course: **MSc II Sem IV** Theory Paper – II Systematic and Evolutionary Biology

Course Code: ZOO 402

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: : **Dr.I.S.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get the knowledge about classification of invertebrates |
| 2 | Student get the skills of knowingevolutionary digital map, model, charts,and also specimen |
| 3 | Apply knowledge in job opportunites in research lab zoological survey |

Department: **Zoology**

Name of the Course: **MSc II Sem IV** Theory Paper – III Skill in Communication and Writing research Paper

Course Code: ZOO 403

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.D.V.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| 1 | Student get the knowledge about research level work. communication skills, reading writing |
| 2 | Skills in the scientific communication and writing research paper |
| 3 | For future research projects research lab and institute |

Department: **Zoology**
Name of the Course: **MSc II Sem IV** Practical 401 + 402
Course Code: ZOO 404
Pattern: CGPA (60 : 40)
Name of the Subject Teacher: : **Dr. M.V. Amrutsagar/ Dr.S.A.Patil/ Dr.I.S.Ahirrao**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |

Department: **Zoology**

Name of the Course: **MSc II Sem IV** Practical 402 + 403 + Project

Course Code: ZOO 405

Pattern: CGPA (60 : 40)

Name of the Subject Teacher: **Dr.D.L.Phand / Dr.D.V.Ahirrao/ Dr.P.N.Mahale**

| Sr. No. | Objectives/Outcomes |
|---|---|
| | Skills , knowledge and job opportunities as mentioned in their theory courses |
| | |
| | |

*S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule*

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course:** **Introduction to Environment-I (Theory)** **Code:**ENVI-101

**Name of the Subject Teacher:** Vijay C Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand about the concept of environment, their structure & types, different components and their functions.** |
| 2. | **Understand about the evolution theories of universe, elements, origin of life and life forms.** |
| 3. | **Aware about social environment, understanding the relation between man & environment.** |
| 4. | **Aware about global environmental issues and possible solution associated for the same.** |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Natural Resources-I (Theory)** **Code:**ENVI-102

**Name of the Subject Teacher:** Varsha R Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts of natural resources, their types and importance** |
| 2. | **Understand the detailed information about biogeochemical cycles, their role & function in the environment with a-biotic and biotic components.** |
| 3. | **Aware about mining activity and their impact on environment through some case studies.** |
| 4. | **Understand the concepts of lithosphere, soil, soil formation, soil profile, ecosystems.** |
| 5 | **Understand the role and function of O2& CO2 with complete mechanism through oxygen cycle, carbon cycle, photosynthesis, GHG and ozone layer depletion.** |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course:** **Introduction to Environment-II (Theory)** **Code:**ENVI-201

**Name of the Subject Teacher:** Vijay C Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts Earth Process, classification and formation of rocks, their movements beneath the earth with tectonic plates and their effects on lithosphere.** |
| 2. | **Understand the concepts of environmental pollution, their sources and effects on biotic community.** |
| 3. | **Aware about environmental issues and their monitoring for minimizing the environmental pollution** |
| 4. | **Understand the concept of environmental education, its need and importance.** |
| 5 | **Aware about objectives and principles of environmental education.** |

S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Natural Resources-II (Theory)** **Code:**ENVI-202

**Name of the Subject Teacher:** Varsha R Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts of Water, Land forest and Energy resources.** |
| 2. | **Aware about over utilization of surface & ground water, benefit and problem associated with water availability, conflicts over water.** |
| 3. | **Understand about the use and over exploitation of forest, causes and effects of forest, timber extraction and mining.** |
| 4. | **Aware about importance of natural resource through some case studies like "Chipko Movements" and "SardarSarovarPaoject".** |
| 5 | **Understand the concept of equitable use of natural resources for sustainable lifestyle.** |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Ecology and Environment Code:**ENVI-301

**Name of the Subject Teacher:** Sachin M Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Understand about the concept of ecology, their structure & types, different components and their functions. |
| 2. | Understand about the a-biotic, biotic factors & their relation to each other. |
| 3. | Aware about ecosystem, function & components of ecosystem and their stability. |
| 4. | Aware about human population and population ecology. |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science

**Pattern:** 60:40

**Name of Course:** **BASICS IN ENVIRONMENTAL MICROBIOLOGY**

**Code:**ENVI-302

**Name of the Subject Teacher:** Varsha R Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts of environmental microbiology, their types and importance** |
| 2. | **Understand the detailed information about microscopy and their application** |
| 3. | **Understand the Physical, Chemical and Biological Methods of isolating pure culture** |
| 4. | **Acquired the skill of staining techniques for isolation and identification of microorganism** |

## S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course:** **SOCIAL ENVIRONMENT AND THEIR CONSERVATION (Theory)** **Code:**ENVI-401

**Name of the Subject Teacher:** Sachin M Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts of social environment & their importance.** |
| 2. | **Aware about environmental impact assessment process & its importance.** |
| 3. | **Understand about the forest resource and its conservation for sustainable development.** |
| 4 | **Understand the concept of environmental lawas.** |
| 5. | **Aware about importance wild life conservation and its importance.** |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course :APPLIED AND INDUSTRIAL MICROBIOLOGY (Theory)**
**Code:**ENVI-402

**Name of the Subject Teacher:** Varsha Rahul Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **Understand the concepts of air and water microbiology** |
| 2. | **Aware about food microbiology associated with food contamination, food infection and food poisoning** |
| 3. | **Understand about the sewage waste water microbiology** |
| 4 | **Aware about importance medical microbiology.** |

**S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule**

**Department: Environmental Science** **Pattern:** 60:40

**Name of Course: Environmental Pollution -I Code:**ENVI-311

**Name of the Subject Teacher:** Sachin M Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Understand about the concept of various environmental pollution . |
| 2. | Understand about sources of environmental pollution |
| 3. | Aware about controls of environmental pollution |
| 4. | To Understand effects of environmental pollution |
| 5 | To Understand sewage treatment plant |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Biodiversity and its conservation Code:**ENVI-312

**Name of the Subject Teacher:** Vijay C Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To know knowledge of ecosystem |
| 2. | To know knowledge of Biodiversity |
| 3. | To understand conservation of Biodiversity |
| 4. | To aware about endangered and Endemic Species |
| 5 | To aware about various Environmental Movements |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Basic Concept in Environmental Toxicology**

**Code:**ENVI-313

**Name of the Subject Teacher:** Mrs. Varsha R. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To Understand basic principles of Toxicology |
| 2. | To Know knowledge of bioaccumulation and biomagnifications |
| 3. | To understand Various Toxicity test |
| 4. | To aware about Various Environmental Toxicant |
| 5 | To aware about Knowledge of carcinogenic substance |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Remote Sensign and GIS I Code:**ENVI-314

**Name of the Subject Teacher:** Vijay C Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand the Satellite |
| 2. | To know knowledge of Remote Sensing and GIS |
| 3. | To understand Electromagnetic Spectrum and Its Process |
| 4. | To aware the Satellite Image Reading |
| 5 | To knowledge of GIS softwares |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Instrumental Techniques in Environmental Analysis**
**Code:** ENVI-315

**Name of the Subject Teacher:** Mrs. Varsha R Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand Instrumental Techniques |
| 2. | To understand Elementary electronics |
| 3. | To aware about EMR and Its integrations |
| 4. | To aware about sampling techniques |
| 5 | To aware about sampling statistics |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Environmental Science **Pattern:** 60:40

**Name of Course: Environmental Biotechnology I Code:**ENVI-316

**Name of the Subject Teacher:** Vijay C Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand Environmental Biotechnology |
| 2. | To understand biomass as Energy resource |
| 3. | To understand biomass Energy Plants |
| 4. | To aware bioremediation processes |
| 5 | To aware about waste Energy Resources |

Department :Botany

Name of Subject Teacher: Dr. Archana M. Chaudhari

Pattern: CBCS

Year:2019-20

| Sr.No. | Class | Course Code | Name of Course | Objective/Outcome |
|---|---|---|---|---|
| 1. | S.Y.B.Sc. | Bot-331 Theory | Bryophytes and Pteridophytes | To learn about<br>i)Diversity,<br>ii)Distribution, classification,<br>iii) Morphology,<br>iv)Anatomy , Reproduction<br>v) Economic importance of Bryophyte and Pteridophytes |
| 2. | S.Y.B.Sc. | Bot-333 Bot-433 | Practical based on Bot-331&Bot-332, Bot 431,bot-432 | To achieve skill of<br>i)section taking,<br>ii) to identify the plants and<br>iii) to perform physiological experiments. |
| 3. | T.Y.B.Sc. | Bot-354 Theory | Advanced Plant Physiology | To learn physiological processes like<br>i)Nitrogen metabolism, ii)Nutrition in plants, iii)Physiology of growth and development in plants |
| 4. | T.Y.B.Sc. | Bot-361 Theory | Gymnosperms and Paleobotany | To learn about<br>i)Diversity,distribution,classification<br>ii)Morphology,anatomy and Reproduction<br>iii)Economic importance of Gymnosperms<br>iv)To know about types of fossils<br>v)Fossilisation,major plant Fossils in India |
| 5. | T.Y.B.Sc. | Bot-367 | Practical-I | To achieve skill of<br>i)section taking,<br>ii) to identify the plants and their life cycle |
| 6. | M.Sc. II | Bot-331 Theory | Algae special paper-I | To learn about<br>i)Diversity,<br>ii)Distribution, classification,<br>iii) Morphology,life cycle pattern<br>iv)Anatomy ,Reproduction<br>v) Economic importance of Algae |

| | | | | |
|---|---|---|---|---|
| 7. | M.Sc.II | Bot-301 Theory | Gymnosperms and Paleobotany | To know about<br>i)Geological time scale ,application of paleobotany in oil and coal exploration<br>ii)Major fossil plant groups of different Era,Climate,<br>iii) Structural specialization,evolution in plants<br>iv)Fossil study techniques |
| 8. | M.Sc.II | Bot-304 | Practical based on Bot-301&Bot-302 | To achieve skill of<br>i)section taking,<br>ii) to identify the plant fossils,types of fossils |
| 9. | M.Sc.II | Bot-305 | Practical based on Bot-331 | To achieve skill of<br>i)Algae identification,<br>ii)Field observation,collection<br>iii)Sectioning and mounting |
| 10. | M.Sc.II | Bot-421 | Algae special paper-II | To know<br>i)Algal cell biology,<br>iii)Algal genetics,<br>iii)Algal Physiology<br>iv)Algal biochemistry<br>v)Algal utilization |
| 11. | M.Sc.II | Bot-401 Theory | Developmental Botany | To learn<br>i)Meristems and growth of plant body<br>ii)Organization and differentiation of plant body<br>iii)Wood anatomy, Healing,<br>iv)Embryology of flowering plants |

**M. Sc. Botany**

**Subject objectives and outcomes**

Bot. 102: Biostatics

Objectives:

1) To study the role of statistics in biological field.
2) To understand Central tendencies, measure of dispersion.
3) To study how to apply the test of significance.
4) To study the correlation and regression analysis

Outcomes:

1) Students understood the role of statistic in the biological research.
2) Students understood central tendencies and measure of dispersion.
3) Students learned about the application of test of significance.
4) Students learned correlation and regression analysis.

Bot. 103 Molecular Biology

Objectives:

1) To study molecular biology in relation to genetic material, modifications, replication and repair.
2) To Study transcription , translation, modifications and proteins'
3) To study the gene regulation in prokaryotes and eukaryotes.

Outcomes:

1) Students understood the scope and importance of Molecular biology.
2) Students know the genetic material, replication and repair of genetic material.
3) Understood modifications and changes in genetic material
4) Students know the protein synthesis, gene regulation in prokaryotes and eukaryotes.

Bot. 202 Diversity of Higher Cryptogams

Objectives:

1) To aware the students about status of higher cryptogams as a group in plant kingdom
2) To study the habit and habitat of higher cryptogams in field
3) To study the distinguishing features, interrelationship, phylogeny and evolutionary tendencies of selected orders with their affinities.
4) To study the economic importance of higher cryptogams.

Outcomes:

1) Students aware about the unique position of higher cryptogams in plant kingdom.
2) Students studied the habit and habitat of higher cryptogams
3) Understood the characteristic features, phylogeny and evolution in plants.
4) Students aware about the ecological and economic importance of higher cryptogames.

Bot. 203 Plant Physiology

Objectives:

1) To understand plant structures in the context of Physiological functions of plant.
2) To study the growth and development of plants and its regulation.
3) To understand the physiological details of Photosynthesis and respiration.
4) To understand lipid metabolism of plants.

Outcomes:

1) Students acquire basic knowledge about growth and development in plants
2) Students understood metabolic activities of the plants
3) Students understood how the plants are organic laboratories with help of photosynthesis and respiration.
4) Understood the adaptations by plants with the help of lipid metabolism.

Bot. 302 Plant Biotechnology

Objectives:

1) To study the fundamentals of totipotency, Plant tissue culture techniques.
2) To study the advantages of in vitro culture.
3) To understand the application of plant tissue culture in various field.

Outcomes:

1) Students understood totipotency of cell and importance of plant cell in regeneration as a new individual.
2) Students know the advantages, importance of in vitro culture in various fields.
3) Students aware about the plant tissue culture technique in the field of agriculture.

Bot. 332 Mycology and Plant Pathology Special Paper-I

Objectives:

1) To revel historical development in mycology.
2) To make aware principles, rules and regulations of ICBN.
3) To Study ultra structure of Fungal cell.
4) To Study different classifications of Fungi.

5) To study morphological features of various groups of fungi, phylogeny and interrelationship.
6) To study the economic importance of fungi

Outcomes:

1) Students know the historical background of mycology in India and abroad.
2) Students understood the principles of ICBN.
3) Students understood the various classifications of fungi.
4) Students understood the various taxonomic groups of fungi.
5) Students know the phylogeny, interrelationship of fungi.
6) Students aware the positive and negative importance of fungi.

Bot. 422 Mycology and plant pathology special paper-II

Objectives:

1) To study the fungal toxicity.
2) To study the application of mycology in industry.

Outcomes:

1) Students aware about the toxins by various fungi
2) Students know and understood the application of mycology in fermentation industry, in medicinal fiends, mushroom technology.

Bot. 432 Mycology and plant pathology special paper III

Objectives:

1) To know the development of plant pathology in India.
2) To provide through knowledge about medical mycology, seed pathology.
3) To make students about market pathology and forest pathology.
4) To create foundation for control fungal disease.

Outcomes:

1) Students understood the development of plant pathology in India.
2) Students know the fungal disease of human beings, diseases of seeds of cereals and other economic importance crops.
3) Students know the diseases of fruits and vegetable through market pathology.
4) Students aware about the forest diseases
5) Students understood about to control the diseases caused by fungi.

Impart an insight into the various plant water relations

Take students to higher levels of learning about the mineral nutrition in plants

Understand the mechanism of various metabolic processes in plants

Equip students with skills and techniques related to plant physiology so that they can design their own experiments

S.S.V.P. Sanstha's, L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Chemistry

Name of Course: CH-352 Inorganic Chemistry

Course Code: 351302

Pattern: CGPA

Name of the Subject Teacher: Mr. Anil S. Patil

| **Sr. No.** | **Objective/Outcomes** |
|---|---|
| 01 | To known the formation of coordinate's compounds. |
| 02 | To study colour variation of coordinate's compounds. |
| 03 | To examine the structure, geometry and shape of coordinate's compounds. |
| 04 | To study importance and application of coordinate's compounds. |
| 05 | |

S.S.V.P. Sanstha's, L.K.Dr.P.R.Ghogrey Science College, Dhule

Department: Chemistry

Name of Course: CH-362 Inorganic Chemistry

Course Code: 361302

Pattern: CGPA

Name of the Subject Teacher: Mr. Anil S. Patil

| **Sr. No.** | **Objective/Outcomes** |
|---|---|
| 01 | To study Uses and application of Copper, Silver, Gold metal. |
| 02 | To study Uses and application of Titanium, Chromium, Uranium and thorium metal. |
| 03 | How to extract metal from ores. |
| 04 | To Known the process of corrosion and passivity. |
| 05 | To study nature of substances, type of solution and behavior of chemical compounds. |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Metabolism **Course Code:** BC-354

**Name of the Subject Teacher:** Praneshwari S. Yelamr

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | **To study carbohydrate,protein,lipid,Nucleotide Metabolism** |
| 2. | **Understand the concept of metabolic pathways.** |
| 3. | **Biosynthesis of purine ribonucleotides and pyrimidine ribonucleotides biosynthesis** |
| 4. | **Learn about catabolic and anabolic reactions.** |
| 5 | Activation of fatty acids. |

**Name of Course:** Biophysical chemistry **Course Code:** BC-355

**Name of the Subject Teacher:** Praneshwari S.Yelmar

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To complement the students with the basic understanding on the various properties of water in relation to life process. |
| 2. | Discuss concept of buffers and biological buffer system. |
| 3. | To study in detail about diffusion,Osmosis and Colloidal phenomena. |
| 4. | Understand viscosity,surface tension and Adsorption. |
| 5. | To study energy rich compounds , and study in detail thermodynamics. |

**S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule**

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Food biochemistry **Course Code:** BC-301

**Name of the Subject Teacher:** Praneshwari S. Yelmar

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Classify food based on functions. |
| 2. | Calculate energy value of food and it's measurement. |
| 3. | Discuss various methods of food preservation. |
| 4. | Understand the concept of food allergy and food additives. |
| 5 | Understand the significance of therapeutic diet. |

**Name of Course:** Environmental biochemistry **Course Code:** BC-401

**Name of the Subject Teacher:** Praneshwari S. Yelmar

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Understand the concept of pollution and pollutants. |
| 2. | Learn about greenhouse effect and global warming and measure to control greenhouse effect. |
| 3. | Understand the concept of Bioenergy |
| 4. | Explain Biodegradation and Bioremediation. |
| 5 | Discuss concept and types of toxins. |

## S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Analytical Biochemistry **Course Code:** BC-365

**Name of the Subject Teacher:** Praneshwari S.Yelmar

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To complement the students with the basic understanding on the instrumental analytical techniques. |
| 2. | Understand concept of electromagnetic radiations,electromagnetic spectrum. |
| 3. | To study applications of chromatography,electrophoresis techniques. |
| 4. | To study the instrumentation of U.V.Visible and Infra –red spectroscopy. |
| 5 | Discuss about radioactivity |

**Name of Course:** biostatistics & bioinformatics **Course Code:** BC-366

**Name of the Subject Teacher:** Praneshwari S.Yelmar

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To complement the students with the basic knowledge about biostatistics and bioinformatics |
| 2. | Learn about diagrammatic representation of data . |
| 3. | To study significance and limitatioms of graphic representation. |
| 4. | Calculate arithmetic mean.mode,median. |
| 5 | Introduction to FASTA and BLAST. |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Plant biochemistry **Course Code:** BC-352

**Name of the Subject Teacher:** Priya S.Deshmukh

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To study basic concepts of photosynthesis. |
| 2. | To understand the Respiration and Photorespiration . |
| 3. | Describe indetail of Electron transport chain. |
| 4. | Explain the mechanism and types of phytoharmones. |
| 5 | Introduction and biosynthesis pathway of secondary metabolites. |

**Name of Course:** Clinical Biochemistry-1 **Course Code:** BC-353

**Name of the Subject Teacher:** Priya S.Deshmukh

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Learn about disorders related to carbohydrate metabolism. |
| 2. | Explain the structure and function of Hemoglobinopathies. |
| 3. | To understand the disorders related to protein metabolism. |
| 4. | Describe and identify the lipid metabolism. |
| 5 | To understand clinical biochemistry related test. |

**S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule**

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Plant and Agro Biotechnology **Course Code:** BC-362

**Name of the Subject Teacher:** Priya S.Deshmukh

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Introduction between the plant tissue culture. |
| 2. | Application of plant tissue culture. |
| 3. | Explain the types of culture and micropropagation. |
| 4. | To understand the genetic engineering of plant. |
| 5 | Describe the Biofertilizers and Biological nitrogen fixation. |

**Name of Course:** Clinical Biochemistry- II **Course Code:** BC-363

**Name of the Subject Teacher:** Priya S. Deshmukh

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To discuss the enzymes and isoenzyme of clinical biochemistry. |
| 2. | Describe and explain the inborn Errors of metabolism. |
| 3. | Explain the cells and organs of immune system. |
| 4. | To understand the antigen and antibody. |
| 5 | Determinants of antigenic immunoglobulins. |

**S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule**

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Genetics **Course Code:** BC-351

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand basic concept of genetics. |
| 2. | To discuss morphological characteristic and types of chromosomes. |
| 3. | To understand mechanism of gene regulation. |
| 4. | To understand mechanism of translation. |
| 5 | To understand mechanism of mutation. |

**Name of Course:** Genetic engineering **Course Code:** BC-361

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To explain basic concept of genetic engineering. |
| 2. | To learn mechanism of cDNA libraries |
| 3. | To learn methods of gene transfer. |
| 4. | To discuss mechanism of PCR. |
| 5 | To understand mechanism of DNA sequencing techniques. |

## S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Biotechnology **Course Code:** BC-356

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand basic concept of fermentation process. |
| 2. | To discuss characteristic and types of bioreactor. |
| 3. | To understand mechanism of primary cell culture. |
| 4. | To understand mechanism of preservation. |
| 5 | To understand mechanism of inoculums developments. |

**Name of Course:** Enzymology **Course Code:** BC-364

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To explain basic concept of enzyme substrate reaction. |
| 2. | To learn mechanism of km Vmax . |
| 3. | To discuss mechanism of enzyme kinetics. |
| 4. | To learn methods of enzyme immobilzation. |
| 5 | To learn classification of enzyme. |

# S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Chemistry of Biomolecules **Course Code:** BC-101

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To learn the elements present in Biomolecules |
| 2. | Differentiate between monomers and polymers. |
| 3. | Explain the role of water in synthesis and breakdown of polymers. |
| 4. | Compare and contrast saturated, monounsaturated and polyunsaturated fatty acids. |
| 5 | Compare and contrast the structure of oligo and polysaccharide |

**Name of Course:** Basic Biochemistry **Course Code:** BC-201

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | Recall DNA structure and function. |
| 2. | Discuss structure types and functions of RNA |
| 3. | Discribe classification and properties of enzyme. |
| 4. | To understand industrial applications of enzyme. |
| 5 | Differentiate water soluble vitamins from fat soluble vitamins and to understand importance of vitamins. |

## S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Human Physiology- I **Course Code:** BC-302

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand histology and anatomy of various organs of digestive system. |
| 2. | To discuss digestion and absorption of carbohydrates, protein and lipids. |
| 3. | To understand mechanism of respiratory process. |
| 4. | To understand mechanism of blood coagulation. |
| 5 | To understand mechanism of urine formation. |

**Name of Course:** Human Physiology- II **Course Code:** BC-402

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To explain structure functions and types of neurons. |
| 2. | To learn mechanism of hormone action. |
| 3. | To learn molecular events during fertilization. |
| 4. | To discuss mechanism of synaptic transmission. |
| 5 | To understand mechanism of olfaction. |

## S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Genetics **Course Code:** BC-351

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand basic concept of genetics. |
| 2. | To discuss morphological characteristic and types of chromosomes. |
| 3. | To understand mechanism of gene regulation. |
| 4. | To understand mechanism of translation. |
| 5 | To understand mechanism of mutation. |

**Name of Course:** Genetic engineering **Course Code:** BC-361

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To explain basic concept of genetic engineering. |
| 2. | To learn mechanism of cDNA libraries |
| 3. | To learn methods of gene transfer. |
| 4. | To discuss mechanism of PCR. |
| 5 | To understand mechanism of DNA sequencing techniques. |

**S.S.V.P. Santha's L. K. Dr. P.R. Ghogrey Science College, Dhule**

**Department:** Biochemistry **Pattern:** 60:40

**Name of Course:** Biotechnology **Course Code:** BC-356

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To understand basic concept of fermentation process. |
| 2. | To discuss characteristic and types of bioreactor. |
| 3. | To understand mechanism of primary cell culture. |
| 4. | To understand mechanism of preservation. |
| 5 | To understand mechanism of inoculums developments. |

**Name of Course:** Enzymology **Course Code:** BC-364

**Name of the Subject Teacher:** Ashvini K. Patil

| Sr. No. | Objective/Outcomes |
|---|---|
| 1. | To explain basic concept of enzyme substrate reaction. |
| 2. | To learn mechanism of km Vmax . |
| 3. | To discuss mechanism of enzyme kinetics. |
| 4. | To learn methods of enzyme immobilzation. |
| 5 | To learn classification of enzyme. |

**S.S.V.P.Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule**

**Department:** Biochemistry

**Name of Course:** Cell Biology **Course Code:** BC-102 **Pattern:** 60:40

**Name of the Subject Teacher**: Dr. Yuvraj Adsul

| Sr. No. | Objective / Outcomes |
|---|---|
| **1** | To complement the students with the basic understanding on the general aspects of animals and plants cell biology. |
| **2** | Differentiate prokaryotic from eukaryotic cells and plant cells from animal's cells. |
| **3** | Discern structure and fuctions of cell organells. |
| **4** | To understand mitosis and meiosis processes. |
| **5** | Explain type of tissues and types of cell junctions. |

**Name of Course: Course Code:** BC-202 **Pattern:** 60:40

**Name of the Subject Teacher**: Dr. Yuvraj Adsul

| Sr. No. | Objective / Outcomes |
|---|---|
| **1** | To complement the students with the various concepts about microorganisms. |
| **2** | Explain types, characteristics and significance of microorganisms. |
| **3** | Describe the structure and functions of major components of microbial cells. |
| **4** | Understand microbial growth, its measurements and bacterial growth curves. Classify microorganisms based on nutrition. |
| **5** | Apply isolation techniques to screen bacteria on solid media.Acquainted with various methods of sterilization and disinfection. |

# F. Y. B.Sc. (Electronics)

Semester I

### ELE-101: Network Analysis and Semiconductor Diodes

**Course objectives:**

1. To impart knowledge of basic concepts in Electronics.
2. To provide the knowledge and methodology necessary for building electronics circuits.
3. To provide exposure of linear and digital electronics circuits.
4. To have practical exposure of electronic circuits.
5. To predict the behaviour and characteristics of electronics devices and circuits using simulation tools.

**Course outcome:**

Learner will be able to ….

1. Apply knowledge to develop circuits using electronic devices.
2. Apply the concept and knowledge of electronics devices to real life problems.
3. Simulate complex circuits and understand the behaviour of the systems.
4. Understand and analyse, linear and digital electronic circuits.
5. Review, prepare and present technological developments.

## ELE-102: Digital Integrated Circuits

**Course objectives:**

1. To impart knowledge of basic concepts in Electronics.
2. To provide the knowledge and methodology necessary for building electronics circuits.
3. To provide exposure of linear and digital electronics circuits.
4. To have practical exposure of electronic circuits.
5. To predict the behaviour and characteristics of electronics devices and circuits using simulation tools.

**Course outcome:**

Learner will be able to ….

1. Apply knowledge to develop circuits using electronic devices.
2. Apply the concept and knowledge of electronics devices to real life problems.
3. Simulate complex circuits and understand the behaviour of the systems.

4. Understand and analyse, linear and digital electronic circuits.

5. Review, prepare and present technological developments.

# Semester II

## ELE-201: Analog Electronics

### Course objectives:

1. To impart knowledge of electronics devices and integrated circuits.

2. To provide the knowledge and methodology necessary for using integrated circuit chips.

3. To have practical exposure of handling Electronics devices and IC chips.

### Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of integrated circuit chips to develop new systems.

2. Apply practical knowledge to solve real life problems of the society.

3. Understand of the course and create scientific temperament and give exposure to the students for independent use of integrated circuit chips for innovative applications.

4. Model complex circuits and simulate them.

5. Handle simulation software to analyse electronics circuits.

## ELE-202: Linear Integrated Circuits

### Course objectives:

1. To impart knowledge of electronics devices and integrated circuits.

2. To provide the knowledge and methodology necessary for using integrated circuit chips.

3. To have practical exposure of handling Electronics devices and IC chips.

### Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of integrated circuit chips to develop new systems.

2. Apply practical knowledge to solve real life problems of the society.

3. Understand of the course and create scientific temperament and give exposure to the students for independent use of integrated circuit chips for innovative applications.

4. Model complex circuits and simulate them.

5. Handle simulation software to analyse electronics circuits.

# S. Y. B.Sc. (Electronics)

## Semester III

### ELE-301: Analog Communication

**Course objectives:**

1. To impart knowledge of analog communication.
2. To provide the knowledge and methodology necessary for building modulation circuits.
3. To have practical exposure of microprocessor and their applications.
4. To analyse various modulation techniques and explore their potential in consumer electronics

**Course outcome:**

Learner will be able to ….

1. Apply knowledge to develop circuits of analog modulation and demodulation.
2. Apply the concept and knowledge of microprocessors to real life problems.
3. Analyse modulation circuits and understand the behaviour of the systems.
4. Review, prepare and present technological developments.

### ELE-302: Microprocessors and Applications

**Course objectives:**

2. To provide the knowledge and methodology necessary for building circuits.
3. To provide exposure of 8085 microprocessor.
4. To have practical exposure of microprocessor and their applications.

**Course outcome:**

Learner will be able to ….

1. Apply the concept and knowledge of microprocessors to real life problems.
2. Analyse modulation circuits and understand the behaviour of the systems.
3. Understand and analyse 8085 microprocessor and its programming.
4. Review, prepare and present technological developments.

### ELE-304: Electrical Circuits and Network Skills

**Course objectives:**

1. To impart knowledge of circuit designing.
2. To provide the knowledge and methodology necessary for building circuits.
3 To analyze various circuit designing techniques and explore their potential in consumer electronics

**Course outcome:**
Learner will be able to ….
1. Apply knowledge to develop circuits.
2. Apply the concept and knowledge of electrical circuits to real life problems.
3. Analyze circuits and understand the behavior of the systems.
5. Review, prepare and present technological developments.

# Semester IV

## ELE-401: Digital Communication

### Course objectives:
1. To impart knowledge of pulse modulation, mobile and satellite.
2. To have practical exposure of handling microcontroller and interfacing applications.

### Course outcome:
Learner will be able to ….
1. Apply the concept and knowledge of digital communication to develop new systems.
2. Apply practical knowledge of communication to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of digital communication for innovative applications.
4. Gain knowledge of digital communication.
5. Handle hardware and software to shoot problems of the society.

## ELE-402: Microcontrollers and Applications

### Course objectives:
1. To provide the knowledge and methodology necessary for using microcontroller chips
2. To have practical exposure of handling microcontroller and interfacing applications.

### Course outcome:
Learner will be able to ….
1. Apply the concept and knowledge microcontroller to develop new systems.
2. Apply practical knowledge of microcontrollers to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of microcontroller for innovative applications.

4. Gain knowledge of microcontroller programming.
5. Handle hardware and software to shoot problems of the society

## ELE-404: Computational Techniques in Electronics

## Course objectives:

1. To impart knowledge computational techniques in electronics.
2. To provide the knowledge and methodology necessary for using computational techniques in electronics.
3. To have practical exposure of handling computational techniques in electronics.

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of computational techniques in electronics to develop new systems.
2. Apply practical knowledge of computational techniques in electronics solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of computational techniques in electronics for innovative applications.
4. Gain knowledge of computational techniques in electronics.
5. Handle hardware and software to shoot problems of the society

# T. Y. B.Sc. (Electronics)

## Semester V

## ELE 351: Semiconductor Physics

**Course objectives:**
1. To enrich the understanding of fundamentals of semiconductor devices.
2. To have an awareness of IC fabrication techniques.

**Course outcome:**
1. Apply the concept and knowledge semiconductor physics to develop new systems.
2. Apply practical knowledge of semiconductor physics to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of semiconductor physics for innovative applications.
4. Gain knowledge of semiconductor physics.
5. Handle hardware and software to shoot problems of the society.

## ELE 352: Basic Communication Systems

**Course objectives:**
1. To learn the concepts of communication system.
2. To know the various modulations and demodulation techniques.
3. To learn the radio wave propagation.

**Course outcome:**
Learner will be able to ….
1. Apply the concept and knowledge of communication to develop new systems.
2. Apply practical knowledge of communication to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of communication for innovative applications.
4. Gain knowledge of communication.
5. Handle hardware and software to shoot problems of the society.

## ELE 353: 8086 Microprocessor

**Course objectives:**
1. To learn the architecture of 8086.
2. To learn the assembly language programming of 16 bit microprocessor.

**Course outcome:**
Learner will be able to ….
1. Apply the concept and knowledge of microprocessors to real life problems.
2. Analyse modulation circuits and understand the behaviour of the systems.
3. Understand and analyse 8086 microprocessor and its programming.
4. Review, prepare and present technological developments.

## ELE 354: The C Programming Language

**Objectives:**

1. To learn the basics of "C" programming language
2. Development of programming skill to write simple "C" programs.

## ELE 355: Microcontroller 8051

**Course objectives:**

1. To learn the architecture of 8051 microcontroller.
2. To learn the programming of 8 bit microcontroller

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge microcontroller to develop new systems.
2. Apply practical knowledge of microcontrollers to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of microcontroller for innovative applications.
4. Gain knowledge of microcontroller programming.
5. Handle hardware and software to shoot problems of the society

## ELE 356: Advanced Digital System Design

**Course objectives:**

1. To study the principles required for designing of advanced digital systems.
2. To acquire basic knowledge of Hardware Description Languages (HDL).
3. To know designing of combinational and sequential logic circuits using VHDL.

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of advanced digital system design to develop new systems.
2. Apply practical knowledge of advanced digital system design to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of advanced digital system design for innovative applications.
4. Gain knowledge of advanced digital system design.
5. Handle hardware and software to shoot problems of the society.

## Semester VI

## ELE 361: Electrodynamics

**Objectives:**

1. To enrich the understanding of fundamentals concepts of electrodynamics and electromagnetics.
2. To have basic knowledge of electromagnetic waves and their propagation.

## Course outcome:

1. Apply the concept and knowledge of electrodynamics to develop new systems.
2. Apply practical knowledge of electrodynamics to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of electrodynamics or innovative applications.
4. Gain knowledge of electromagnetic waves and their propagation

## ELE 362: Advanced Communication Systems

**Objectives:**

1. To learn the digital communication.
2. To learn the telephony systems
3. To learn the Fiber optic communications.
4. Introduction to computer network and security.

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of digital communication to develop new systems.
2. Apply practical knowledge of communication to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of digital communication for innovative applications.
4. Gain knowledge of digital communication.
5. Handle hardware and software to shoot problems of the society.

## ELE 363: Microprocessor Interfacing Techniques and Advanced Microprocessors

**Objectives:**

1. To learn the interfacing of I/O devices with microprocessor.
2. To learn interfacing techniques.
3. Introduction to Advance Microprocessors.

**Course outcome:**

Learner will be able to ….

1. Apply the concept and knowledge of microprocessors to real life problems.
2. Analyse modulation circuits and understand the behaviour of the systems.
3. Understand and analyse 8086 microprocessor and its programming.
4. Review, prepare and present technological developments.

## ELE 364: Numerical Simulation in Electronics

**Objectives:**

1. To learn the different numerical methods.
2. To study application of numerical methods to electronic circuits.

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge of numerical methods in electronics to develop new systems.
2. Apply practical knowledge of numerical methods in electronics solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of numerical methods in electronics for innovative applications.
4. Gain knowledge of computational techniques in electronics.
5. Handle hardware and software to shoot problems of the society

## ELE 365: Embedded Systems

**Objectives:**

1. To know about advanced microcontroller programming
2. To learn the 8 bit microcontroller interfacing.

## Course outcome:

Learner will be able to ….

1. Apply the concept and knowledge embedded system to develop new systems.
2. Apply practical knowledge of embedded system to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use embedded system for innovative applications.
4. Gain knowledge of embedded system programming.
5. Handle hardware and software to shoot problems of the society

## ELE 366: Industrial and Power Electronics

**Objectives:**

1. To know about power semiconductor devices frequently used in industries.
2. To have an idea about the principle and operation of circuits using power semiconductor devices to control various operations in industries.
3. To acquaint with industrial and domestic applications of power semiconductor devices

**Course outcome:**

Learner will be able to ….

1. Apply the concept and knowledge industrial and power electronics to develop new systems.
2. Apply practical knowledge of industrial and power electronics to solve real life problems of the society.
3. Understanding of the course and create scientific temperament and give exposure to the students for independent use of industrial and power electronics for innovative applications.
4. Gain knowledge of industrial and power electronics.