**Poojya Sane GurujiVidyaPrasarak Mandal's**

Shri. S. I. Patil Arts, G. B. Patel Science and S. T. K. V. S Commerce College, Shahada

## Programme Outcomes (Under Graduate Level)

After graduating from science faculty, a student should have:

Acquired knowledge with facts and figures related to various subjects in basic sciences such as Physics, Chemistry, Biology, Mathematics, etc.

Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevance in day-to-day life.

Acquired skills in handling scientific instruments, planning and performing laboratory experiments nothing down the observations and drawing logical inferences from them.

Analyzed the given scientific data critically and systematically and drawing objective conclusions.

Been able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems.

Realized how developments in any one-science subject help in the development in other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for sustainable developments.

Developed scientific outlook not only with respect to science subjects but also in all aspects related to life.

Realized that knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc can greatly and effectively influence & inspire in evolving new scientific theories and inventions.

Imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.

Developed various communication skills such as reading, listing, speaking, etc., which we will help in expressing ideas and views clearly and effectively.

Realized that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude all necessary qualities for leading a successful life.

Developed a flair for participating in various social and cultural activities voluntarily, in order to spread knowledge, creating awareness about the social evils, blind faith, etc.

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## Programme Outcomes (Post Graduate Level)

After completing the post-graduation studies in any subject belonging to science, the student should have…

- Acquired a deep knowledge on possible in the subject concerned by making use of reference books, research journals & periodicals, internet, etc.
- Known in detail how the subject matter has progressed from ancient times till the date with important discoveries, inventions, theories, the scientists who contributed to this.
- Understood how scientific theories are proposed and how they are accepted or rejected by experimental evidences.
- Judged the presently accepted theories by considering their strength and weakness and provide better explanations for the modification or improvement of the theory.
- Explained how the subject has influence the progress in the other areas of science and technology useful in the betterment of life of common man.
- Acquired high level skills in laboratory experimentation and inferring the logical conclusions.
- Participated in Project works, doing independent designing & execution of the research work.
- Participated in seminars and workshops and acquires theoretical thinking skills and practical skills.
- Developed the faculty of creative thinking (Convergent & divergent) to provide solutions to the unsolved problems or designing new experimental verification procedures.
- Conceived where and how subject knowledge can be used in future for a betterment of mankind.
- Recognized the areas where there is no further research work done or the areas which are not yet explored.
- Taken up an independent research project in a R & D organization or in any industrial organization.
- Developed a strong faith that ethical, moral and social values are necessary for pursuing a scientific career.
- Accepted that scientific knowledge plays most important role in overcoming social evils, blind faith, poverty, health issues, and can certainly improves the quality of human beings.
- Comprehended necessary measures for sustainable development and controlling environmental pollution hazards.

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## Programme Outcomes (Undergraduate Level)

After completing the graduation in the faculty of humanities/Arts/Social sciences, the student should have:

Acquired knowledge with facts and figures related concerned with subjects such as History, Geography, Economics, Languages, etc.

Understood the basic concepts, fundamental principles, and various theories in the above mentioned subjects.

Realized the importance literature in creating aesthetic, mental, moral, intellectual development of an individual and increasing a healthy society.

Understood how issues in social science influence literature and how literature can provide solutions to the social issues.

Gained the analytical ability to analyze critically the literature and social issues, appreciate the strength and suggest the improvements for better results.

Appreciated that social issues are no longer permanent and largely depend on political, economic changes and also on the developments in science and technology.

Convinced himself/herself that study of literature and social sciences not only help to evolve better individual and better society but also help to make the life of an individual more happy and meaningful.

Participated in various social and cultural activities voluntarily.

Written articles, novels, stories to spread the message of equality, nationality, social harmony, etc.

Emerged as a multifaceted personality who is self dependant; earning his own bread and butter and also creating opportunities to do so.

Realized that pursuit of knowledge is a lifelong process and in combination with untiring efforts and positive attitude are necessary qualities for leading a successful life.

Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.

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## Programme Outcomes (Post Graduate Level)

After completion the Post-Graduation in Humanities, the student should have -

- Acquired a deep knowledge as possible in the subject concerned by making useof reference books, research journals, periodicals and internet facilities.
- known in detail how the subject matter has developed from ancient time till this date with important landmarks, theories and people have contributed to achieve these.
- Critically evaluated the works of various authors or social scientists by considering the strength and weakness and suggestions probable modifications for improvement.
- Understood how the developments in the field of Humanities have improves the quality of life and how they have satisfied the aspirations, intensions likes and dislikes and how they could modify them.
- Realized how the studies in Humanities have led to various social, economical, political changes over last few centuries.
- Predicted the future course of the developments in the subject and the various factors that are likely to influence them and how they will change the life of common man.
- Taken up an independent research project, plan and execute it and present the results and conclusions systematically at the end.
- Taken up independent creative writing or various aspects in literature, social, economic political, environmental issues in the form of story, poetry, research articles, reports, etc in various periodicals &journals.
- Recognized the areas where there is no further research work or areas which are not yet explored.
- Developed a strong belief that study of humanities will lead to development of soul, giving immense pleasure & satisfaction for any individual.
- Recognized that studies in humanity will dissolve differences & inequalities due to caste, creed and religion, social status etc leading to human dignity which will help to create social & national integration.
- Participated & led various activities related to literature & social issues in order to create social awareness and harmony.

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Shri. S. I. Patil Arts, G. B. Patel Science and S. T. K. V. S Commerce College, Shahada

## Programme Outcomes (Under Graduate and Post Graduate Level)

## Bachelor of Commerce (B.Com)

- To equip students with the necessary soft skills to enhance their competitive edge in the job market
- To imbibe in students positive attitude towards life and work
- To help students excel in their individual and professional lives using the soft skills
- Understand the significance and essence of a wide range of soft skills
- Learn how to apply soft skills in a wide range of routine social and professional settings.
- Learn how to employ soft skills to improve interpersonal relationships.
- Learn how to employ soft skills to enhance employability and ensure workplace and career success.
- Learn The Law & Legal Principals of Contract Act 1872.
- Draft legal documents including partnership deed & service tax returns.
- Understand the basic structure, rules & powers of consumer protection act.
- To know the provision regarding strikes and lock outs under industrial dispute act.
- Be acquainted with development of patents and environment protection act.
- Students to gain a better underrating of the negotiable instrument act.
- Learn how to analysis the legal constraints on business.
- Be able to face the problems on various sides of Business and Tax Law.
- To acquaint the students with modern updated computerized accounting system and software.
- To develop an understanding of the rules of measurement and reporting relating to various components of corporate financial transactions.
- To provide working knowledge of accounting principles and procedures for recording of transactions related to corporate entities.
- To provide working knowledge for preparing the corporate accounts and statements in accordance with the statutory requirements.
- To Understand the Objectives of Computerized Accounting.
- To Know the Principles Of Tally Software.
- To acquire Computing Skills.
- To Study various features of Tally.
- To Acquaint with Modern Technology In Accounting.
- To study of Goods and Services Tax Act
- To use Tally with GST
- Demonstrate a basic understanding of computer hardware and software.
- Demonstrate problem-solving skills.
- Apply logical skills to programming in a variety of languages.
- Utilize web technologies.
- Present conclusions effectively, orally, and in writing.
- Demonstrate basic understanding of network principles.
- Working effectively in teams.
- Apply the skills that are the focus of this program to business scenarios.
- Students will be able to get the Job as an accountant in GST
- Students may get the job as an assistant in GST Tax consultancy firm
- Students may get the job of GST Practical Instructor in Educational Computer Institute
- To improve the knowledge, skills & competencies of the potential & existing entrepreneurs in various sector.
- To improve life management skills of children and youth.
- To provide intellectual resources to youth for their best future.
- To improve social and economic skills.
- To provide diverse opportunities for participation.
- To empower to people to create business opportunities.
- To boost the Entrepreneurship Development Programme.
- To boost women and rural entrepreneurship.
- To understand different methods to assess the attractiveness of business opportunities

- To understand what characterizes an attractive business opportunity and common pitfalls during the entrepreneurial process
- To products or services to market
- To understand different methods that can be used to minimize uncertainties at different stages of the entrepreneurial process
- To understand the dynamics of how teams develop and function as well as the various types of conflicts that can arise during teamwork
- To acquaint students with the new concepts of Banking
- To update the students about new changes in Banking
- To know the relevance Banking practices in modern competitive world
- To make understandable of Banking operations
- Explain the various functions of money, and how money has evolved over time.
- Show that modern banking systems include both privately owned commercial banks and government-owned central banks.
- Explain how commercial banks create money through the process of taking deposits and making loans.
- List what is included in the various measures of the money supply
- To Introduce Basic Retailing Management Concepts.
- Empowering Students with the Most Modern Techniques and Practices of Retailing as Seen and
- Experienced around the Globe.
- Imparting Theoretical and Practical Knowledge to Ensure Understanding of the Dynamic of Modern Organized Retail Trade.
- To understand analysis of store location, merchandising, products and pricing.
- The learner will be able to determine a level of interest in pursuing a career in retail management.
- To equip students with the necessary soft skills to enhance their competitive edge in the job market
- To imbibe in students positive attitude towards life and work
- To help students excel in their individual and professional lives using the soft skills
- To understand the essential terminologies used in the Indian Partnership Act and the structure of legal document
- To acquire the knowledge of various terms included in the Factories Act and Industrial dispute Act
- To understand the basic structure, rules & powers of the Consumer Protection Act.
- To be acquainted with the Environment Protection Act.
- To be acquainted with the Goods and Services tax Act.
- Describe the legal system and the legal environment of business.
- Describe the relationship of ethics and law in business.
- Define relevant legal terms in business.
- Explain basic principles of law that apply to business and business transactions.
- Describe business law in the Indian context.
- Describe current law, rules, and regulations related to settling business disputes.
- Understand different technical terminology used in this act
- Discussed and consult businesses on related issues of business laws
- A comprehensive understanding of the advanced issues in accounting for assets, liabilities and owner's equity.
- The ability to account for a range of advanced financial accounting issues
- The ability to prepare consolidated accounts for a corporate group.
- Demonstrate a basic understanding of computer hardware and software.
- Demonstrate problem-solving skills.
- Apply logical skills to programming in a variety of languages.
- Utilize web technologies.
- Present conclusions effectively, orally, and in writing.
- Demonstrate basic understanding of network principles.
- Working effectively in teams.
- Apply the skills that are the focus of this program to business scenarios.
- To understand different methods to assess the attractiveness of business opportunities
- To understand what characterizes an attractive business opportunity and common pitfalls during the entrepreneurial process
- To products or services to market

- To understand different methods that can be used to minimize uncertainties at different stages of the entrepreneurial process
- To understand the dynamics of how teams develop and function as well as the various types of conflicts that can arise during teamwork
- To acquaint students with the new concepts of Banking.
- To update the students about new changes in Banking.
- To know the relevance Banking practices in modern competitive world.
- To make understandable of banking operations.
- Explain the central role of retail in industrialized societies, and the impact of key market/retail trends upon this sector in the local and global contexts.
- Identify the key stakeholders and the roles/responsibilities of retail towards these stakeholders Understand and apply appropriate frameworks to develop high level retail marketing strategy, and identify the role of marketing strategies in the building of brand equity and shareholder value in the retail industry
- Evaluate the implementation of marketing strategy through the retail mix – including product and merchandise mix, pricing, location and store- design, promotions, and store management - to improve the total customer experience and retailer market competitiveness.
- Interpret retail problems and be capable of critically evaluating and applying appropriate retail management models and theories to generate strategic and tactical solutions
- Analyse how retail managers can make informed strategic choices in relation to managing channel partners, retail form (online vs. bricks and mortar), global sourcing, and managing staff to improve strategic outcomes.

## Master of Commerce (M.Com)

Acquire strong subject-matter expertise in finance, financial instruments and markets.

Develop advanced theoretical knowledge and research capabilities in their preparation for academic and research focused careers

To develop an attitude for working effectively and efficiently in a business environment

To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students

To expose students about entrepreneurship

**Outcome of B Sc Chemistry**

## Programme Outcome (B.Sc Chemistry)

 To promote understanding of basic facts and concepts in Chemistry while retaining the excitement of Chemistry.
 To make students capable of studying Chemistry in academic and Industrial courses.
 To expose the students to various emerging new areas of Chemistry and apprise them with their prevalent in their future studies and their applications in various spheres of chemical sciences.
 To develop problem solving skills in students.
 To expose the students to different processes used in Industries and their applications.
 To develop ability and to acquire the knowledge of terms, facts, concepts, processes, techniques and principles of subjects,
 To develop ability to apply the knowledge of contents of principles of chemistry.
 To inquire of new knowledgeof chemistry and developments therein.
 To expose and to develop interest in the fields of chemistry
 To develop proper aptitude towards the subjects.
 To develop the power of appreciations, the achievements in Chemistry and role in nature and society.
 To develop skills required in chemistry such as the proper handling of apparatus and chemicals.

**Outcome of M. Sc. Organic Chemistry**

To equip students with the knowledge and generic skills for employment or further training in R&D, science based industry and establishments, education, and for training at management levels in other professions.

To stimulate intellectual development, develop powers of critical analysis and ability to solve problems

Understand the synthesis by various mechanism and characterization of organic compounds and natural compounds.

To train students in the practical skills necessary for the safe manipulation of chemicals

To generate interest in, and understanding of, the wider role of chemistry in society e.g. health, industry.

To enable students to develop independent learning skills as well as the experience of working as part of ateam.

Understand the Stereochemistry of the natural product and organic compounds.

Perform the organic preparation of one, two and three stage preparation by green and chemical approach.

Understanding application of organic compounds like antibacterial, anticancer and antifungal etc. in medical and pharmaceutical field.

To introduce student to chemical research methodology through carrying out a research project.

Understanding application of IR, NMR, GCMS for characterization of organic compounds.

To understand professional responsibility and ethics in Chemistry.

- **Course outcome UG**

- This course offers self-employment to the student like horticulture related business like nursery, food industry like Pickle, tomato ketchup and fruit jam preparation etc.
- They become technically sound in area like tissue culture and green house technology.
- They are able to understand plant structures in the context of physiological activities of plants.
- Students will be well versed with various processes such as mushroom production, cut flower production, and compost production.
- They are able to understand structural organization and variation in chromosomes.

## Course outcome PG:

- Department of Botany offer PG course in Botany designed in the North Maharashtra
- This course rigorously train students in the extensive activities run in seed companies, as well as tissue culture companies.
- They are able to realize the environmental problems like air pollution, water pollution and soil pollution and are able to handle these problems.
- They are also able to handle subject related projects.
- Study of a-biotic stresses with respect breeding in different crops which is one of the burning issues in Indian agriculture.

**Poojya Sane Guruji Vidya Prasarak Mandal's**

Shri. S. I. Patil Arts, G. B. Patel Science and S. T. K. V. S Commerce College, Shahada

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**UG :**

**After completion of B. Sc. (Mathematics) student will able to**

- learn properties of inverse Laplacetransformssolve basic mathematical problems.
- use the mathematics in real life.
- become employable.
- get knowledge for higher studies.
- Understand basic facts of mathematics.
- Develop mathematical modeling.
- learn to solve improper integrals.
- use of Linear equations for solving any differential equations
- understand various problems related with planar graphs.
- Understand Concepts of Matrices and linear equations.

**PG :**

**After completion of M. Sc. (Mathematics) student will able to**

Understand Lebesgueintegrals.
Learn the methods of RealAnalysis.
Learn Ordinary and Partial differentialequations.
Know the fundamentals of gametheory.
Know about differentiation off unctions.

**On Completion of the B.Sc. (Zoology) students are able to**

Understand the nature and basic concepts of cell biology
Understand the basic concepts about chordates and non-chordates
Understand the concepts of Goatary and Lac culture.
Understand the various Applications of Biotechnology
Understand the Lamarckism, Neo-Lamarckism and Darwinism.
Understand the term ELISA technique and DNA fingerprinting.
Understand the process of evolution.

**On Completion of the M.Sc. Zoology, students are able to**

Understand the various microbial, bacterial as well as viral diseases and pathogenicity.
Understand the Organization And Life: Homology and Analogy, Diversity of invertebrates, Phylogeny of invertebrates.
Understand the larval forms of the invertebrates.
Understand the colonial and social life in invertebrates.
Understand the structure and function of the cell and its organelles
Understand the Applications and uses of Statistics in Zoology.

**B.Sc. (Microbiology)**

**Upon completion of B.Sc. Microbiology program, the students will be able to -**

- Perform the basic techniques related to screening, isolation and cultivation of microorganisms from various sources
- Study the microorganism with regard to morphology, cultural and biochemical characters. It will help to classify the microbes to certain extent.
- Follow the aseptic techniques and conduct the process of sterilization as well as perform the techniques to control the microorganism
- Understand microorganisms and their relationship with the environment,
- Produce and analyze the microbial products at laboratory level
- Conduct the basic research with these microorganisms and perform the diagnostic procedures required in food, milk and pharmaceutical industries.

**M.Sc. (Microbiology)**
**On completion of M.Sc. (Microbiology), students are able to:**

- Instill the intellectual skills to analyze the molecules using advance biophysical techniques such as HPLC, GC, AAS, PCR etc.
- Perform the quantitative/ qualitative analysis of Bimolecular and understand various biochemical pathways
- Acquire knowledge and understanding the concepts of Microbial genetics, Molecular biology, Immunology, Enzymologist.
- Explore the scientific literature effectively and use computational tools such as bio-statistical and bioinformatics
- Implement the knowledge in industry with regard to scale up, production, scale down and quality control of the various microbial products
- Conduct the basic research related to industry-environmental issues and use of agricultural for sustainable products.

**On Completion of the B.Sc. Biotechnology, students are able to**

Get empowered by Biotechnological, microbiological and biochemical skills to serve in life science related industries.

Become eligible to take Master education in the field of life sciences inclining biotechnology, biochemistry, genetic engineering, forensic science, molecular biology and agriculture biotechnology.

Serve as biotechnologist with apposite knowledge of practical and theoretical skills.

Work as researcher for scientific, practical purposed in pharmacy, food, agriculture and in sterile plants of various industries.

Serve as administrators, researchers, investigators, assistant, and data scientist, data analyst in pharmacy, food, agriculture and in sterile plants of various industries.

After successful completion of three years degree course in Biochemistry, student will be well versed with laboratory skills and transferable skills.

**Laboratory Skills:**

Laboratory safety practices

Accurate weighing and reagent preparation

Skillful handling of basic and advanced instruments

Calibration of basic instruments like pH meter, micro pipettes etc

Advanced techniques like
Chromatography
Electrophoresis
Spectrometry
Polymerase Chain Reaction(PCR)
Plant Tissue Culture

Animal Tissue Culture

Aseptic techniques

Logical thinking

Analysis and interpretation of results

Collection, organization and presentation of data

**Transferable Skills**

During the course student will develop skills other than laboratory skills that are transferable across the number of career areas. These are:

Analytical skill

Report writing skill

Presentation skill

Time management

Creative thinking

Problem solving

IT skills

Planning

Observational skill

**Programme Specific Outcomes of B.Sc. Physics:**

- Understand the set of physical laws, describing the motion of bodies, under the influence of system of forces.
- Analyze the applications of mathematics to the problems in physics & develop suitable mathematical method for such application & for formulation of physical theories.
- Provide knowledge about material properties and its application for developing technology to ease the problems related to the society.
- Perform experiments and interpret the results of observation, including making an assessment of experimental uncertainties.
- Impart skills required to gather information from resources and use them.
- To give need based education in physics of the highest quality at the undergraduate level.
- Read, understand and interpret physical information – verbal, mathematical and graphical.
- Provide an intellectually stimulating environment to develop skills and enthusiasms of students to the best of their potential.
- Attract outstanding students from all backgrounds.

**Programme Specific Outcomes of M.Sc. Physics:**

- Understanding the basic concepts of physics particularly concepts in classical mechanics, quantum mechanics and statistical mechanics to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical and mathematical reasoning.
- Learn to carry out experiments in basic as well as certain advanced areas of physics such as condensed matter physics, nuclear physics, nanoscience, lasers and electronics. To develop strong student skills in the research, analysis and interpretation of complex information.
- To develop strong student competencies in Physics and its applications in a technology-rich, interactive environment.
- Apply theoretical knowledge of principles and concepts of physics to practical problems.
- Gain hands on experience to work in applied fields.
- Become professionally trained in the area of electronics, nonlinear circuits, materials characterization and lasers.

**Poojya Sane Guruji Vidya Prasarak Mandal's**
Shri. S. I. Patil Arts, G. B. Patel Science and S. T. K. V. S Commerce College,
Shahada

**Course outcome UG:**

- Know about Software Coding & Testing
- know about functions and services of operating system
- get introductory knowledge about android operating system.
- Create and manipulate databases for various applications.
- Aware about different web techniques used in PHP.
- On completion of the course, students are able to develop interactive static as well as dynamic websites.
- By using ASP.Net create dynamic web pages

**Course outcome PG**

- Know about advanced data mining techniques such as spatial data mining and understand the concept of big data analysis.
- On completion of the course, students are able to develop client server programs for various services like TCP, UDP, Telnet
- Understating the mobile and advoc network programming.
- On completion of the course, students will get hands on training for various java programs like JDBC, EJB, Servest, and Struts etc.
- Know about linguistics essentials and grammar as part of speech and parsing and differentiating them

**After Completing Bachelor of Commerce (B.Com) course, students are ableto:**

To build a strong foundation of knowledge in different areas of Commerce.

To develop the skill of applying concepts and techniques used in Commerce.

To develop an attitude for working effectively and efficiently in a business environment.

Tointegrateknowledge,skillandattitudethatwillsustainanenvironmentoflearningand creativity among the students.

To expose students about entrepreneurship.

To enable a student to be capable of making decisions at personal and professional level.

Solve problems (programming networking database and Web design) in the Information Technology environment. Function effectively on teams to accomplish a common goal, Demonstrate professional behavior.

Develop IT-oriented security issues and protocols.

Able to design and implement a web page.

Improved communication and business management skills, especially in providing technical support.

**After Completing, Masters in Commerce (M. Com) Students are able to:**

develop an ability to apply knowledge acquired in problem solving.

work in teams with enhanced communication and inter-personal skills.

be worthy for employment in functional areas like Accounting, Taxation, Banking, Insurance and Corporate Law.

start entrepreneurial activities.

inculcate ethical values, team work, leadership and managerial skills.

- pursue professional courses such as CA/ CS/ CMA/CFA etc.

On completion of B.A. & M.A. (Economics), Students are able to:

Understand basic concepts of economics.

Analyze economic behavior in practice.

Understand the economic way of thinking.

Analyze historical and current events from an economic perspective.

Write clearly expressing an economic point of view.

Find alternative approaches to economic problems through exposure to coursework in allied fields.

Create students ability to suggest solutions for various economic problems.

**UG** On completion of B.A (English), students are able to:

use correct English in oral as well as written form.

Inculcate of human values for one's transformation of behavior.

interpret the literary works by critical analysis.

Compare literary works of the great philosophers using their logic and literary capacity.

**PG** On completion of M.A (English), students are able to:

Understand and learn the literary works on the basis of the foundation laid by the scholars.
Strengthen their language capacity.
assist them in understanding of extended frontiers of language and literature

**On Completion of the BA (Geography) Students are able to:**

- To understand overall structure of Geography and its importance in Society
- Importance of Geographical knowledge in day to day life.
- To Study the land forms and related processes.
- Understand the structure, composition of different spheres of the earth
- Understand importance of oceans, rivers and water and Conservation
- Understand the Function and importance of Biogeography
- Understand the science of Remote Sensing
- Job opportunities in the Field of GIS, Surveying, Climate, Ocean etc.
- To Understand aware the students about use of resources with prudence.
- Tounderstand acquaint the students with different environmental policies.
- Understand acquaint the students with the knowledge of economic realm in the world.
- Highlight the different economic activities.
- Understand mineral and power resources in the specific regions of the world.

**On Completion of the B.Sc. (Geography), Students are able to:**

- To understand the importance of geography in day to day life.
- To implement geographical knowledge in today's problem solving.
- Understand the concepts of Physiographic, Drainage, Climate, and Vegetation
- Understand the structure, composition of different spheres of the earth.
- Understand importance of oceans, rivers and water and Conservation.
- Understand the Function and importance of Biogeography
- Understand the science of Surveying and Remote Sensing.
- Understand Watershed management and water harvesting Structure.
- Job opportunities in the field of GIS, Surveying, Climate, Ocean etc.

**Course outcome PG**

**On completion of the M.A./M.Sc (Geography), students are able to**

- To understand Concept of Research and promote research.
- Can join GIS industry with better job opportunity in MNC Company
- Can Join and get opportunity in Survey department of government and private organization.
- Get job in Weather department of private and government organizations.
- Get job opportunity in organizations like ISRO
- Understand Watershed management and have job opportunity in department of water resources.
- Understanding the applications in various fields like agriculture, forestry, ecology, geosciences, disaster management, urban planning etc.

**Poojya Sane Guruji Vidya Prasarak Mandal's**
Shri. S. I. Patil Arts, G. B. Patel Science and S. T. K. V. S Commerce College, Shahada

**B.A. in HINDI**
**After completion of B. A. Hindi student will able to**
Develop Attitude of Literary Forms. ( Hindi Poetry &Fiction)
Develop Reading, Writing & Communication Skills of Students.
Get information about the history of ancient, medieval and modern Hindi Literature.
learn the literary works on the basis of the foundation laid by the scholars.
Get information about Literary Theory.
Develop Approach of Hindi Linguistics &Grammar.

**M.A. in HINDI**
**After completion of M. A. Hindi student will able to understand**
Applications of Literature and Language concepts.
The literary works on the basis of the foundation laid by the scholars.
The basic need for strengthening the language capacity.
The latest development of literary works in the world and within the country

**B.A. History**
**On completion of the BA (History) special, students will be able to**
Understand the basic themes, concepts, chronology and the Scope of Indian History.
Acquaint with range of issues related to Indian History that span distinct eras.
Understand the history of countries other than India with comparative approach.
Think and argue historically and critically in writing and discussion.
Prepare for various types of Competitive Examinations
Critically recognize the Social, Political, Economic and Cultural aspects of History.

**On Completion of the B.A.(MARATHI) students are able to:**
- Understand the basic themes, concepts, chronology and the Scope of Marathi.
- Think and argue Marathi writing Skill and discussion.
- Prepare for various types of Competitive Examinations
- Consulting on the progress of modern Marathi novels.

**On Completion of the B.SC( MARATHI ) students are able to:**
- To explain the basic concepts of Marathi classical to the students
- Develop linguistic skills for students
- Introduce students to the storytelling type of storytelling

**On completion of the B.COM (MARATHI ) Programme, students are able to:**
- Introduce business skills to Student
- Explain the concept of business toStudent through the example of an entrepreneur
- IntroduceStudent to different entrepreneurs and introduce them to life journey
- Make the students aware of the various aspects in Social Behaviour.

**Course outcome PG**

- Develop Attitude of Literary Forms. ( Marathi Aatmkathan & Novel)
- Get Information about the history of MODERN Marathi Literature.
- Develop Attitude of Literary Forms. ( Marathi Drama &Lalit Gadya)
- Get Information about the history of Medieval Marathi Literature.
- Develop Reading, Writing & Communication Skills of Students.

**On completion of B.A (political science), Students are able to:**

understand basic concepts of political science.
analyze political behavior in practice.
Understand the political ways of thinking.
analyze historical and current events from political perspective.
write clearly expressing political point of view.
Understand alternative approaches to political problems through exposure to coursework in allied fields.
create ability to suggest of the various political problems.
Understand the functioning, powers of the UN, SAARC and other organizations.

**B. A.**

**On completion of the BA Psychology Programme, students are able to:**

Understand the basic concepts and modern trends in Psychology.
Make the students aware of the applications of Psychological concepts.
Understand the relationship between theoretical and practical principals of psychology.
Make the students aware of the various concepts in Social Psychology of the Indian context.
Understand the psychological measurements to help to understand the client.
Understand the students how to follow up the behavioral problem and solve it with the behavior and other therapies.
Administer psychological measurements and their interpretation.

**Poojya Sane GurujiVidyaPrasarakMandal's**

Shri. S. I. Patil Arts, G. B. Patel Science &

S. T. K. V. S. Commerce College,

**Shahada, Dist Nandurbar. (M.S.)**

# Course Outcomes

# DEPARTMENT OF BOTANY

| Class | Course | Outcomes(After completion of this course, the students will be able to) |
|---|---|---|
| | **SEM I & SEM II** | |
| **F.Y.B.Sc.** | **BOT-101 Microbial Diversity, Algae & Fungi** | 1. To study the diversity among Microbes. |
| | | 2. To study systematic, morphology and structure of Bacteria, Viruses, Algae and Fungi. |
| | | 3. To study the life cycle pattern of Bacteria, Viruses, Algae and Fungi. |
| | | 4. To study the useful and harmful activities of Bacteria, Viruses, Algae and Fungi. |
| **F.Y.B.Sc.** | **Bot. 102: Plant Taxonomy** | 1 To study the diversity of angiosperms. |
| | | 2 To study the comparative account among the families of angiosperms. |
| | | 3 To study the economic importance of the angiosperm plants. |
| | | 4 To study the distinguishing features of angiosperm families. |
| **F.Y.B.Sc.** | **Bot. 201: Diversity of Archegoniates** | 1 To study salient features of Archegoniate. |
| | | 2 To make students aware of the status of higher cryptogams& gymnosperms |
| | | as a group in plant kingdom. |
| | | 3 To study the life cycles of selected genera. |
| | | 4 To study economic and ecological importance of Archegoniate. |
| **F.Y.B.Sc.** | **Bot. 202: Plant Ecology** | 1 To know scope and importance of the discipline. |
| | | 2 To study plant communities and ecological adaptations in plants. |
| | | 3 To know about conservation of biodiversity. |
| | | 4 To study the botanical regions of India and vegetationtypes of Maharashtra. |
| **Class** | **Course** | **Outcomes (**After completion of this course, the students will be able to**)** |
| | **SEM III & SEM IV** | |
| **S.Y.B.Sc.** | **Bot. 301: Plant Anatomy** | 1. To know scope and importance of plant anatomy |
| | | 2. To study various tissue systems |
| | | 3. To know primary structure of dicot and monocot plants |
| | | 4. To study normal secondary growth in plants and their causes |
| | | 5. To study protective tissue system |
| **S.Y.B.Sc.** | **BOT.302: PLANT PHYSIOLOGY** | 1. To know importance and scope of plant physiology. |
| | | 2. To study plant and plant cell in relation to water. |
| | | 3. To study different process in relation with structure of organism and its environment. |
| | | 4. To understand mechanism of absorption of water, gases and solutes. |
| | | 5. To understand growth at various level. |
| **S.Y.B.Sc.** | **BOT. - 401: PLANT EMBRYOLOGY** | 1. To know the scope and Importance of Embryology |

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|---|---|---|
| | | 2. To study structure of micro and mega sporangium. |
| | | 3. To study pollination, fertilization, Endosperm and Embryogeny. |
| | | 4. To give exposure of techniques in embryology |
| **S.Y.B.Sc.** | **BOT.-: 402 PLANT METABOLISM** | 1. To know the scope and importance of plant metabolism. |
| | | 2. To study the properties, mechanism and classification of enzymes. |
| | | 3. To study the process of photosynthesis in higher plants, C3, C4 and CAM pathways. |
| | | 4. To study respiration in higher plants. |
| | | |
| **Class** | **Course** | **Outcomes (**After completion of this course, the students will be able to**)** |
| | **SEM V & SEM VI** | |
| **T.Y.B.Sc.** | **PAPER – I CRYPTOGAMS** | 1. To study salient features of Cryptogrammic plants. |
| **SEM V** | | 2. To make students aware of the status of cryptogams as a group in plant kingdom. |
| | | 3. To study the life cycles of selected genera. |
| | | 4. To study economic and ecological importance of Cryptogrammic plants. |
| **T.Y.B.Sc.** | **PAPER-II ANGIOSPERM TAXONOMY** | 1. To study status of angiosperms in plant kingdom |
| **SEM V** | | 2. To study origin of Angiosperms with respect to time, place, origin and probable ancestor. |
| | | 3. To study Pre-Darwinian and Post- Darwinian systems of Classification. |
| | | 4. To study various angiosperm families emphasizing their morphology, distinctive |
| **T.Y.B.Sc.** | **PAPER- III CELL AND MOLECULAR BIOLOGY** | 1. To introduce the students with “Cell Science”. |
| **SEM V** | | 2. To study Cell wall Plasma membrane, Cell organelles and cell division. |
| | | 3. To study the scope and importance of molecular biology. |
| | | 4. To study the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove |
| | | DNA as a genetic material. |
| | | 5. To understand the process of synthesis of proteins and role of genetic code in polypeptide formation. |
| **T.Y.B.Sc.** | **PAPER-IV ADVANCED PLANT PHYSIOLOGY** | 1) To learn and understand about mineral nutrition in plants. |
| **SEM V** | | 2) To study the growth and developmental processes in plants. |
| | | 3) To learn about movement in plants. |
| | | 4) To study the process of translocation of solutes in plants |
| | | 5) To Study the nitrogen metabolism and its importance |
| **T.Y.B.Sc.** | **PAPER-V PLANTECOLOGY AND PHYTOGEOGRAPHY** | 1. To know scope and importance of the discipline. |
| **SEM V** | | 2. To study plant communities and ecological adaptations in plants |

| | | |
|---|---|---|
| | | 3. To know about conservation of biodiversity, Non-conventional Energy and Pollution. |
| | | 4. To study botanical regions of India and vegetation types of Maharashtra. |
| | | 5. To study Bioremediation, Global warming and climate change. |
| **T.Y.B.Sc.** | **PAPER VI [OPTIONAL PAPER- ] GARDENING** | 1. To know the concept of garden. |
| **SEM V** | | 2. To study the special types of gardens. |
| | | 3. To study the different features of garden. |
| | | 4. To study the different ornamental garden plants. |
| | | 5. To study about the techniques of pot-culture, Bonsai, Topiary, Lawn. |
| **T.Y.B.Sc.** | **PAPER I GYMNOSPERMS & PALEOBOTANY** | 1. To study Gymnosperms with respect to distinguishing characters, comparison with |
| **SEM VI** | | Angiosperms, economic importance and classification. |
| | | 2. To study the life cycles of Pinus and Gnetum. |
| | | 3. To study the scope of Pale botany, types of fossils and geological time scale. |
| | | 4. To study the various fossil genera representing different fossil groups |
| **T.Y.B.Sc.** | **Paper-II ANATOMY AND EMBRYOLOGY** | 1. To know scope & importance of Anatomy and Embryology |
| **SEM VI** | | 2. To study various tissue systems. |
| | | 3. To study normal and anomalous secondary growth in plants and their causes. |
| | | 4. To give exposure to techniques in anatomy |
| **T.Y.B.Sc.** | **Paper - III GENETICS, PLANT BREEDING AND EVOLUTION - GENETICS** | 1. To introduce the students with “Science of Heredity”. |
| **SEM VI** | | 2. To study the role of genes in evolution of species. |
| | | 3. To study linkage, segregation and mutation of genes during evolution. |
| | | 4. To introduce the student with science of plant breeding |
| **T.Y.B.Sc.** | **PAPER- IV PLANT BIOCHEMISTRY** | 1. To introduce the students with current status of Biochemistry. |
| **SEM VI** | | 2. To recognize the impact of Biochemistry on socioeconomic aspects of life. |
| | | 3. To develop the knowledge of industrial application of Biochemistry |
| | | 4. To inculcate the students with the importance of Bimolecular. |
| **T.Y.B.Sc.** | **Paper – V Applied Botany** | 1. To know importance and scope of botanical science in the industries. |
| **SEM VI** | | 2. To study role of microbial plants in fermentations process. |
| | | 3. To study the process of cultivation of cash crops. |
| | | 4. To study some plants which are used as herbal cosmetics. |
| | | 5. To study technique of plant tissue culture and its application. |
| | | 6. To study the role plants in forensic science. |

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| **T.Y.B.Sc.** | **Paper VI: Optional Paper-HORTICULTURE** | 1. To know horticulture, its scope, disciplines and importance |
| **SEM VI** | | 2. To know horticulture zones of Maharashtra and India |
| | | 3. To understand different horticultural practices and their methods |
| | | 4. To study importance, principles and types of Bahar treatment |
| | | 5. To study role played by green and polyhouses in horticulture |
| | | 6. To study production technology, harvesting techniques and marketing of crops grown especially in Khandesh |
| | | region of Maharashtra |
| | | |

| Class | Course | **Outcomes (**After completion of this course, the students will be able to**)** |
|---|---|---|
| | **SEM I & SEM II** | |
| **M.Sc.I** | **BOT - 101: Plant Systematics-I** | 1. To study salient features of Algae, Fungi and Bryophytes |
| | | 2. To know the diversity of Cryptogrammic plants in nature. |
| | | 3. To study the life cycle patterns in cryptogams. |
| | **BOT-102 Taxonomy of Angiosperms** | 1. To study aims, principles and methods in taxonomy. |
| | | 2. To study taxonomic structure of Angiosperms. |
| | | 3. To study Cronquist system of classification. |
| | | 4. To study recent APG system of classification and evolutionary trends. |
| | | 5. To study morphological peculiarities and biological importance of plants |
| | **BOT 105 Applied Plant Biotechnology** | 1. To the fundamentals of totipotency, plant tissue culture techniques. |
| | | 2. To study transgenic technology for the improvement of quality and quantity of Plant and thereby product. |
| | | 3. To understand the advantages of in vitro propagation in various areas. |
| | | 4. To understand the application and importance of plant tissue culture and transgenic plant in |
| | **Bot. 201 Plant Systematics- II (Pteridophytes, Gymnosperms and Palaeobotany)** | 1. To know the Classification, economic importance of Pteridophytes& Gymnosperms. |
| | | 2. To Know the distribution of Pteridophytes& Gymnosperms in India. |
| | | 3. To understand the biodiversity of Pteridophytes and Gymnosperms. |
| | | 4. Scope, importance, applied aspect of Palaeobotany& methods to study various fossils. |
| | | 5. To study the important fossils in different group of plants and Indian fossil record. |
| | **BOT 202 Plant Physiology and Biochemistry** | 1. To understand plant-water relationships |
| | | 2. To understand the plant structures with respect to physiological functions of plants |
| | | 3. To understand physiology of photosynthesis and respiration in plants |

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| | | 4. To understand lipid metabolism in plants |
| | | 5. To understand basic concepts in Biochemistry |
| | | 6. To understand the primary and secondary metabolites and their importance in the plants |
| | **BOT 203 Cytogenetics and Molecular Biology** | 1. To study structural organization and variation in the chromosome as well as karyotype analysis. |
| | | 2. To study extra-chromosomal inheritance in the plant system. |
| | | 3. To study molecular biology about genetic material, its inheritance, modification, replication, andrepair. |
| | | 4. To study transcription, translation post-translation modification of a protein. |
| | | 5. To study gene regulation in prokaryotes and eukaryotes |
| | **SEM III & SEM IV** | |
| **M.Sc.II** | **BOT. 301: GYMNOSPERMS AND PALAEOBOTANY** | 1. To study the diversity of Gymnosperms in India |
| | | 2. To study the evolutionary trends and affinities of living gymnosperms with respect to external and internal features. |
| | | 3. To study the important fossil types in different groups of plants and Indian fossil records. |
| | | 4. To study applied aspects of Palaeobotany |
| | **BOT. 302: PLANT BIOTECHNOLOGY AND BIOINFORMATICS** | 1. To the fundamentals of totipotency, plant tissue culture techniques. |
| | | 2. To study transgenic technology for the improvement of quality and quantity of Plant and there by product. |
| | | 3. To understand the advantages of in vitro propagation in various areas. |
| | | 4. To understand the application and importance of plant tissue culture and transgenic |
| | **BOT. 334: ANGIOSPERM TAXONOMY SPECIAL PAPER - I** | 1. To study importance of classification in Angiosperms. |
| | | 2. To study primitive and advanced groups of Angiosperm. |
| | | 3. To study taxonomic structure of Angiosperms. |
| | | 4. To study orders of Engler and Prantl's system of classification. |
| | **BOT.401: DEVELOPMENTAL BOTANY** | 1. To study vascular tissues, structure of woods and anomalous secondary growth |
| | | 2. To detect adulterations and forensic botany |
| | | 3. To study historical development of embryology |
| | | 4. To study structure and development of microsporangium, megasporangium, embryo |
| | | and endosperm. |
| | | 5. To study methods of pollination and fertilization |
| | | 6. To study applications of embryology in plant tissue culture |
| | | 7. To study structure and development of pollen grains |
| | | 8. To study applications of palynology in human welfare |
| | **BOT. 424: ANGIOSPERM TAXONOMY SPECIAL PAPER - II** | 1. To study biosystematics. |

| | | |
|---|---|---|
| | | 2. To study the numerical taxonomy of angiosperms. |
| | | 3. To study chemotaxonomy of Angiospermic plants. |
| | | 4. To study Cronquist`s system of classification of angiosperms |
| | | 5. To study ultrastructural systematics. |
| | | 6. To study Angiospermic Phylogeny Group System. |
| | **BOT. 434: ANGIOSPERM TAXONOMY SPECIAL PAPER - III** | 1. To study wood anatomy of Angiospermic plant. |
| | | 2. To study ecological anatomy of Angiosperms. |
| | | 3. To study embryology of Angiospermic plant. |
| | | 4. To study palynology of Angiospermic plant. |
| | | 5. To trace origin of Angiosperms. |
| | **BOT – 406 : Project work** | |
| | | |

# DEPARTMENT OF BIOTECHNOLOGY

| Class | Course | Outcomes |
|---|---|---|
| **FYBSc** | **BT101: Cell Biology** | learn basic knowledge pertinent to cell as unit, cell organelles and its architecture |
| | | know the structural and functional details of cell. |
| | | ind answers related to the scope of biotechnology eukaryotic cells |
| | | understand how science works |
| | | aware about biotechnology and its application in various fields |
| | | |
| | **BT102: Biochemical Tools** | Demonstrate theory and practical skills in different types of microscopy and their handling techniques and staining procedures |
| | | Understand the fundamental biochemical concepts and familiarize with standard solution, buffer and reactions |
| | | Describe the concepts of pH and its biological significance, buffers, HendersonHasselbalch equation, biological buffer systems and their importance |
| | | Know the terms and terminologies related to basic biochemical aspects |
| | | understand the Principle, general features and significance of biophysical terms like density, sedimentation, centrifugation, surface tension, adsorption |
| | | |
| | **BT103: Practical Paper I (Practical)** | Demonstrate practical skills in microscopy, laboratory equipment and their handling techniques and staining procedures. |
| | | Know various stages of cell division and also understand the significance of each event during meiosis and mitosis |
| | | Perform routine tasks safely and effectively |
| | | |
| | **BT 201: Biomolecules (Theory)** | Overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function of the above mentioned biomolecules |
| | | Specify the biological significance of biomolecules in metabolism |
| | | |
| | **BT 202: Basic Microbiology B (Theory)** | Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and familiarize the structural similarities and differences among various microbes |

| | | |
|---|---|---|
| | | Know various Culture media and their applications and also understand various physical and chemical means of sterilization |
| | | Know general bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae |
| | | Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively |
| | | understand the Principle, working and applications of instruments viz, pH meters, spectrophotometer, centrifuge, viscometer, and laminar air flow |
| | | |
| | **BT 203: Practical Paper II (Practical)** | Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures |
| | | Understand the basic microbial practices and study the comparative characteristics of prokaryotes and eukaryotes |
| | | Prepare and view specimens using microscopy (bright field microscope). |
| | | Aware and train in aseptic handling of microbial specimens. |
| | | Practice safe microbiology, using appropriate protective and emergency procedures. |
| | | |
| **SYBSc** | **BT 301 Basic Genetics** | understand basic concept of Gene, DNA |
| | | study mutation and chromosomal variations |
| | | learn basic aspect about gametogenesis and cell cycle. |
| | | understand the Mendel’s laws. |
| | | |
| | **BT 302 Bioprocess Technology** | develop an understanding of the various aspects of Bioprocess Technology. |
| | | aware with screening of Industrially Important Strains and culture collection centres |
| | | understand principles underlying design of Fermenter, Fermentation Process, upstream and downstream processing |
| | | |
| | **BT 303 Practical paper III** | acquaint with different problems regarding genetics |
| | | know various stages of cell division and understand the significance of each event during meiosis and mitosis |
| | | develop skill about isolation of industrially important microorganism and familiar with analytical techniques |
| | | |
| | **SEC I: Algae and Mushroom Cultivation** | To understand commercial development of algal culture |
| | | To aware about commercial utilization of algae |

| | | |
|---|---|---|
| | | To understand diversity of morphological and biochemical |
| | | To know role of algae in industries |
| | | Know about nutritional and medicinal value of edible mushrooms |
| | | Learn about the cultivation techniques off mushrooms |
| | | Gain knowledge on the present status of mushroom industry in india |
| | | |
| | **BT 401 Molecular Biology** | understand basic structure of DNA |
| | | understand central dogma of molecular biology |
| | | understand the process of replication, transcription, translation. |
| | | Learn regulation of all molecular processes. |
| | | |
| | **BT 402 Immune Response** | now the cellular ontogeny and organ involvement in immunity |
| | | explain the principles of self-tolerance and autoimmunity |
| | | know how the immune system can fight infections and cancer, including examples of immunodeficiency diseases |
| | | know the difference between innate and adaptive immunity |
| | | understand what antigens are and how they are presented |
| | | understand the mechanisms involved in control of immune responses |
| | | |
| | | know about the basic concept in immunology. |
| | **BT 403 Practical paper IV** | understand basics in serological practicals and its handling |
| | | ware of molecular biology techniques about isolation of genetic material. |
| | | aware and train spectrophotometric estimations of metabolites |
| | | |
| | **SEC II: Bioanalytical Instrumentation** | Explain the functioning, maintenance and safety aspects of the basic apparatus used in a Biotechnology lab. |
| | | Explain the principles and applications of Bioanalytical instrumentation |
| | | Utilize the knowledge for the separation of proteins/peptides by selecting appropriate separation techniques |
| | | Characterize certain functionalities of biomolecules by using techniques. |
| | | |

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| **Biotechnology** | | |
| T.Y.B.Sc. | BT 351 Genetics | • Understand the Mendelian and Neo Mendelian Genetics. |
| | | • Concept and Types of linkages and Crossing over. |
| | | • Concept and types Population, gene pool, gene frequency, genetic drift, speciation. |
| | | |
| | BT 352 Agricultural biotechnology | • Understand the plant microbe interaction. |
| | | • Concept of plant pathology and disease control. |
| | | • Industrial application of agricultural biotechnology. |
| | | |
| | BT 353 Animal Biotechnology | • Introduction to Animal Cell and Tissue Culture. |
| | | • Introduction to transgenic laboratory animals. |
| | | • Understand the principle and method of different cell transformation techniques. |
| | | |
| | BT 354 Industrial Biotechnology | • Understand the process of Bioprocess Technology. |
| | | • Removal and recovery of cell mass (precipitation, filtration and centrifugation.) |
| | | • Quality control, process economics and GLP. |
| | | |
| | BT 355 Food Biotechnology | • Understand the different techniques used in Food and Dairy Biotechnology. |
| | | • Aspects of Food Production. |
| | | • Food Spoilage and Preservation. |
| | | |
| | BT 356 Environmental Biotechnology | • Introduction and concept of Waste Water Treatment. |
| | | • Biodegradation and Bioremediation Techniques. |
| | | • Understand the Xenobiotics. |
| | | |
| | BT 357 (Practical course) Industrial Biotechnology | • Production and estimation of different organic compounds produced by fermentation technology. |
| | BT 358 (Practical course) Animal Biotechnology and Immunology | • Preparation of different animal cell culture and study of various immunological techniques. |
| | BT 359 (Practical course) Food and Environmental Biotechnology | • Different techniques used in industries for quality control. |
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| | BT 361 Gene Biotechnology and Bioinformatics | • Genetic engineering- concept and principle. |
| | | • Techniques in rDNA Technology. |

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| | | • Bioinformatics – Definition, history and scope of bioinformatics. |
| | | |
| | BT 362 Plant Biotechnology | • Introduction to Plant Tissue Culture and Techniques. |
| | | • History and concept of transgenic plants. |
| | | • Concept of horticulture and floriculture. |
| | | |
| | BT 363 Immunology | • Understand the Immune system & immunity, types of immunity. |
| | | • Study of Immunological techniques. |
| | | • Know the Immuno-prophylaxis. |
| | | |
| | BT 364 Advanced Bioprocess Technology | • Concept and types of biotransformation reactions. |
| | | • Production of Biofuels. |
| | | • Patenting Biotechnology and Intellectual property rights. |
| | | |
| | BT 365 Pharmaceutical Biotechnology | • Introduction and types of secondary metabolites. |
| | | • Structure, mechanism of action and applications of Chemotherapeutics Agents. |
| | | • Understand the Drug Discovery, Designing and Delivery. |
| | | |
| | BT 366 Biodiversity and Biometry | • Understand evolutionary classification, taxonomic hierarchy, concept of species. |
| | | • Concept of Bioprospecting&Biomonitoring. |
| | | • Biostatistics and Biometry. |
| | | |
| | BT 367 (Practical course) Plant Biotechnology | • Understand preparation of plant tissue culture media and culture techniques. |
| | BT 368 (Practical course) Genetics and Bioinformatics | • Understand the methods in genetics and genetical data analysis by bioinformatics tools. |
| | BT 369 (Practical course) Pharmaceutical Biotechnology | • Perform the microbial tests to validate the different pharmaceutical products. |

# DEPARTMENT OF CHEMISTRY

# DEPARTMENT OF CHEMISTRY
# Course Outcomes under Graduate Level

## FYBSc CBCS (Chemistry Courses)

| Course | Outcomes (Students will be able to ) |
|---|---|
| **Semester- I** | |
| **CH-101: Physical and Inorganic Chemistry-I** | • Develop an ability to use conceptual and mathematical tools to express and predict atomic and molecular behavior |
| | • Predict atomic structure, chemical bonding or molecular geometry based on accepted models. |
| | • Convert scientific equation in straight line to get physical parameter for slope and intercept. |
| | • Understand deviation of real gas from ideal behavior. |
| | • Understand critical constant and vanderwall‟s constant. |
| **CH-102: Organic and Inorganic Chemistry-I** | • Understand the general properties of organic compounds, applications of organic compounds. |
| | • Understand the Mono functional compounds - Common and IUPAC nomenclature of various type of organic compound. |
| | • Understand the the alkane by many organic reaction. |
| | • Understand of S- block Elements of alkali metals and Alkaline earth metals |
| | • Understand Arrhenius theory, Bronsted- Lowry theory, and Lewis theory. |
| | • Understand ionic product of water, Buffer solutions. |
| **CH-103: Chemistry Practical-I** | • Calibrate the apparatus like volumetric flask, pipette and burette. |
| | • Understand the determination of heat of solution, equivalent weight, surface tension etc. |
| | • Carry out qualitative analysis of acidic and basic radicals. |
| | • Learn the applications of types of titrations for various estimations |
| | • Carry out quantitative analysis by gravimetric method |
| | • Carry out quantitative analysis by volumetric method |
| **Semester- II** | |
| **CH-201: Physical and Inorganic Chemistry-II** | • Identify methods and instruments that can be used to study chemistry |
| | • Evaluate data generated by experimental methods for chemical characterization. |
| | • To understand specific and equivalent conductance. |
| | • To understand cell constant and use of it to obtain specific and equivalent conductance. |
| | • To know Kolhaurash‟s law and application of it. |

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| **CH-202: Organic and Inorganic Chemistry-II** | • Understand the preparations, reactions and properties of Monohalogen and Dihalogen derivatives of Alkane. |
| | • Understand the preparations, reactions and properties of Alcohol, Ether and Epoxide. |
| | • Understand the preparations and reactions of carbonyl group. |
| | • Understand the preparation of carboxylic acids. |
| | • Determine the Molecular weight, formula weight, equivalent weight of organic compounds. |
| | • Understand the Electronic structures, size of atoms and ions, ionization energy, metallic and nonmetallic of p block elements. |
| **CH-203: Chemistry Practical-II** | • Handle viscometer to determine the viscosity and relative viscosity of liquids . |
| | • Carry out quantitative analysis by instrumental method using Conductometer. |
| | • Estimate of aniline / phenol. |
| | • Perform qualitative analysis of organic compounds. |
| | • Carry out quantitative analysis by volumetric method and gravimetric methods |

## SYBSc CBCS (Chemistry Courses)

| Course | Outcomes (Students will be able to ) |
|---|---|
| **Semester- III** | |
| **CH 301: Physical and Inorganic Chemistry (Core Course)** | • Understand the properties of solution |
| | • Understand concept of  and application of colligative properties |
| | • Understand concept of vapor pressure of liquids |
| | • Learn about the D-block elements and its properties in periodic table |
| | • Understand the concept of physical properties of metals |
| | • Learn about standard electrode potential and magnetic properties of elements |
| **CH 302: Organic and Inorganic Chemistry (Core Course)** | • Review the concept of isomers and discuss the isomer which results from free rotation of C-C single bond, from a chirallity, from restricted rotation, R, S and E, Z nomenclature |
| | • Study of heterocyclic and polycyclic aromatic compounds |
| | • Study of donar and acceptor properties. |
| | • Understand the concept of molten salts, solvents for electrochemical reactions, purity of solvents |
| | • Know the importance of differentiating and levelling solvents |
| | • Learn about the co-solvating agents |
| | • Learn the concept of soft and hard acid and bases |
| **CH 303: Practical Chemistry** | • Understand the technique and process of physical chemistry experiment |
| | • Understand the use/application of volumetric titration |
| | • Use of chromatography in sample analysis |
| | • Carryout the preparation of organic compounds (darivatives) |

| | |
|---|---|
| **CH-304: Basic Analytical Chemistry (Skill Enhancement Course) SEC-I** | • Understand the concept of analytical chemistry |
| | • Understand Good laboratory practices: Material Safety Data Sheet (MSDS), fire safety, Handling of chemicals |
| | • Know about titration method use for analysis |
| | • Understand the concept and application of Acid-Base titration |
| | • Understand the concept and application of precipitation titration |
| | • Understand the concept of Chromatography and its application in analytical chemistry |
| **Semester- IV** | |
| **CH 401: Physical and Inorganic Chemistry (Core Course)** | • Understand the concept of electrochemistry |
| | • Understand concept of chemical thermodynamics and its use |
| | • Understand about basic concept of co-ordination chemistry |
| | • Understand the general properties of metals |
| | • Understand about type and application of Semiconductor |
| **CH 402: Organic and Inorganic Chemistry (Core Course)** | • Understand the concept and application of synthetic reagents |
| | • Understand the synthesis of synthetic reagents and their synthetic utility |
| | • Know the concept of organometallic compounds and its use in synthesis |
| | • Understand the concept of Molecular Orbital Theory (MOT) |
| | • Understand the use of molecular orbital treatment for Homo and Hetero nuclear diatomic species |
| **CH 403: Practical Chemistry** | • Understand the technique and process of physical chemistry experiment |
| | • Carry out qualitative analysis of organic compounds |
| | • Determine critical solution temperature |
| | • Perform gravimetric analysis |
| | • Preparation of inorganic compounds synthetically in the laboratory |
| **CH 404: Advanced Analytical Chemistry (Skill Enhancement Course) SEC-II** | • Understand the concept and application of redox titration |
| | • Understand the concept and application of complex metric titration |
| | • Understand the concept and application of gravimetric analysis |

| Class | Course | Outcomes (After completion of this course, the students will be able to) |
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| **TYBSc** | **SEM V** | |
| | **CH-501 Principles of Physical Chemistry-I** | Understand the significance of wave function and postulates of quantummechanics. |
| | | Deduce rate equations and half-life equations for first and second order reactions. |
| | | Draw and explain the one and two component system phase diagrams. |
| | | Explain the principles of electrode processes and apply them during practical. |
| | **CH-502 Inorganic Chemistry** | Learn about the VSEPR theory and how it can be used to explain molecular shapes. |
| | | Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap. |
| | | Learn about stability of complexes using CFSE. |
| | | Learn about MOT to draw energy diagrams and to predict bond order. |
| | **CH-503 Organic Reaction Mechanism** | Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination. |
| | | Students will be able to write/ explain mechanisms of those types of reactions. |
| | | Students will understand how a reaction takes place in one or more steps. |
| | | Students will understand the types of intermediates formed in different reactions. |
| | | Students will learn how reagent attacks the substrate molecule and accordingly how bonds break and formed. |
| | | Students will learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry. |
| | | Students will be able to predict the products and to suggest the mechanisms. |
| | **CH-504 Industrial Chemistry** | Basic requirements of Chemical Industry, different terms, operations and processes involved in chemical Industry. |
| | | Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO). |
| | | Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar and uses of by-products of sugar industry. |
| | | Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry. |
| | | Understand Occurrence of Petroleum, theories of formation of Petroleum and different terms Viz. Knocking, Anti-Knock Compounds, Octane number, Cetane number, Gasohol and Power alcohol etc. |
| | | Manufacturing processes involved in Industrial Organic Synthesis such as Methanol, Isopropanol, Glycerol, Acetylene and Aromatic hydrocarbon i.e. Toluene from petroleum with their uses. |
| | **CH-505 Analytical Instrumentation** | Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis. |
| | | Express the role of analytical chemistry in science. |

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| | | Students will be able to function as a member of an interdisciplinaryproblem solving team. |
| | **CH-506(A)**<br>**Biochemistry** | Students will study biomolecules like carbohydrates, amino acids, proteins, enzymes, lipids and nucleic acids. |
| | | Students will understand definitions, classifications and examples of these biomolecules. |
| | | Students will learn the detailed structure of these biomolecules along with types of bonds or linkages present in their molecules. |
| | | Students will learn the chemical properties of these biomolecules and the action of some reagents on them in the form of reactions or graphical presentation. |
| | | Students will understand biochemical energetics of common energy rich compounds along with hydrolytic reactions. |
| | | Students will learn metabolisms like Glycolysis, TCA cycle, Transamination, deamination and ß- oxidation through reactions, enzymes involved, outlines and energetics. |
| | **CH-506(B)**<br>**Green Chemistry** | With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances.<br>The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield. |
| | | The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock, renewable energy sources, importance of green solvents, etc. |
| | | The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems. |
| | | Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry. |
| | **CH-507**<br>**Physical Chemistry Practical** | Students will get basic analytical and technical skills to work effectively in the various fields of chemistry. |
| | | Students will able to calibrate and handle instruments like conductometer, potentiometer, pH meter, colorimeter, spectrophotometer, polarimeter. |
| | | They have ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. |
| | | They get skills required in chemistry such as the proper handling of apparatus and chemicals. |
| | | They will have ability to present scientific and technical information resulting from laboratory experimentation in both written and oral formats. |
| | | Students will apply conductometer, potentiometer, pH meter, colorimeter, spectrophotometer, polarimetery techniques for analysis and measurement. |
| | **CH-508**<br>**Inorganic Chemistry Practical** | Student will able to determine cation& anion from inorganic mixtures by using qualitative analysis. |
| | | Student will able to determine metal from ore & alloys. |
| | | Students will be able to design & carry out scientific experiments as well as accurately record & analyze the results of experiments. |
| | | Students will be able to handle colorimeter for estimation of metal ions. |
| | **CH-509** | Separate and analyze binary water insoluble mixture. |

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| | **Organic Chemistry Practical** | Separate and analyze binary water-soluble mixture. |
| | | Estimate - Acetamide, Glucose and Glycine by volumetric method. |
| | | Estimate basicity of various acids. |
| | | Synthesis of various organic compounds through greener alternatives. |
| | | Understand Thin Layer Chromatographic techniques and physical constant. |
| **TYBSc** | **SEM VI** | |
| | **CH-601 Principles of Physical Chemistry-II** | Analyze the rotational spectra of diatomic molecules and determine the bond length. |
| | | Explain and apply the radioactivity principles for various chemical and biological investigations. |
| | | Describe the mechanism of fluorescence, phosphorescence and photochemical reactions. |
| | | Analyze the given crystal structure and determine the indices of planes, inter-planer distances and type of crystal structure. |
| | **CH-602 Chemistry of Inorganic Solids** | Learn about basic principles and synthesis of nanomaterials. |
| | | Learn about classification, composition and processing of cement. |
| | | Learn about classification and composition of alloys. |
| | | Learn about types manufacture and applications of fertilizers. |
| | **CH-603 Spectroscopic Methods of Structure Determination** | Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters. |
| | | Students will learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum. |
| | | Students will learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum. |
| | | Students will understand principle of UV spectroscopy and nature of UV spectrum. They will learn types of electronic excitations. |
| | | Students will be able to calculate maximum wavelength for any conjugated system. And from the value of λ-max they will be able to find out extent of conjugation in the compound.<br>Students will understand principle of IR spectroscopy, types of vibrations and the nature of IR spectrum. |
| | | From IR spectrum, they will be able to find out IR frequencies of different functional groups. And thus, they will be able to find out functional groups present in the compound. |
| | | Students will understand principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants. |
| | | Students will be able to interpret the NMR data and they will be able to use it for determination of structure of organic compound. |
| | | Students will be able to determine structure of simple organic compounds on the basis of spectral data such as λ max values, IR frequencies, chemical shift (d values). |
| | **CH-604 Chemistry of Industrially Important Products** | Describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use. |
| | | Gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries. |
| | | Importance of Cosmetics Industry and a general study including preparation and uses of the Hair dye, hair spray, shampoo, suntan |

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| | | lotions, lipsticks, talcum powder, nail enamel, creams (cold, and shaving creams). |
| | | Perfumes and identify the distinguishing features of its components and also an essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone etc. |
| | | Know about pesticides both natural and synthetic, benefits and adverse effects of it, also synthesis, manufacture and uses of pesticides viz. Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor). |
| | | Definition, classification, raw material used in soaps and detergents, reaction involved in it, Manufacture of Soaps and cleansing action of soaps and detergents. |
| | | Definition, properties of good dyes, relation between colour and constitution, classification of dyes according to their mode of application and chemical constitution. |
| | | Importance's, definition and meaning of the different terms involved in Drugs and Pharmaceuticals Industry and also synthesis, uses, properties and industrial manufacture of Paracetamol, Aspirin, and Chloramphenicol. |
| | **CH-605**<br>**Analytical Techniques** | Compare the Instrumental methods and non instrumental methods and there advantages. |
| | | Solve the problem of detection and separation using analytical instruments. |
| | | Students will be able to explore new areas of research in both chemistry and allied fields of science and technology. |
| | | Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems. |
| | **CH-606(A)**<br>**Polymer Chemistry** | Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response. |
| | | Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index. |
| | | Identify different mechanisms of polymerizations *viz*. free radical, ionic, and condensation polymerizations. |
| | | Distinguish techniques of polymerization based on physical conditions required for the preparation of polymers in laboratory or industry. |
| | | Familiar with preparation, properties, and applications of industrially important selected polymers. |
| | **CH-606(B)**<br>**Research Methodology for Chemistry** | Students will learn about what is research, research methods and impact of chemical research on society through pure and applied research. |
| | | Students will learn how to analyze research in chemistry drawn from contemporary primary chemical literature. |
| | | Student will formulate thesis topic, explain its significance and propose the methodology to be used in the thesis topic research. |
| | | Student will demonstrate proficiency in scientific writing which includes:<br>o Ability to interpret and synthesize primary research literature related to the student's thesis topic.<br>o Ability to write a coherent narrative that explains the significance of the thesis research with regard to the primary research literature.<br>o Ability to report original research results in a coherent narrative.<br>o Ability to explain and defend conclusions draw from original results in narrative form.<br>o Prepare and present scientific topics orally utilizing presentation software such as PowerPoint. |

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| | | Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments. |
| | | Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems. |
| | | Students will be able to communicate the results of scientific work in oral, written and electronic formats. |
| | | Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behaviour in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine. |
| | **CH-607**<br>**Physical Chemistry Practical** | Students will get basic analytical and technical skills to work effectively in the various fields of chemistry. |
| | | Students will able to calibrate and handle instruments like conductometer, potentiometer, pH meter, colorimeter, spectrophotometer, polarimeter. |
| | | They have ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. |
| | | They get skills required in chemistry such as the proper handling of apparatus and chemicals. |
| | | They will have ability to present scientific and technical information resulting from laboratory experimentation in both written and oral formats. |
| | | Students will apply conductometer, potentiometer, pH meter, colorimeter, spectrophotometer, polarimetery techniques for analysis and measurement. |
| | **CH-608**<br>**Inorganic Chemistry Practical** | Students will be able to prepare co-ordination compounds. |
| | | Students will be able to determine amount of metal by using quantitative analysis. |
| | | Students will be able to calculate Rf value of metal. |
| | | Students will be able to design & carry out scientific experiments as well as accurately record & analyze the results of experiments. |
| | | Students will be able to explain why chemistry is an integral activity for addressing social, economic & environmental problems. |
| | | Understand the purification technique use in organic chemistry. |
| | **CH-609**<br>**Organic Chemistry Practical** | Separate and analyze binary water insoluble mixture. |
| | | Separate and analyze binary water soluble mixture. |
| | | Estimate - Acetamide, Glucose and Glycine by volumetric method. |
| | | Estimate basicity of various acids. |
| | | Synthesis of various organic compounds through greener alternatives. |
| | | Understand Thin Layer Chromatographic techniques and physical constant. |
| | | Understand the purification technique use in organic chemistry. |

# MSc (Organic Chemistry Courses)

| Class | Course | Outcome |
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| **M. Sc. I** | **SEM - I** | |
| | **CH-110: Physical Chemistry – I** | Apply the quantum mechanical principles to simple systems of chemical interests |
| | | Differentiate between the nature of chemical bond concept from MOT and VBT |
| | | To identify and write the different types of equilibriums in a given nuclear decay process |
| | | To explain the concept of Radiation dose measurement and its practical applications |
| | | To be able to calculate the ionic strength and activity coefficients by using the basic concepts underlying. |
| | **CH-130: Inorganic Chemistry – I** | Apply the fundamental knowledge about the synthesis, structure, bonding and properties of some selected main group elements which are very important in different fields. |
| | | Apply fundamental knowledge about molecular symmetry, MOT, organometallic compounds, ionic solids and bioinorganic compounds. |
| | | Explain various concepts and theories of various topics from inorganic chemistry. |
| | **CH-150: Organic Chemistry – I** | Apply the fundamental concepts of organic reaction mechanism in theoretical and practical work, may be in academic, research laboratories, and industries. |
| | | Understand the importance and types of organic reactions and their applications. |
| | | Acquire knowledge of important characteristics of organic compounds. |
| | **CH-190: Industrial Safety and Good Laboratory Practices** | Understand the importance of laboratory safety. |
| | | Aware and follow healthy laboratory practices. |
| | | Acquire the knowledge about personal protective equipment. |
| | **CH-P-1 (A): Physical Chemistry Practical – I** | Students will understand the preparation for each experiment. |
| | | Setup and standardize the potentiometer, $P^H$ meter and conductometer. |
| | | Identify thermodynamics and kinetics of simple systems. |
| | | To know Safety requirements and lab skills to perform physico-chemical experiments. |
| | | To apply the principles and techniques to different systems. |
| | **CH-I-1 (A): Inorganic Chemistry Practical-I** | Students will understand the process of over analysis. |
| | | Students able to apply their knowledge for binary mixture separation of inorganic compounds using quantitative analysis |
| | | Students can analyze contents present in drug |
| | | Students able to evaluate the lattice energy of binary salt |
| | **CH-O-1 (A): Organic Chemistry Practical-I** | Students understand the important of safety techniques and handling of chemicals. |
| | | Students are made aware of carrying out different types of reactions and their workup methods. |

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| | | Students are able to apply their knowledge for development of experiment involve green chemistry. |
| | | Students able to perform purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction. |
| | **AC-101: Practicing Cleanliness** | Identify need at of cleanliness at home/office and other public places. |
| | | Plan and observe cleanliness programs at home and other places. |
| | | Practice cleanliness practices in day to day life. |
| | **CH - 210: Physical Chemistry – II** | Students will gain an understanding of Joule-Thomson effect, third law of thermodynamics, absolute entropy, standard entropy and residual entropy and partial molar quantity and its significance. |
| | | Students should understand the importance of statistical thermodynamics and concept of partition functions. |
| | | Students should able to understand core study of chemical kinetics and spectroscopy. |
| | **CH - 230: Inorganic Chemistry – II** | Understand the concept of microstates, spectroscopic terms and orgel diagram of inorganic compounds. |
| | | Gain knowledge about magnetic properties and charged transfer spectra of transition metal complexes. |
| | | Students are able to analyze structure reactivity and reaction mechanisms of metal complexes. |
| | **CH - 250: Organic Chemistry – II** | Students will learn the basic name reactions and rearrangement reactions. |
| | | Students will understand the applications of reagents in organic synthesis. |
| | | Students will apply the basic knowledge about core study of spectroscopy and stereochemistry |
| | **CH - 290: Instrumentation and Analysis** | Explain various theoretical concepts of analytical chemistry. |
| | | Build up ability to solve the numerical problems. |
| | | Apply theoretical principles, working of various classical and modern instrumentation techniques. |
| | **CH-P-1 (B): Physical Chemistry Practical – II** | Students will understand the preparation for each experiment. |
| | | Setup and standardize the potentiometer, $P^H$ meter and conductometer. |
| | | Identify thermodynamics and kinetics of simple systems. |
| | | To know Safety requirements and lab skills to perform physico-chemical experiments. |
| | | To apply the principles and techniques to different systems. |
| | **CH-I-1 (B): Inorganic Chemistry Practical-II** | Students are able to synthesize and evaluate the complex and also able to determination of complex purity. |
| | | Students understand the techniques of chromatography and its application in analysis. |
| | | Students able to handle and perform the instrumental analysis techniques. |
| | | Students able to perform estimation of inorganic compounds. |
| | **CH-O-1 (B): Organic Chemistry Practical-II** | Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction. |
| | | Students are made aware of safety techniques and handling of chemicals. |
| | | Students are made aware of carrying out different types of reactions and their workup methods. |

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| | | This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction. |
| | **AC-201(A): Soft Skills** | Develop soft skill in students |
| | | Students are aware about the use of soft skills in the personal and professional development. |
| | **AC-201(B): Practicing Sports Activities** | Aware about various sports and its importance in physical strength development. |
| | | Develop interest in various sports. |
| | | Students are motivated towards sports and provide them required training. |
| | **AC-201(C): Practicing Yoga** | Students are motivated towards yoga and provide them required training. |
| | **AC-201(D): Introduction to Indian Music** | Students are motivated towards Indian music and provide them minimum required training. |
| | | Identify different types of Indian music. |
| | | Develop more interest to learn and practice Indian music. |

| **Semester- III** | |
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| **CH-350: Organic Reaction Mechanism** | • Compare the major and minor product of variety of organic reaction. |
| | • Understand accepted mechanism of organic reaction including all intermediates |
| | • Solve the problems on Taft and Hammet constant. |
| | • Understand Concave upward and downward deviation. |
| | • Learn the type‟s hydrolysis of ester. |
| | • Solve problems on Anchimetric assisted reaction. |
| **CH-351: Spectroscopic Methods in Structure Determination** | • Understand principle and instrumentation of 1H NMR, 13 C NMR and Mass spectroscopy. |
| | • Investigate structures on these techniques. |
| | • Resolve structure of organic compounds by 2D NMR techniques. |
| | • Analyze reaction sequences by using spectroscopic technique. |
| **CH-352: Organic Stereochemistry** | • Understand the basic concepts of stereo chemistry |
| | • Assign structure of organic molecules. |
| | • learn Three dimensional structure of cyclic and acyclic compounds |
| | • Use selectivity of reagents for chemical reactions. |
| | • Compare the major and minor product of asymmetric synthesis. |
| | • Solve the examples on ORD and CD. |
| **CH-353: Free radical, photochemistry, pericyclic reaction and their application** | • Understand term quantum yield, and electronic states and transitions in molecules. |
| | • Understand Norrish-I and Norrish-II cleavages, Paterno-Buchi reaction. |
| | • Understand Photochemistry of olefins and arenes: 1, 2- , 1, 3- and 1, 4- additions. |
| | • Understand free radical reaction contain Halogen, Sulphur, and, Selenium Group transfer reaction. |
| | • Understand selection rule for thermal and photochemical reactions. |

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| | • Understand Frontier molecular orbital approach [FMO] and Aromatic transition state approach according to Huckel and Mobius system. |
| **Semester- IV** | |
| **CH-450: Chemistry of Natural Products** | • Know concept of biogenesis of natural products. |
| | • Classify sources of various vitamins. |
| | • Learn biological importance of vitamins B1, B2, B6, folic acid, B12, C, D1, E, K1, and K |
| | • Understand and apply the role of enzyme in reactions. |
| | • Synthesize natural organic compounds by chemical methods. |
| | • Learn the stereochemistry of natural product. |
| **CH-451: Synthetic Methods in Organic Chemistry** | • Understand Transition metal complexes in organic synthesis, Grubb‟s catalyst, Ziegler Natta catalyst. |
| | • Design the organic compounds by use of synthetic reagents |
| | • Understanding role of Umpolung in organic synthesis. |
| | • Understanding Protection and deprotection in the synthesis of polypeptide and polynucleotide. |
| | • Know basic principles of green chemistry and design green synthesis. |
| | • Use ecofrindly green reagents, solvents, catalysts and reaction conditions. |
| **CH-452: Heterocyclic chemistry, Chiron approach and chiral drugs** | • Know the main synthetic routes and reactivity for variety of heterocyclic compounds and applications. |
| | • Understand Important Terms –Receptor, therapeutic index, bioavailability, Drug assay and Drug Potency used in medicinal chemistry. |
| | • Understand Structure of triose, Pentose, hexose, Stereochemistry and reaction of Glucose. |
| | • Understand Synthesis and Pharmacological activity of S-Ibuprofin , S-Metaprolol, (+) Ephedrime |
| | • Understand basic Pharmacokinetics of drugs, anti Microbial drugs, Antifungal, Antibacterial, antiviral, antiprotozoals. |
| **CH-O-2: Organic Preparation Practical** | • Separate organic compounds in different phases. |
| | • Perform qualitative test to analyze functional group of organic compounds. |
| | • Learn distillation technique. |
| | • Detect elements N, S, and X in organic compounds. |
| | • Use purification techniques of organic compounds . |
| **CH -O-3: Three Stage Preparations** | • Perform three stage preparation. |
| | • Draw the reaction mechanism. |
| | • Purify the organic compounds by crystallization. |
| | • Perform chromatographic technique to check completion of reaction. |
| | • Apply the knowledge about different reaction conditions. |
| **CH-O-4: Short Research Project** | • Survey literature for the topic of the project. |
| | • Learn to apply reaction conditions for synthesis, isolation of product and give mechanism. |
| | • Handle instruments for analysis and discuss their experiment al results. |
| | • Used ICT tools to prepare project reports and present it using Power point presentation. |
| | • Work within a small team to achieve a common research goal. |

# DEPARTMENT OF COMMERCE & MANAGEMENT

# Course Outcome
## Department of Commerce

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| **F.Y.B. COM.** | **104 Financial Accounting and Costing** | To lay a foundation for understanding the Accounting Standards issued by the ICAI. |
| | | To lay down a theoretical foundation for the recording of financial transactions concerning specialized area related to Non-corporate entities and for preparing the related accounts or statements. |
| | | To gain the ability to solve problems relating to settlement of obligations on dissolution of partnership firm and also relating to their business combinations |
| | | To introduce the concepts used in Cost Accounting, elements of costs and the concept of cost sheet. |
| | | To lay a foundation for the preparations of financial statements from incomplete record. |
| | | To lay a foundation for understanding the Accounting procedure for Material cost and price methods. |
| | **105 Computing Skills** | To familiarize the Students with basics of Internet. |
| | | To understand the use of Office application. |
| | | To know the role of word processor, Spread sheet, presentation in industry . |
| | | To understand the how of accounting software works . |
| | | To know the relevance of Tally accounting package in modern competitive world. |
| | **106 a - Elective - Modern office Management** | To understand the concept of office management. |
| | | To acquire operational skills of office management. |
| | | To develop the interest in methods and procedures of office management. |
| | | To know the secretarial procedure. |
| | | To understand office layout and environment in modern context. |
| | | To acquire the basic knowledge of office appliances and machines. |
| | | To understand office system. |
| | | To acquire knowledge of office meetings and proceedings. |
| | **107 c - Elective - Marketing & Advertising** | To create awareness about marketing & advertising |
| | | To understand basic concepts of marketing & advertising |
| | | To establish link between business and marketing & advertising |
| | | To know the relevance of marketing & advertising in modern competitive world |
| | | To develop an analytical ability to plan for various marketing& advertising strategy. |
| SY BCOM | **301Business Skill** | Understand the significance and essence of a wide range of soft skills |
| | | Learn how to apply soft skills in a wide range of routine social and professional settings. |
| | | Learn how to employ soft skills to improve interpersonal relationships. |
| | | Learn how to employ soft skills to enhance employability and ensure workplace and careersuccess. |
| | **303Business and Tax Laws** | Draft legal documents including partnership deed & service tax returns. |
| | | Understand the basic structure, rules & powers of consumer protection act. |

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| | | To know the provision regarding strikes and lock outs under industrial dispute act. |
| | | Be acquainted with development of patents and environment protection act. |
| | | Students to gain a better underrating of the negotiable instrument act. |
| | | Learn how to analysis the legal constraints on business. |
| | | Be able to face the problems on various sides of Business and Tax Law. |
| | **304 Corporate Accounting** | To acquaint the students with modern updated computerized accounting system and software. |
| | | To develop an understanding of the rules of measurement and reporting relating to various components ofcorporate financial transactions. |
| | | To provide working knowledge of accounting principles and procedures for recording oftransactions relatedto corporate entities. |
| | | To provide working knowledge for preparing the corporate accounts and statements inaccordance with thestatutory requirements. |
| | | Students will be able to handle issues related to corporate accounting. |
| | **305 Computing Management** | Demonstrate a basic understanding of computer hardware and software. |
| | | Demonstrate problem-solving skills. |
| | | Apply logical skills to programming in a variety of languages. |
| | | Utilize web technologies. |
| | | Present conclusions effectively, orally, and in writing. |
| | | Demonstrate basic understanding of network principles. |
| | | Working effectively in teams. |
| | | Apply the skills that are the focus of this program to business scenarios. |
| | **306 (a) – Business Entrepreneurship** | to understand different methods to assess the attractiveness of business opportunities |
| | | to understand what characterizes an attractive business opportunity and common pitfalls duringthe entrepreneurial process |
| | | to products or services to market |
| | | to understand different methods that can be used to minimize uncertainties at different stages of the entrepreneurial process |
| | | to understand the dynamics of how teams develop and function as well as the various types of conflicts that can arise during teamwork |
| | **307 (c) – Retail Management** | Explain the central role of retail in industrialised societies, and the impact of key market/retail trends upon this sector in the local and global contexts. |
| | | Identify the key stakeholders and the roles/responsibilities of retail towards these stakeholders |
| | | Understand and apply appropriate frameworks to develop high level retail marketing strategy, and identify the role of marketing strategies in the building of brand equity and shareholder value in the retail industry |
| | | Evaluate the implementation of marketing strategy through the retail mix – including product and |

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| | | merchandise mix, pricing, location and store- design, promotions, and store management - to improve the total customer experience and retailer market competitiveness. |
| | | Interpret retail problems and be capable of critically evaluating and applying appropriate retail management models and theories to generate strategic and tactical solutions |
| | | Analyse how retail managers can make informed strategic choices in relation to managing channel partners, retail form (online vs. bricks and mortar), global sourcing, and managing staff to improve strategic outcomes. |
| | **401Business Skill** | Understand the significance and essence of a wide range of soft skills |
| | | Learn how to apply soft skills in a wide range of routine social and professional settings. |
| | | Learn how to employ soft skills to improve interpersonal relationships. |
| | | Learn how to employ soft skills to enhance employability and ensure workplace and career success. |
| | **403Business and Tax Laws** | Describe the legal system and the legal environment of business. |
| | | Describe the relationship of ethics and law in business. |
| | | Define relevant legal terms in business. |
| | | Explain basic principles of law that apply to business and business transactions. |
| | | Describe business law in the Indian context. |
| | | Describe current law, rules, and regulations related to settling business disputes. |
| | | Understand different technical terminology used in this act |
| | | Discussed and consult businesses on related issues of business laws |
| | **404 Corporate Accounting** | A comprehensive understanding of the advanced issues in accounting for assets, liabilities and owner’s equity. |
| | | The ability to account for a range of advanced financial accounting issues |
| | | The ability to prepare consolidated accounts for a corporate group. |
| | **405Cost Accounting** | Demonstrate a basic understanding of computer hardware and software. |
| | | Demonstrate problem-solving skills. |
| | | Apply logical skills to programming in a variety of languages. |
| | | Utilize web technologies. |
| | | Present conclusions effectively, orally, and in writing. |
| | | Demonstrate basic understanding of network principles. |
| | | Working effectively in teams. |
| | | Apply the skills that are the focus of this program to business scenarios. |
| | **406 (a) – Business Entrepreneurship** | to understand different methods to assess the attractiveness of business opportunities |
| | | to understand what characterizes an attractive business opportunity and common pitfalls during the entrepreneurial process |

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| | | to understand different methods that can be used to minimize uncertainties at different stages of the entrepreneurial process |
| | | to understand the dynamics of how teams develop and function as well as the various types of conflicts that can arise during teamwork |
| | **407 (c) – Retail Management** | Explain the central role of retail in industrialised societies, and the impact of key market/retail trends upon this sector in the local and global contexts. |
| | | Identify the key stakeholders and the roles/responsibilities of retail towards these stakeholders |
| | | Understand and apply appropriate frameworks to develop high level retail marketing strategy, and identify the role of marketing strategies in the building of brand equity and shareholder value in the retail industry |
| | | Evaluate the implementation of marketing strategy through the retail mix – including product and merchandise mix, pricing, location and store- design, promotions, and store management - to improve the total customer experience and retailer market competitiveness. |
| | | Interpret retail problems and be capable of critically evaluating and applying appropriate retail management models and theories to generate strategic and tactical solutions |
| | | Analyse how retail managers can make informed strategic choices in relation to managing channel partners, retail form (online vs. bricks and mortar), global sourcing, and managing staff to improve strategic outcomes. |
| TY BCOM | **Principles of Auditing** | 1) understand the concept of Audit and its various types,<br>2) prepare and implement an audit programme,<br>3) vouch the transactions recorded in the books of accounts of an organisation,<br>4) verify the assets and liabilities, and<br>5) maintain the necessary documentation in relation to the audit,<br>6)understand the concept of Investigation, internal check and internal control,<br>7)understand the various provisions of the Companies Act, 2013 in relation to the appointment of auditors, and their powers, duties and liabilities,<br>8)understand the manner of auditing the capital and borrowing raised by a limited company,<br>9)understand the contents of an audit report |
| | 503 - Business Management | • Understand the significance and essence of management concepts, principles and skills.<br>• Learn how to apply Management concepts, principles and skills in business setting and improving business environment.<br>• Learn how to employ Management skills to enhance employability and ensure workplace and career success<br>• Understand the significance and essence of management concepts, principles and skills.<br>• Learn how to apply management concepts, principles and skills in business setting and improving business environment.<br>• Learn how to employ Management skills to enhance employability and ensure workplace and career success. |

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| | **504 - Income Tax** | 1. Understand the various provisions relating to Income Tax<br>2. Determine the basic concepts of the Income Tax Act 1961<br>3. Describe the elementary knowledge of scheme of taxation in India<br>4. Compute Income and Tax of an Individual assesse under the Act<br>5. Utilize working knowledge with application skill. |
| | **604 - Goods & Services Tax (GST)** | 1. To develop basic understanding of procedural aspects of Goods & Service Tax Law.<br>2. To provide overview of various provisions under GST Law.<br>3. understand Registration under GST<br>4. Know about how to Maintenance of Records and Input Tax Credit<br>5. Understand about Offences and Penalties |
| | **505 a -Human Resource Management** | 1. Students can know concepts , principles and practices of HRM.<br>2. Familiar with concepts of HR Planning , job analysis, recruitment and selection.<br>3. Development in total personality of students as future human resource of India.<br>4. Acquaint the knowledge of recent trends in HRM.<br>5. Students have the knowledge of management development and training procedure to Human Resource.<br>6. Students are familiar to the recent trends in Human Resource Management.<br>7. Total Personality of students can be develop as a future Human Resource of India.<br>8. Acquaint the knowledge of various dimensions of Human Resource Management.<br>9. Familiar with work culture and discipline. |
| | **7 a:AdvancedAccounting–II** | 1. Understand the various concepts of Advanced Accounting<br>2. Utilize working knowledge with application skill of Advanced Accounting.<br>3. Preparing the Bank Companies Statements in accordance with the statutory requirements.<br>4. Prepare Statements regarding Royalty Accounts and Insolvency Accounts.<br>5. Understanding knowledge of Hire Purchase, Banking Companies and Farm Accounting.<br>1. Understand the various concepts of Management Accounting<br>2. Describe the elementary knowledge of Financial Statement Analysis and Interpretation.<br>3. Utilize working knowledge with application skill of Management Accounting.<br>4. Compute Ratio Analysis and Prepare Fund Flow and Cash Flow Statements.<br>5. Understanding knowledge of Budget and Budgetary Control. |

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| | **507 a - Advanced Accounting - II** | 1. Understand the various concepts of Corporate Sector Accounting.<br>2. Developing techniques of reconstruction of Companies financial statement.<br>3. Preparing the Reconstructed Financial Statements.<br>4. Understanding knowledge of Liquidation of Companies<br>5. Utilize working knowledge with application skill of Advanced Accounting.<br>6. Understand the various concepts of Advanced Accounting<br>7. Preparing the Government Accounts in accordance with the statutory requirements.<br>8. Prepare Statements regarding Service Sector and Independent Branch.<br>9. Understanding knowledge of Accounting of Educational Institution and Insurance Claim. |
| MCOM | **103 Research Methodology in Commerce & Management** | To study Research Methodology for decision making in business |
| | | To understand process of research by students by filling questionnaire for preparation of research report. |
| | **104 D Marketing Management** | To facilitate understanding of the conceptual framework of marketing. |
| | | Students able to define and analyze the marketing problems through the formulation of marketing objectives, policies, programmes and strategies. |
| | | To help students comprehend various situations and marketing terminologies |
| | | To help students understand various marketing tools/models for solving marketing problems |
| | | To understand effective marketing strategies to achieve organizational objectives. |
| | **203-A ) Modern Management Practices**<br>**301 Management Accounting** | Understand fundamental concepts and principles of management, including the basic roles, skills, and functions of management. |
| | | Be knowledgeable of various theories, principles, process of Management. |
| | | Be familiar with interactions between the planning, controlling, and quality control in organizations |
| | | Be aware of the ethical dilemmas faced by managers and the social responsibilities of Organization. |
| | | understand the nature, mechanics and tools of management accounting and their managerial implications. |
| | | understand the philosophy and rationale of the financial analysis |
| | | understand the techniques of analysis and interpretation of financial statements |
| | | develop an appreciation about the utility of techniques of financial analysis for management information and decision making process. |
| | | evaluate the implications of cash flow and fund flow on financial position of an industrial organisation. |
| | **302 Entrepreneurship & Project Management** | encourage and inspire the students to become an Entrepreneur. |
| | | acquaint the students with the challenges to start a new venture. |
| | | provide theoretical foundation for executing various projects. |
| | | highlight the support system for Entrepreneurship Development. |
| | **303 Organisational Behaviour** | get an overview of organizational behaviour and the challenges and opportunities |

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| | | understand the concept of behaviour – individual and organizational Behaviour |
| | | know about perception, learning, attitude, values and emotions |
| | | gain knowledge of Motivation and Leadership and its various theories |
| | | acquire basic knowledge of organisational change and development |
| | **304 (D) Marketing Management** | understand various concepts and theoretical aspect of internet marketing |
| | | know the mechanism of internet marketing |
| | | study the strategies of internet advertising |
| | **401 Management Accounting** | understand the concept and techniques of financial control used in management accounting |
| | | imbibe knowledge about the control techniques namely budgetary control and standard costing. |
| | | develop the skill to analyse the cost-variance for effective cost control. |
| | | familiarise with the concept, role, and utility of marginal costing, and its implications and utility for managerial decision making process. |
| | | acquaint themselves with the concept and significance of working capital and its implications in managing the funds. |
| | | familiarise with the concept, role, and utility of marginal costing, and its implications in decision making |
| | | provide necessary inputs in form of concepts, theories and appraisal techniques related to capital expenditure decisions, and develop an integrated approach to capital-expenditure decision-making process. |
| | **402 Modern Retail Management** | acquaint the students with the various concepts and theoretical aspect of retail management |
| | | introduce the most modern techniques and practices of retailing for employment opportunity |
| | | understand dynamics of modern organised retail trade |
| | | get the insight of the theoretical aspect of retail management |
| | | know the modern techniques and practices of retailing in India |
| | | design the strategies and understand dynamics of modern organised retail trade |
| | **404 (D) Marketing Management** | 1. get the insight of the philosophy and framework of marketing research |
| | | 2. know the important aspects to be studied in marketing research |
| | | 3. get equipped with the ability to apply the marketing research techniques to solve the marketing related problems of a business organisation |

# DEPARTMENT OF COMPUTER SCIENCE

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| Computer Science | | |
| FYBSc | CS 101 Basics of Computer | Understand the History ofComputers. |
| | | Understand What is Computer and Basic concepts ofcomputer. |
| | | Aware about various types of Computers, types of input and outputdevices. |
| | | • Preparation of Algorithm and Flowchart ofProgram. |
| | | • Learn computer networks, its types and basics ofInternet. |
| | | • Understand computer viruses and itstypes. |
| | | |
| | CS 102 C Programming Language- I | • Develop their programmingskills. |
| | | • Be familiar with programming environment with C Programstructure. |
| | | • Declaration of variables andconstants. |
| | | • Understand operators, expressions andpreprocessors. |
| | | • Understand arrays , it's declaration anduses. |
| | | |
| | CS 103 LAB Course on Essential of Computer and C programming | How LAN work in laboratory, Sharing of Computer and printer in Network |
| | | Creation of an e-mail account, sending and receiving emails with attachment |
| | | To Study various editors and perform program using standard input output Statements. |
| | | |
| | CS 201 Internet Computing | • Understand the Types of Website, it's Structure, Site Organization Model , Site Planning andTesting. |
| | | • Understand how to design website with different website developmentmodels. |
| | | • Know the different page types on websites and it'snavigations. |
| | | • Designing website using HTMLlanguage. |
| | | • Design advanced website usingCSS. |
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| | CS 202 C Programming Language- II | • Design programs using Functions, Pointers , Structures and Unions in Clanguage. |
| | | • Write a program using FileHandling. |
| | | • Writing programs for drawing different graphicalshapes. |
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| | CS-203 LAB Course on Internet Computing and C Programming | • Oncompletionofthecourse,studentsareabletodevelopprogramsusingCtomeetrealworldneedsandabletodevelop their own websites. This course provides platformto<br>enhancestudent‟s basic skills required for advanced programming. |
| | | |
| SYBSc | COMP 211 : Data Structure-I | • Know what is data structure and basic algorithmicnotations. |
| | | • Analyse the time and space requirement of anyalgorithm. |
| | | • Understand different linear data structures for conversion of mathematical expressions and polynomialrepresentations. |
| | | • Know the filestructures. |
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| | COMP 212 : OOAD & Introduction to C++ | • Be familiar with Object Oriented ProgrammingEnvironment. |
| | | • Differentiate between Structure oriented programming and object orientedprogramming. |
| | | • Understand different object modelling techniques and analysis like Generalization , Aggregation andMetadata. |
| | | • Write Reusable , Extensible and Robust programs inC++. |
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| | CS SEC-I (Skill Enhancement Course-I) Software & Hardware Installation Skills | To understand Software & Hardware Installation Skills. |
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| | COMP 213: Practical Course | • On completion of the course, students are able to develop programs using C++ based on object oriented conceptsand write the ROBUST, EXTENSIBLE and EFFICIENT programs. |
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| | COMP 221 : Data Structure – II | • Know different non-linear data structures that can be used to represent hierarchical relationship betweenobjects. |
| | | • Traverse and represent the graphs in computer. |
| | | • Understand the different approaches of sorting and searching elements in thearrays. |
| | | • Understand different techniques of designing thealgorithms. |
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| | COMP 222 : Programming in C++ | • Explore polymorphism using Function and OperatorOverloading. |
| | | • Write programs for handling runtime errors usingexception. |
| | | • Understand the concepts of pointers inC++. |
| | | • Understand the different aspects of hierarchy of classes and theirextensibility. |
| | | • Write generic programs using templates andSTL. |
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| | CS SEC-II (Skill Enhancement Course-II) Network Security | To understand objectives of Network Security. |
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| | COMP 223 : Practical Course | • On completion of the course, students are able to develop programs using C++ based on object oriented conceptsand write the ROBUST, EXTENSIBLE and EFFICIENT programs. |
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| Class | Course | **Outcomes(**After completion of this course, the students will be able to**)** |
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| | **SEM V** | |
| **T.Y.B.Sc** . | CS-501 System Programming | Understand details about system software |
| | | Students are familiar with language processing activities- functions of translators, loader and linkers |
| | | To do basic system program like development of editors lexical analyzers etc |
| | CS-502: Database Management System | Solve real world problems using appropriate set, function, and relational models. |
| | | Design E-R Model for given requirements and convert the same into database tables. |
| | | Use SQL. |
| | CS-503 Software Engineering | Students are able to perform the E-R Diagram, DFD, Data dictionary, Decision tree about software. |
| | | They can also design the software in learned language using the course content |
| | | Get the knowledge of types of testing & how testing is performed in industry |
| | CS-504 Computer Aided Graphics | Differentiate between interactive and non-interactive graphics. |
| | | Study line Drawing and Circle Drawing techniques and algorithms. |
| | | Perform 2D and 3D transformation on different images |
| | | Know about detail working of 2D and 3D clipping and windowing |
| | | Understand raster graphics and hidden surface elimination |
| | CS – 505Python Programming - I | Explain basic principles of Python programming language |
| | | Construct and apply various filters for a specific task. |
| | | Apply the best features of mathematics, engineering and natural sciences to program real life problems. |
| | CS-506B JAVA Programming I | Get knowledge of JDK environment |
| | | Explore polymorphism using method overloading and method overriding |

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| | | Understand the different aspects of hierarchy of classes and their extensibility<br>Understands the concept of streams and files |
| | | Write programs for handling run time errors using exceptions |
| | CS-507 LAB on Python Programming – I | Explain basic principles of Python programming language |
| | | Construct and apply various filters for a specific task. |
| | | Apply the best features of mathematics, engineering and natural sciences to program real life problems. |
| | CS-508: LAB on Computer Aided Graphics | Hands on of using standard graphics library |
| | | Hands on of implementation of DDA, Bresenham'sLine,Circle Drawing Algorithm |
| | | Hands on of implementation of 2D Transformation: Translation, Scaling and Rotation |
| | | Hands on of implementation ofCohen-Sutherland line clipping algorithm |
| | CS-509B : Lab on JAVA Programming I | Explore polymorphism using method overloading and method overriding |
| | | Understand the different aspects of hierarchy of classes and their extensibility |
| | | Understands the concept of streams and files |
| | | Write programs for handling run time errors using exceptions |
| | **SEM-VI** | |
| | CS-601 : Operating System | Students should familiar with Operating System Services. |
| | | Understand CPU scheduling algorithms, memory Management Techniques, Disk Drum Scheduling algorithms, Deadlock preventions and avoidance. |
| | | Introduction to android operating systems – its architecture, applications and uses. |
| | CS-602 :Relational Database Management Systems | Design E-R Model for given requirements and convert the same into database tables. |
| | | Use database techniques such as SQL & PL/SQL. |
| | | Explain transaction Management in relational database System. |
| | | Use advanced database Programming concepts |
| | CS-603 :Computer Network | Students understand the information exchange done across the network with the help of OSI & TCP/IP models. |
| | | Student understands how errors are captured & handled in network. |

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| | | Student understands various attack & its prevention techniques. |
| | CS-604 : Theoretical Computer Science | Understanding the use of Sets, Relations and Graphs. |
| | | Understand Languages in TCS. |
| | | Introduction of Regular Languages and Expressions. |
| | | Understanding Pumping Lemma and its applications. |
| | | Explore the knowledge of Pushdown Automata. |
| | | Understanding Normal Forms with Examples. |
| | | Understanding Turing Machine. |
| | CS – 605<br><br>Python Programming - II | Explain basic principles of Python programming language |
| | | Implement object oriented concepts, database applications. |
| | | Construct regular expressions for pattern matching and apply them to various filters for a specific task. |
| | | Design and implement Database Application and Content providers. |
| | | Apply the best features of mathematics, engineering and natural sciences to program real life problems. |
| | CS-606B : JAVA Programming II | Program using graphical user interface with Swing classes |
| | | Handle different kinds of events generated while handling GUI components |
| | | Create programs using menus and dialog boxes |
| | | Program to create applets |
| | | Understand advanced java concepts like JDBC, Java Beans |
| | CS-LAB-607 LAB on Python Programming – II | Design and implement Database Application and Content providers. |
| | | Apply the best features of mathematics, engineering and natural sciences to program real life problems. |
| | | Implement object oriented concepts, database applications |
| | CS-Lab 608): Lab on RDBMS | To use SQL & PL/SQL. |
| | | To perform advanced database operations. |
| | | Create database tables in postgreSQL |
| | | Write and execute simple, nested queries |

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| | CS-509 B : Lab on JAVA Programming II | Program using graphical user interface with Swing classes |
| | | Handle different kinds of events generated while handling GUI components |
| | | Create programs using menus and dialog boxes |
| | | Program to create applets |
| | | Understand advanced java concepts like JDBC, Java Beans |

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| **Class** | **Course** | **Outcomes (After completion of this course, the students will be able to)** |
| | **Semester-I** | |
| **M.Sc.-I** | CS-102 Database Management System | 1. To analyze Database design methodology. |
| | | 2. Acquire knowledge of fundamentals of Database Management System. |
| | | 3. Analyze the difference between traditional file system and DBMS. |
| | | 4. To deal with different Database languages. |
| | | 5. Draw various data models for Database, writing and executing queries to get expected results. |
| | CS-103 Automata Theory and Computability | 1. Understand, design, construct, analyse and interpret Regular languages, Expression andGrammars. |
| | | 2. Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator. |
| | CS-104 Operating Systems | 1. Understand different types of operating systems. |
| | | 2. Again extensive knowledge on principles and modules of the operating systems. |
| | | 3. Understand key mechanisms in the design of operating systems modules. |
| | | 4. Understand process management, thread management, memory management, filemanagement and deadlock handling. |
| | | 5. Understand the issues related to protection and security. |
| | | 6. Compare performance of different processor scheduling algorithms.. |
| | CS-105 Object Oriented Programming | 1. To understands the fundamentals of Java programming language and its constructs. |
| | | 2. To understand concept of object-oriented programming concept using Java. |
| | | 3. To implement the applications using the concept of the Inheritance, Interfaces, LambdaExpressions, and Inner Classes. |
| | | 4. To design and implement the real-world application using the concept of the Exceptions andGeneric Programming |
| | | 5. To understand how to use concept of the Graphics Programming, Event Handling, SwingComponents, and JDBC in their application. |
| | CS LAB-I LAB on JAVA programming | 1. Write Java application programs using OOP principles and proper program structuring |

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| | | 2. Implementing user interface: 2D shapes, events, dialog box, menu and popup menu |
| | | 3. Developing Applets, multithreaded programs |
| | | 4. Implementing generic and JDBC programming |
| | | 5. Demonstrate the concepts of polymorphism and inheritance |
| | | 6. Write Java programs to implement error handling techniques using exception handling |
| | CS LAB-II LAB on DBMS | 1. To understand Database design methodology. |
| | | 2. Acquire knowledge in fundamentals of Database Management System. |
| | | 3. Work with popular Database languages. |
| | | 4. Realise various data models for Database and Write queries in SQL. |
| | | 5. Familiar with basic database storage structures and access techniques. |
| | **Semester-II** | |
| | CS-201 Compiler Construction | 1. Understanding of basic structure of compiler, concepts and terminology in programminglanguages, lexical analysis, finite state techniques, scanner generator, parsing, kinds ofparsers, designing lexical analyzer, scanner and parsers, principal ideas with intermediatecode generation, optimizations. |
| | | 2. Understanding of all concepts essential to design compiler in general for programminglanguages. |
| | CS-202 Artificial Intelligence | 1. Identify problems that are amenable to solution by AI methods. |
| | | 2. Identify appropriate AI methods to solve a given problem. |
| | | 3. Design smart system using different informed search / uninformed search or heuristicapproaches. |
| | | 4. Apply the suitable algorithms to solve AI problems. |
| | CS-203 Design and Analysis of Algorithms | 1. Analyze the asymptotic performance of algorithms. |
| | | 2. Write rigorous correctness proofs for algorithms. |
| | | 3. Design and analyze divide-and-conquer based algorithms. |
| | | 4. Devise and Synthesize greedy and dynamic-programming based algorithms. |
| | | 5. Employ graphs to model problems solvable using traversal techniques. |
| | | 6. Able to model problems using backtracking |
| | | 7. Able to classify nondeterministic polynomial time algorithms. |
| | CS-204 Python Programming | 1. Understand the basic concepts of Python programming. |
| | | 2. Write Python programs that supports some constructs of functional programming likemap, reduce, filter. |
| | | 3. Understand the use of strings, lists, tuples, dictionaries, and files and able to manipulatesdata available within them with help of various functions. |

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| | | 4. understand how to write user defined classes, methods as well as module creation andhandle exceptions while implementing python programs. |
| | | 5. Use regular expression for validating email address or domain name. |
| | CS- LAB-III LAB on Design and Analysis of Algorithms (DAA) | 1. Able to construct logic for the algorithms designed using designing techniques. |
| | | 2. Able to do posterior analysis of the algorithms. |
| | | 3. Able to debug the algorithms. |
| | | 4. Modify to improve performance of the algorithms. |
| | | 5. Able to test and profile the algorithms. |
| | CS-LAB-IV LAB on Python Programming | 1. implement Python programs that demonstrates all types of sorting and searching techniques. |
| | | 2. write programs that demonstrate the concepts of functions scoping, recursion, list mutability, regular expression and support of function programming constructs through Python programming. |
| | | 3. write Python programs that defines user defined classes, methods and module forsolving real world problems as well as use of exception handling concepts whenever necessary. |
| | | 4. implement programs that uses regular expression for searching patterns and validating data. |
| | | 5. develop GUI programs using Tkinter. |
| | Semester-III | |
| | CS-301 Web Application Development Technology | 1. Successful students will able to design web applications using ASP.NET |
| | | 2. Successful students will be able to use ASP.NET controls in web applications. |
| | | 3. Successful students will be able to debug and deploy ASP.NET web applications |
| | | 4. Successful students will be able to create database driven ASP.NET web applications and web services. |
| | CS-302 Digital Image Processing | 1. Developed scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics and Digital Image Processing. |
| | | 2. Demonstrated various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects. |
| | | 3. Built the mathematical foundations for digital image representation, image acquisition, image transformation, image enhancement and restoration. |
| | | 4. Developed a theoretical foundation of fundamental concepts of digital imageprocessing. |
| | | 5. Exposed students to MATLAB Image Processing Toolbox. |
| | CS-303 Software Engineering | 1. Understand and demonstrate basic knowledge in software engineering |
| | | 2. Define various software application domains and remember different process model usedin software development. |

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| | | 3. Explain needs for software specifications also they can classify different types of softwarerequirements and their gathering techniques. |
| | | 4. Convert the requirements model into the design model and demonstrate use of software anduser interface design principles. |
| | | 5. Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them. |
| | | 6. Justify role of SDLC in Software Project Development |
| | | 7. Generate project schedule and can construct, design and develop network diagram for different type of Projects. |
| | CS-304(A) Big Data Analytics | 1. Recognize the characteristics, applications of big data that make it useful to real-worldproblems. |
| | | 2. Process available data using big data tools hadoop file system and predict outcomes to solvegiven problem. |
| | | 3. Study & Design various case studies using big data tools/commands and analyse it. |
| | CS LAB-V LAB on Web Application Development Technology | 1. Students will get hands-on experience on basic concepts in web applications development using ASP.NET technology. |
| | | 2. Students can develop or undertake professional looking real life web sites using ASP.Net technology |
| | | 3. It will help students to grasp other Web Application Development technologies/platforms easily through learn-by-comparison approach so that the learning curve will be smooth and faster. |
| | CS LAB-VI LAB on Digital Image Processing | 1. Developed scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics and Digital Image Processing using C++ and MATLAB respectively. |
| | | 2. Implemented various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects. |
| | | 3. Exposed students to MATLAB and Image Processing Toolbox. |
| | | 4. Used various tools in MATLAB to implemented image transformation, image enhancement in spatial and frequency domain. |
| | | 5. Developed the programs on various digital image processing techniques. |
| | Semester-IV | |
| | CS-401 Natural Language Processing | 1. Students will get idea about know-hows, issues and challenge in Natural Language Processing and NLP applications and their relevance in the classical and modern context. |
| | | 2. Student will get understanding of Computational techniques and approaches for solving NLP problems and develop modules for NLP tasks and tools such as Morph Analyzer, POS tagger, Chunker, Parser, WSD tool etc. |
| | | 3. Students will also be introduced to various grammar formalisms, which they can apply in different fields of study. |
| | | 4. Students can take up project work or work in R&D firms working in NLP and its allied areas |
| | CS-402 Data Warehousing and Data Mining (DWDM) | 1. Explain organization of data warehousing and data marts. |
| | | 2. Differentiate between OLTAP and OLAP |

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| | | 3. Apply data pre-processing techniques |
| | | 4. Write basic algorithms for extracting patterns from data (association mining, classification and clustering) |
| | | 5. Solve problems related with various aspects of data mining. |
| | CS-403(A) Optimization Algorithms | 1. Write about OR and decision making. |
| | | 2. Differentiate between feasible and optimal solution |
| | | 3. Apply solving techniques to all types of LPP. |
| | | 4. Apply solving techniques to network problems and game theory problems as well. |
| | CS LAB-VII LAB Data Warehousing and Data Mining(DWDM) | 1. Organize strategic data in an enterprise and build a data Warehouse. |
| | CS-401 Mini Project Guidelines | 1. Capability to acquire and apply fundamental principles of Computers Science. |
| | | 2. Become master in one's specialized technology. |
| | | 3. Become master in one's specialized technology. |
| | | 4. Become updated with all the latest changes in technological world. |
| | | 5. Ability to communicate efficiently. |
| | | 6. Knack to be a multi-skilled Computer Science professional with good technical knowledge, management, leadership and entrepreneurship skills. |
| | | 7. Ability to identify, formulate and model problems and find engineering solution based on a systems approach. |
| | | 8. Capability and enthusiasm for self-improvement through continuous professional development and life-long learning |
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| MSc-II | CS-301 Software Engineering | • Know the requirements of developingsoftware. |
| | | • Be aware of various models required for softwaredevelopment. |
| | | • Test the developed software for its functionality andperformance. |
| | | • Understand software quality and qualitymeasures. |
| | | • Grasp the software configuration management and projectplanning. |
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| | CS-302 Optimization of Algorithm | • Understanding classification and limitation of quantitativetechniques. |
| | | • Take hold of linear programming problem solvingtechniques. |
| | | • Solve various kinds of transportation problems using differenttechniques. |
| | | • Explore concepts in gametheory |
| | | • Be aware about the network models, sequencing models and simulaonmodels. |
| | | |
| | CS-303 Advanced Java Programming | • Design programs using Remote method invocations(RM. |

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| | | • Explore programming techniques of Java beans andswing. |
| | | • Be aware about Java Enterpriseapplications. |
| | | • Know about java servlets and javastruts. |
| | | |
| | CS-304 Windows, WCF and WPF Programming | • Familiar with windows environment and child windowcontrols. |
| | | • Understand windows communication foundation using WCF contracts, clients and servicessecurity. |
| | | • Understand windows presentation foundation, WPF and .Netprogramming. |
| | | |
| | CS-305-LAB – V Lab on Windows, WCF<br>and WPF Programming | • On completion of the course, students are able to develop program having graphical user interface forvarious applications.. |
| | | |
| | CS -306-LAB –VILab on Advanced Java<br>Programming | • On completion of the course, students will get hands on training for various java programs like JDBC, EJB,Servlets, Struts etc. |
| | | |
| | CS-401 Natural Language Processing | • Understand languages and linguisticbackground |
| | | • Be familiar with applications and research background inNLP. |
| | | • Grasp mathematical foundation related to NLP like probability, bays theorem and machinelearning. |
| | | • Know about linguistics essentials and grammar as part of speech and parsing and differentiatingthem. |
| | | • Aware about word morphology and N-GramModels. |
| | | |
| | CS-402 Advanced Network Programming | • Understand network fundamentals with TCP/IParchitecture. |
| | | • Aware with client server programming and its application using socketinterface. |
| | | • Understand IGMP ICMP and IP datagrams |
| | | • Understating the mobile and ad voc network programming. |
| | | |
| | CS-403 Data Warehousing and Data Mining | • Understand data warehousing for business analysis using OLAP, OLTP, MOLAP andROLAP. |
| | | • Explore the concepts of data mining and datapreprocessing. |
| | | • Understand concept of association rulemining. |
| | | • Grasp classification and prediction and analysie different issues related tothem. |
| | | • Identify different cluster analysistechniques. |

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| | | • Know about advanced data mining techniques such as spatial data mining and understand the concept of big data analysis. |
| | | |
| | CS-404- LAB – VII Lab on Network | • Oncompletionofthecourse,studentsareabletodevelopclientserver programs forvariousservicesliketCP,UDP,Telnet, |
| | programming and Data Mining | FTP and HTTP. Students are also able to analyse the processing and classification techniques using WEKA tool. |
| | | |
| | CS -405 Mini Project (200 marks) | • Deal with real worlddata. |
| | | • Familiar about real time IT industry environment. |
| | | • Expeirnance about applying the knowledge they got up til now. |
| | | • Build a whole real time working system which will satisfy all custmor‟sneeds. |

# DEPARTMENT OF ECONOMICS

| Class | Course | Outcomes |
|---|---|---|
| FYBA | Eco G-101 (A) Principles of Micro Economics-I | • Students will be aware about fundamental concepts of economics |
| | | • Students will be able to understand economic approach& what is a utility of demand theory. |
| | | • Students will be able to know role of market in real life. |
| | | • Student gets knowledge of cost and production to apply on ground. |
| | | |
| | Eco G-201(A) Principles of Micro Economics-I | • Students will be aware about various forms of market |
| | | • What is a real competition in market and what to do company for market capturing' |
| | | Too aware about concept of Rent, profit, Interest |
| | | |
| SYBA | DSC Eco 231 C- (02) ** General Paper | • Students will be able to understand nature of Indian economy |
| | | • Students will be able to understand population & economic development |
| | | • Students will be able to understand infrastructure and economic development |
| | | • Students will be able to understand role of agriculture in Indian economy |
| | | |
| | DSC C - (02) ** General Paper | • Students will be able to understand industrial sector in India |
| | | • Students will be able to understand cooperative sector in economy |
| | | • Students will be able to understand economic planning in India |
| | | • Students will be able to understand recent structural changes in economy |
| | | |
| SYBA | DSE Eco 233 A Advanced Macro Economics-I | • Students will be able to understand macro-economic analysis |
| | | • Able to understand of national income |
| | | • Able to understand classical & Keynesian theories of output and employment |
| | | • Able to understand consumption & Investment function |
| | | |
| | DSE Eco 243 B Advanced Macro Economics-II | • Students will be able to understand process of credit creation by commercial banks |
| | | • Students will be able to understand Quantity theory of money. |
| | | • Students will be able to understand various macroeconomic problems. |
| | | • Students will be able to understand various macroeconomic policy |
| SYBA | DSE Eco 232 A Agricultural Economics-1 | Students will be able to understand economics of agriculture |
| | | Students will be able to understand Indian agriculture sector |

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| | | Students will be able to understand agricultural prices, marketing & subsidies in India |
| | | |
| | DSE Eco 242 B Agricultural Economics-II | Students will be able to understand economics of agricultural production |
| | | Students will be able to understand technology in agriculture |
| | | • Students will be able to understand management of animal genetics resources |
| SYBA | SEC Eco 234 (Research Methodology In Economics-I) | Students will be able to understand methods of data collection & analysis |
| | | Students will be able to understand contents of report writing |
| | | Students will be able to understand concepts of research designing |
| | | Students will be able to understand concepts of hypothesis testing methods |
| | SEC Eco 244 (Research Methodology In Economics-II) | Student gets knowledge of survey. |
| | | How to write research paper in various subjects. |
| | | Job opportunity in in various companies for Demand Forecasting. |
| TYBA | ECO 351 - Indian Economy since 1980 – III | • Students will be able to understand Indian financial system |
| | | • Students will be able to understand money & banking |
| | | • Students will be able to understand India's foreign trade |
| | | • Students will be able to understand concept of globalization |
| | | |
| | ECO 361-Indian Economy since 1980 – IV | • Students will be able to understand federal fiancé in India |
| | | • Students will be able to understand Indian tax system |
| | | • Students will be able to understand public expenditure in India |
| | | |
| | ECO 242- Advanced Micro Economics – II | • Studentswillbeableto understand price determination of factors |
| | | Students willbeabletounderstand various theories offactors |
| | | Students willbeableto understand concept of profit &Interest |
| | | Students willbeableto understand market equilibrium of firm in monopolisticmarket. |
| | | |
| | ECO 233- Advanced Macro Economics – I | • Students will be able to understand macro-economicanalysis |
| | | • Able to understand of nationalincome |
| | | • Able to understand classical & Keynesian theories of output andemployment |
| | | • Able to understand consumption & Investmentfunction |
| | | |

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| | ECO 243- Advanced Macro Economics – II | • Students will be able to understand process of credit creation by commercialbanks |
| | | • Students will be able to understand Quantity theory ofmoney. |
| | | • Students will be able to understand various macroeconomicproblems. |
| | | • Students will be able to understand various macroeconomicpolicy |
| | | |
| TYBA | ECO 351 - Indian Economy since 1980 – III | • Students will be able to understand Indian financialsystem |
| | | • Students will be able to understand money &banking |
| | | • Students will be able to understand India's foreigntrade |
| | | • Students will be able to understand concept ofglobalization |
| | | |
| | ECO 361-Indian Economy since 1980 – IV | • Students will be able to understand federal fiancé inIndia |
| | | • Students will be able to understand Indian taxsystem |
| | | Students willbeableto understand public expenditure inIndia |
| | | • Students will be able to understand public debt& deficitfinance |
| | | |
| | ECO-352(A)- Public Finance and Policies-I | • Students will be able to understand concept of publicfiancé |
| | | • Students will be able to understand concept of publicrevenue |
| | | • Students will be able to understand incidence & approaches oftaxation |
| | | • Students will be able to understand governmentintervention |
| | | |
| | ECO-362(A) - Public Finance and Policies-II | • Students will be able to understand concept of publicexpenditure |
| | | • Students will be able to understand concept of publicdebt |
| | | • Students will be able to understand concept of fiscalpolicy |
| | | • Students will be able to understand concept of budget & deficitfinance |
| | | |
| | ECO-353(A) - International Trade and Practices-I | • Students will be able to understand international tradetheories |
| | | • Students will be able to understand gains from international trade & tradepolicy |
| | | • Students will be able to understand concept of BOP &BPT |
| | | • Students will be able to understand concept of exchangerates |
| | | |
| | ECo-362(B) - Economics of Indian Agriculture-II | • Students will be able to understand international capital movements &MNCs |

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| | | Students will be able to understand international instructions & regional economic<br>• cooperation |
| | | • Students will be able to understand concept of devaluation & convertibility ofrupees |
| | | • Students will be able to understand Euro currencymarket |
| | | |
| MA-I | ECO-111 - | Students willbeableto understand ordinal utility analysis of consumerdemand |
| | | Students willbeableto understand modern utilityanalysis |
| | | Students willbeableto understand the Firm & itstechnology |
| | | • Studentswill be able to understand theory ofprice |
| | | |
| | ECO-121 -<br>ADVANCEMICROECONOMICTHEORY -II | • Studentswillbeableto understand the theory of oligopoly &duopoly |
| | | Students willbeableto understand the new theories of oligopolymarket |
| | | Students willbeabletounderstand theory ofdistribution |
| | | • Studentswillbeableto understand general equilibrium & economic efficiency &welfare |
| | | |
| | ECO-112 - MODERN PUBLIC FINANCE - I | • Students will be able to understand market vs Government |
| | | Students willbeableto understandpublicgoods,monopoly,externalities&Asymmetricinformation |
| | | Students willbeableto understand macroeconomic considerations in publicfinance |
| | | • Studentswillbeableto understand government & rentseeking |
| | | |
| | ECO-122- MODERN PUBLIC FINANCE- II | Students willbeabletounderstand fiscal federalism inIndia |
| | | Students willbeableto understand taxation & public debt ofIndia |
| | | Students willbeableto understand public expenditure & subsidies inIndia |
| | | Students willbeabletounderstand fiscal administration & public governance inIndia |
| | | |
| | ECO-113 - STATASTICS FOR ECONOMICS - I | • Able to understand meaning, scope & importance ofstatistics |
| | | • Able to understand methods ofcorrelation |

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| | | • Able to understand measures and types of priceindex |
| | | |
| | ECO-123 - RESEARCH METHODOLOGYFOR ECONOMICS | • Students will be able to understand methods of data collection &analysis |
| | | • Students will be able to understand contents of reportwriting |
| | | • Students will be able to understand concepts of researchdesigning |
| | | • Students will be able to understand concepts of hypothesis testingmethods |
| | | |
| | ECO-114 (B) - AGRICULTURAL ECONOMICS -I | • Students will be able to understand economics ofagriculture |
| | | • Students will be able to understand Indian agriculturesector |
| | | • Students will be able to understand agricultural prices, marketing & subsidies inIndia |
| | | • Students will be able to understand agriculture finance, insurance& capitalformation |
| | | |
| | ECO-124 (B)- AGRICULTURAL ECONOMICS -II | • Students will be able to understand economics of agriculturalproduction |
| | | • Students will be able to understand technology inagriculture |
| | | • Students will be able to understand management of animal geneticsresources |
| | | • Students will be able to understand WTO &agriculture |
| | | |
| MA-II | Eco-231 - Modern Monetary Economics - I | • Students will be able to understand nature, scope & importance of monetarypolicy |
| | | Students will be able to understand nature classical & Keynesian theories of employment |
| | | • Students will be able to understand measures of moneysupply. |
| | | Students will be able to understand various theories of demand for money. |
| | | |
| | Eco-241 - Modern Monetary Economics - II | • Students will be able to understand IS-LMmodel |
| | | Students will be able to understand fiscal policy |
| | | Students will be able to understand various of trade cycle |
| | | Students will be able to understand supply side economics |
| | | |
| | Eco-232 - Economics of Development - I | Students will be able to understand conceptualizing development |
| | | • Students will be able to understand theories of economicdevelopment |
| | | • Students will be able to understand concept of poverty &development |
| | | • Students will be able to understand population & humandevelopment |

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| | Eco-242 - Model's of Economic Growth - II | • Students will be able to understand the economic growth & technologicalchanges |
| | | • Students will be able to understand some growthmodels |
| | | • Students will be able to understand the Neo- Classical & Cambridge models ofgrowts |
| | | • Students will be able to understand issues & techniques of economicgrowth |
| | | |
| | Eco-233 - International Economics - I | Students will be able to theories international trade. |
| | | Students will be able to understand gains from international trade & their measurements |
| | | Students will be able to understand theory of intervention in trade |
| | | Students will be able to understand the theory of regional blocks |
| | | |
| | Eco-243 - International Economics - II | Students will be able to understand trade policies in India |
| | | Students will be able to understand international financial institutions |
| | | Students will be able to understand foreign direct investments |
| | | Students will be able to understand foreign exchange market |
| | | |
| | Eco-234- Modern banking & Financial Markets in India - I | • Students will be able to understand commercial banking system inIndia |
| | | Students will be able to understand cooperative and rural banking in India |
| | | • Students will be able to understand working & operation ofRBI |
| | | |
| | Eco-244 - Modern banking & Financial Markets in India - II | • Students will be able to understand the Indian moneymarket |
| | | Students will be able to understand the Indian capital market |

# DEPARTMENT OF ENGLISH

| Class | | Course Outcome | Programme Specific Outcome |
|---|---|---|---|
| F.Y.B.A. (CBCS) | Compulsory English | 1.To enable the students to understand the written text<br>2. To inculcate the human and moral values amongst the students.<br>3. To develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries.<br>4. To develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing.<br>5.To acquaint the students with formal and informal style in using English | 1.The students will understand the written text<br>2. The students will inculcate the human and moral values amongst the students.<br>3. The students will develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries.<br>4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing.<br>5.The students will acquaint with formal and informal style in using English |
| | Core Course-Reading Literature: Short Stories and Poems | 1.This, being discipline specific course invites the students to know about the<br>treasure of English literature<br>2. The Course introduces two basic forms of literature- short story and poem which are very near and dear to every human heart.<br>3. As per the guidelines of CBCS, this course contains the simple stories and poems. The prescribed texts not only meet the primary function of literature i. e. entertainment but also the secondary function of value inculcation.<br>4. The course will enhance the skills of appreciation and creativity of the Students. | 1. The course will introduce the basic forms of literature to the students.<br>2. The course will develop the liking of reading in the students.<br>3. The course will inspire students to develop their creative ability.<br>4. Consequently, the course will develop reading skill and creative and expressive ability of the students. |
| F.Y.B.Com. | Compulsory English | To understand the technical writing skills | Banking Advertisements Sales<br>Medical Representatives<br>Hotel Management<br>BPOS, Translators<br>Tourists Guide, Media<br>Radio, Television<br>Competitive Examination Administrative Services<br>Industries, Call Centers<br>Computer Services<br>Business Communication<br>Journalism<br>Railway<br>Service Sector |

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| | Optional English | To understand efforts taken different businessman. | Students will understand the detail information about different business & businessman. |
| F.Y.B.Sc. (CBCS) | | 1. To introduce the students with writing and reading skill<br>2. To acquaint the students with the use of English language through different means<br>3. To acquaint the students with the creative use of English language | 1.the students will know writing and reading skill<br>2. the students will acquaint the use of English language through different means<br>3. the students acquaint the creative use of English language |
| S.Y.B.A.<br>(CBCS)<br>SEM.PATTERN<br>(with effect from 2019-20) | Compulsory English | To enable the students to understand the written text<br>To inculcate the human and moral values amongst the students.<br>To develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries.<br>To develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing.<br>To acquaint the students with formal and informal style in using English | 1.The students enable to understand the written text<br>2. The students will inculcate the human and moral values amongst the students.<br>3. The students will develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries.<br>4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing.<br>5. The students will acquaint with formal and informal style in using English |
| | Special Paper-I: 16th and 17th Century English Literature<br>DSE 1 A and B (Equivalent to S-I) | 1. To acquaint students with the major dramatists and essayists of the 16th and 17th Century English Literature.<br>2. To make the student aware of the literary history, salient features and cultural background of the period.<br>3. To help the students to grasp the content and critical appreciation of the prescribed texts.<br>4. To inculcate amongst students a liking for the Elizabethan and post-Shakespearean literature. | 1. The students will acquaint with the major dramatists and essayists of the 16th and 17th Century English Literature.<br>2. The students will make aware of the literary history, salient features and cultural background of the period.<br>3. The students will help to grasp the content and critical appreciation of the prescribed texts.<br>4. The students will inculcate amongst a liking for the Elizabethan and post-Shakespearean literature. |
| | Special Paper-II: 18th and 19th Century English Literature<br>DSE 2A and B (equivalent to Special Paper-II) | 1. To impart basic ideas about the 18th and 19th Century English Literature with special reference to Poetry and Novel.<br>2. To make the students aware of the literary history, salient features and cultural background of the Romantic and Victorian age.<br>3. To help the students to grasp the content and critical appreciation of the prescribed Texts. 4. To inculcate amongst | 1. The students will impart basic ideas about the 18th and 19th Century English Literature with special reference to Poetry and Novel.<br>2. The students will make aware of the literary history, salient features and cultural background of the Romantic and Victorian age.<br>3. The students help to grasp the content and critical appreciation of the prescribed Texts. |

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| | | students a liking for the Romantic and Victorian literature. | 4. The students will inculcate a liking for the Romantic and Victorian literature. |
| | English General Paper-II:<br>The Study of Novel & Drama<br>DSC 1 C (equivalent to Sp. English -General Paper II) | 1. To develop the interest of students in reading/understanding novel and drama.<br>2. To acquaint students with Novel and Drama as genres of literature.<br>3. To develop students' competence to study, understand, analyze and Interpret novel and drama.<br>4. To introduce students with the key terms useful in the study of novel and drama.<br>5. To orient students with major types of novel and drama. | 1. The students will acquaint with the essential aspects of novel & drama as a form of literature.<br>2. The students will orient to different types of English novel & drama<br>3. The students will enable to trace the development of the English novel & drama<br>4. The students will develop competence to systematically study and analyze a novel & drama<br>5. The students will introduce to the recent trends in novel& drama form. |
| | Practical for the paper DSC 1 C and D (for internal assessment) | 1. To acquaint the students with notion of applied perception<br>2. To develop scientific attitude of understanding their subject<br>3. To put on record their own observations and hone their skill of explanation<br>4. To observe the local investigation topics and suggest remedies. | 1. The students will acquaint with the essential aspects of novel & drama as a form of literature.<br>2. The students will become conversant with different types of English novel & drama<br>3. The students will enable to mark out the development of the English novel & drama<br>4. The students will develop ability to systematically study and scrutinize a novel & drama<br>5. The students will introduce to the recent trends in novel& drama form. |
| | Skill Enhancement Course (SEC)<br>SEC-I: English for Competitive Examinations | 1. To enable students to prepare for the competitive exams of various kinds especially meant for testing ability in English language.<br>2. To introduce students with the common question types asked in competitive examinations concerning English-grammar, vocabulary, comprehension,<br>and other significant topics.<br>3. To encourage students to appear and prepare for the competitive exams.<br>4. To help the students to overcome the fear about English as a compulsory subject in various competitive exams. | |
| | SYBA English Sem. IV<br>DSC 3 D Minor Study Project | 1. To motivate students for research<br>2. To inspire them to participate research oriented activities like Avishkar, Indradhanushy, Anweshan etc.<br>3. To orient them for grasping the concept and features of | |

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| | | research<br>4. To inculcate in them skills like analysis, interpret and visualize | |
| | | | |
| S.Y.B.Sc. | | 1. To introduce the new techniques of technical communication<br>2. To train the students to use English for specific purpose and situation in real life<br>3. To enable the students to face the world of competition and challenges of the changing world<br>4. To equip the students with enough English to enable them to enter the usual professions open to them<br>5. To inculcate the basic human values amongst the students<br>6. To enable the students for oral and written communication in English<br>7. To equip the students to communicate effectively in the changed circumstances and the present business environment | 1. The students enable to understand the written text<br>2. The students will inculcate the human and moral values amongst the students.<br>3. The students will develop the communicative competence of students with special reference to interview, presentation skills.<br>4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing.<br>5. The students will acquaint with formal and informal style in using English |
| | | | |
| M.A. PART- II | ENG 231 and 241 : Literary Theory and Concepts | 1) To introduce the students to a wide range of critical methods, literary theories and concepts.<br>2) To enable them to use the various critical approaches and advanced literary theories.<br>3) To familiarize the learners with the trends and cross-disciplinary nature of literary theories.<br>4) To enable them to use various critical tools in the analysis of literary and cultural texts. | 1) The students will be introduced to a wide range of critical methods, literary theories and concepts.<br>2) The students will enable them to use the various critical approaches and advanced literary theories.<br>3) The students will be familiarized with the trends and cross-disciplinary nature of literary theories.<br>4) The students will enable them to use various critical tools in the analysis of literary and cultural texts. |
| | ENG 232 and 242 : English Novel | 1. To acquaint the students with the growth and development of English novel.<br>2. To acquaint the students with the contribution of the novelists to the Genre.<br>3. To enable the students to understand the different aspects of novel in different social and cultural contexts.<br>4. To make the students to understand the human values, psyche and issues raised in the representative novels.<br>5. To familiarize the students with verities of English through the reading of the prescribed novels. | 1. The students will be acquainted with the growth and development of English novel.<br>2. The students will be acquainted with the contribution of the novelists to the Genre.<br>3. The students will be enabled to understand the different aspects of novel in different social and cultural contexts.<br>4. the students will understand the human values, psyche and issues raised in the representative novels. |

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| | | | 5. the students will be familiarized with verities of English through the reading of the prescribed novels. |
| | ENG 233 and 243 : Basics of Research in English Language and Literature | 1)To acquaint the students with the term ‘research’<br>2) To introduce the students with the basic elements of research in English language and English literature.<br>3) To make the students familiar with difference in the research of English language and literature.<br>4) To acquaint the students with nature, aspects, types and areas of research in English<br>language and literature.<br>5) To acquaint the students with research questions, methods and framing of outlines. | 1) The students will be acquainted with the term ‘research’<br>2) the students with the will be introduced a basic elements of research in English language and English literature.<br>3) the students will be familiar with difference in the research of English language and<br>literature.<br>4) The students will be acquainted with nature, aspects, types and areas of research in English language and literature.<br>5) The students will be acquainted with research questions, methods and framing of outlines. |
| | ENG 234 and 244 (B) : American Literature | 1. To acquaint the students with selected masterpieces in American Literature.<br>2. To acquaint the students with the development of different genres in American Literature.<br>3. To make the students aware about social, political and cultural issues reflected in<br>American Literature.<br>4. To introduce the students with the trends and tendencies in American Literature. | 1. The students will be acquainted with selected masterpieces in American Literature.<br>2. The students will be acquainted with the development of different genres in American Literature.<br>3. the students will be aware about social, political and cultural issues reflected in<br>American Literature.<br>4. The students will be introduced with the trends and tendencies in American Literature. |

| Class | | Course Outcome | Programme Specific Outcome |
|---|---|---|---|
| T.Y.B.A (CBCS) | Developing Communication Skills | 1.To acquaint students with various modes of communication<br>2. To intimate students about various types of written communication<br>3. To inform students about various types of oral communication<br>4. To give practice to students in various modes of communication | 1. Students will be acquainted with various modes of communication.<br>2. Students will acquire the skill of varied types of written communication.<br>3. Students will get the knowledge of various types of oral communication.<br>4. Students will practice various modes of communication. |
| | (DSE 3 A) Twentieth Century English Literature | 1. To explain the students development of poetry in English<br>2. To acquaint the students with features and types of modern poetry, drama and novel<br>3. To introduce the students with major poets, novelists and dramatists in modern English literature. | 1. The course will introduce the development of poetry in English.<br>2. Students will get the detail knowledge of features, types and development of poetry in twentieth century English Literature<br>3. Students will acquire the knowledge of major poets, novelists and dramatists in modern English literature. |
| | DSE 4 ENG A: The Study of English Language | 1) To introduce the students to the properties, styles, and varieties of English language.<br>2) To acquaint the students with grammatical forms and functions in English language.<br>3) To enable the students learn and practice morphological concepts and word formation processes.<br>4) To introduce the students to the basic concepts in semantic, lexis and syntax in English language. | 1. Students will be introduced to the properties, styles, and varieties of English language.<br>2. Students will get the knowledge of grammatical forms and functions in English language.<br>3. Students will be able to understand and practice morphological concepts and word formation processes.<br>4. Students will learn the basic concept concepts in semantic, lexis and syntax in English language. |
| | DSC ENG 1 E: Indian Writing in English | 1.To introduce students with development of English Literature by Indian Writers.<br>2. To acquaint students with major writers of Indian English Literature.<br>3. To introduce students with content, techniques and styles of Indian writers in English. | Students will get the idea of the development of English Literature by Indian<br>2. Students will study the major writers of Indian English Literature<br>3. Students will be acquainted with the content, techniques and styles of Indian writers in English |
| | SEC ENG: English for Practical | 1. To enable students learn and practice usages in spoken | 1. Students will learn the practical use of spoken |

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| | Purposes 3 & 4 | and written English<br>2. To introduce students various skills in using practical English in real life situation<br>3. To encourage students prepare for attending job interviews, develop presentation skills,<br>Learn professional skills in communicative English.<br>4. To make students able to exercise spoken and written English skills for their career Development. | and written English.<br>2.Students will use various skills in English in real life situation<br>3. Students will learn attending job interviews; develop presentation skills and communicative skill.<br>4.Students will be able to use spoken and written English skills for their career Development |
| | GE Eng. A and B: Film and Literature | a) To introduce the students the concept of film and its origin and development.<br>b) To make the students able to understand the similarities and differences in film and literature<br>c) To enable the students explore the process of adaptation and come to an understanding of how<br>Film interacts with other cultural forms such as theatre and fiction.<br>d) To help the students analyze and judge film as an adaptation of literary text<br>e) To develop among the students the ability to comprehend art of cinema making from a literarytext. | 1.Students will know the concept of film and its origin and development<br>2. Students will understand the similarities and differences in film and literature<br>3. Students will understand the relation of film and culture. The different between film and theatre.<br>4. Students will develop the ability to analyze and judge film as an adaptation of literary text<br><br>Students will develop the ability to comprehend art of cinema making from a literary text. |

# DEPARTMENT OF GEOGRAPHY

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| FYBSc | Gg.101,& 201 Paper I (Section A) Physical Geography (Lithosphere Part –I & II) | • Understand the effect of rotation of revolution theEarth |
| | | • Know the internal structure of the earth know the importance of longitudes & latitudes International Date line and Standardtime |
| | | • Understand interior structure of theearth |
| | | • Understand Theory regarding of Origin of Continents andoceans |
| | | • Study the formation of Rocks Understand the work of internal and external forces and their associatedlandforms. |
| | | To study external forces operating on the Earth surface. |
| | | To enable students to acquire knowledge of their physical environment. |
| | | |
| | Gg.102 & 202 Paper - II (Section B)Physical Geography (Atmosphere & Hydrosphere) | • Understand the importance ofAtmosphere |
| | | • Understand the composition ofatmosphere |
| | | • Know Measurement of Atmospheric Pressure and formation of PressureBelts |
| | | • Understand the types ofwinds |
| | | To introduce the students to the basic concepts of Oceanography. |
| | | To introduce the origin and effects of Tsunami. |
| | | To make the student aware about the application of Oceanography in different areas. |
| | | |
| | Paper - III (Section A & B Lab.) Gg. 103 & 2032 Practical Geography (Cartographic Techniques) (Practical Geography Map Projections) | To understand the concept of scale at the initial stage. |
| | | To know how to draw the maps on various scale. |
| | | To acquaint the students with the principles of Classification and Choice of map projections. |
| | | |
| SYBSc | Gg: 301 (DSC) Sem. III Paper I - Environmental Geography | 1.To create the environmental awareness amongst the students. |
| | | 2. To acquaint the students with fundamental concepts of Environmental Geography. |
| | | 3. To aware the students about the processes and patterns in the natural environment. |
| | | 4. To acquaint the students with past, present and future utility and potentials of Environmental Geography at regional, national and global levels. |
| | | 5. To make aware the students about the judicious use of resources. |
| | | |
| | Gg: 302 (DSC) Sem. III Paper II –Physical Geography of Maharashtra | To Understand Natural, Historical and Political Geography Of Maharashtra |

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| | Gg: 303(DSC) Sem. III (LAB-III) Paper III - Interpretation of Topographical, Weather Maps and Weather Data Analysis | 1. To develop the interpretation skill among the students. |
| | | 2. To introduce the students about the information recorded on topographical and weather maps. |
| | | 3. To acquire various information from the maps. |
| | | |
| | Gg: 304 Sem. III SEC I - Regional Planning and Development | 1) To introduce general problems of regional development and their application to rural areas. |
| | | 2) To introduce basic methods of elaboration regional development studies |
| | | 3) The student is able to explain the role of regional policy and desire the tools used to regional development support |
| | | 4) To understanding of social and regional relation of the rural development |
| | | |
| | Gg: 401(DSC) Sem. IV Paper I - Human Geography | 1. This course is to acquaint the students with the nature of man-environment relationship and human capability. |
| | | 2. To adopt and modify the environment under its varied conditions from primitive life style to the modern living; |
| | | 3. To identify and understand environment and population in terms of their quality and spatial distribution pattern. |
| | | 4. To comprehend the contemporary issues facing the global community. |
| | | |
| | Gg: 402 (DSC) Sem. IV Paper II - Socio – Economic Geography of Maharashtra | • To accustom the students with utility and applications knowledge got from the study of Socio-Economic Geography in different walks of the life. |
| | | • To acquaint the student with basic knowledge of Maharashtra state. |
| | | • To acquaint the student with prospects and problems of agriculture, industries, trade and transport of Maharashtra. |
| | | |
| | Gg: 403 (DSC) Sem. IV (LAB-IV) Paper III - Surveying and Area Measurement by GPS | 1. To develop the surveying skill among the students. |
| | | 2. To introduce the students about working and practical utility of GPS. |
| | | 3. To acquaint the students about the field survey. |
| | | |
| | Gg: 404 Sem. IV SEC II - Field Techniques and Survey based Project Report | 1) To inculcate in students the analytical approach towards their geographical environment through field study/work of a selected area. |
| | | 2) To aware students that how does a field work form an important part of geographical learning? |
| | | 3) To develop the skill of selection of appropriate technique for field study. |
| | | 4) To enable the student to frame different types of questionnaires to conduct a field study. |
| | | 5) To develop the ability of analysis, interpretation and report writing based upon the data collected during a field study. |
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| FYBCom | Paper: 107 g - Elective Geography of Disaster Management ( Part – I) | To understand basic concepts in Disaster Management. |
| | | To create awareness on disasters through intensive public education |
| | | To Understand Types, Categories and impact of Disasters. |
| | | |
| | Paper: 207 g - Elective - Geography of Disaster Management (Part – II) | To know role & responsibilities of Different Agencies &Government. |
| | | To know the Importance of planning in disaster preparedness. |
| | | To get information regarding disaster medicine. |
| | | |
| | | |
| FYBA | Gg 101 PHYSICAL GEOGRAPHY: PART– I (Lithosphere) | • Understand the effect of rotation of revolution theEarth |
| | | • Know the internal structure of the earth know the importance of longitudes & latitudes International Date line and Standardtime |
| | | • Understand interior structure of theearth |
| | | • Understand Theory regarding of Origin of Continents andoceans |
| | | • Study the formation of Rocks Understand the work of internal and external forces and their associatedlandforms. |
| | | To study external forces operating on the Earth surface. |
| | | To enable students to acquire knowledge of their physical environment. |
| | | |
| | Gg. 201 PHYSICAL GEOGRAPHY: PART- II (Atmosphere & Hydrosphere) | • Understand the importance ofAtmosphere |
| | | • Understand the composition ofatmosphere |
| | | • Know Measurement of Atmospheric Pressure and formation of PressureBelts |
| | | • Understand the types ofwinds |
| | | To introduce the students to the basic concepts of Oceanography. |
| | | To introduce the origin and effects of Tsunami. |
| | | To make the student aware about the application of Oceanography in different areas. |
| | | |
| SYBA | Gg. 231 (DSC) Sem. III General Cartography | To understand the concept of scale at the initial stage. |
| | | To know how to draw the maps on various scale. |
| | | To acquaint the students with the principles of Classification and Choice of map projections. |
| | | |
| | Gg. 241(DSC): G2 Human Geography | • Understand the relationship of man and environment |
| | | • Studies of races of mankinds. |

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| | | • Understand the modes of life of Eskimo, pigmy, gonad, Bhil And nagas. |
| | | • Importance of Right to InformationActs. |
| | | |
| | Gg. 232 (DSE 1 A) Sem. III Geography of Tourism | 1. To develop and communicate basic conceptual frame work of Geo Tourism. |
| | | 2. To realize its potentials and against achieved in the Indian context. |
| | | 3. To understand the various Geo tourism. geography. |
| | | 4. To know the role and responsibilities, economic growth of Tourism industry in India. |
| | | 5. To evaluate the role of various organization of tourism.. 7. To develop Socio cultural aspects for the Tourism |
| | | 6. To know the importance of the sustainable tourism |
| | | |
| | Gg. 242 (DSE 1 B): GEOGRAPHY OF INDIA | i. To make the students able to understand Geographical Personality of India. |
| | | ii. To study minerals and power resources in the specific regions of India. |
| | | iii. To study the nature of industries and their development in India. |
| | | iv. To aware the students about agricultural and demographic problems and make them able to find remedial measures on those problems. |
| | | |
| | Gg. 233 (DSE 2 A): PRACTICAL GEOGRAPHY (Scale and Map Projections) | 1. To give basic information about various tools and techniques used in making maps. |
| | | 2. To understand the concept of scale at the initial stage . |
| | | 3. To know how to draw the maps on various scale. |
| | | 4. To acquaint the students with basic of Scale, Map Projections and cartographic Techniques 5. To enable the students to use Scale Map Projections and cartographic techniques |
| | | |
| | Gg. 243 (DSE 2 B): PRACTICAL GEOGRAPHY (Surveying) | 1. To acquire knowledge of survey language and sense of technique of surveying. |
| | | 2. To know the scale and distance of surveying. |
| | | 3. To know how to draw layout by surveying of region. |
| | | 4. To acquaint the students with basic knowledge and technique of ground survey. |
| | | 5. To acquire the knowledge of survey instruments.. |
| | | 6. To provide basic information about mechanism of survey instruments. |
| | | 7. To acquaint the knowledge how to use survey instruments. |
| | | 8. To know the importance of surveying and survey instruments. |
| | | |
| | Gg. 234 (SEC 1): REGIONAL PLANNING AND DEVELOPMENT | 1. Student will become well aware about the Regional Planning and Development. |

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| | | 2. Students will get the knowledge of planning, its limitation. plans and Agro Ecological Zones of Maharashtra. |
| | | 3. Students will be able to participate in planning and regional development. |
| | | 4. Students will get knowledge about various approaches and models of regional planning and development. |
| | | 5. Students will be aware of the Special area development. |
| | | |
| | Gg. 244 (SEC 2): REMOTE SENSING AND GPS BASED PROJECT REPORT | 1. To understand the principles of Remote Sensing. of GPS based survey. |
| | | 2. To acquaint the students with fundamental concepts of Aerial Photography. |
| | | 3. To introduce students with advance techniques for data collection. |
| | | 4. To learn principles and applications |
| | | 5. To learn basics of GPS. |
| | | |
| | Gg. 245 (DSC 3D): MINOR STUDY PROJECT | 1. To motivate the students towards Research. students. |
| | | 2. To understand the various problems in the field of Geography. |
| | | 3. To introduce research methodology and to inculcate research aptitude. |
| | | 4. To enhance analytical thinking and report writing ability of the students. |
| | | |
| | | • Investigate components and function ofGIS |
| | | • Study GIS Datamodels. |
| | | • Introduce GPS and ItsFunctions. |
| | | • Make use GIS & GPSsoftware. |
| | | |

| **Class** | **Course** | **Outcomes (**After completion of this course, the students will be able to**)** |
|---|---|---|
| | **SEM V** | |
| **T.Y.B. A.** | **Gg. 351 (DSC 1E) Environmental Geography** | To make the environmental awareness amongst the students. |
| | | Awareness among the students about use of resources with prudence. |
| | | To identify environmental problems and their solution in day to day life |
| | **Gg. 352 (DSE 3A) Economic Geography** | To understand current economic situation in relation with geography |
| | | To identify different economic problems in India & World |
| | | Understanding of efficient use of resources for economic sustainable development |
| | **Gg. 353 (DSE 4A) Practical in Human** | To understand the practical approach of Human Geography |

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| | **Geography and Geo-Statistics.** | To know the importance of statistical techniques in Human Geography. |
| | | To understand techniques useful in various research work |
| | **Gg. 354(SEC 3) Field Techniques and Introduction to Project Report.** | Understanding & experience of the analytical skill of field-work. |
| | | Development of skill in preparing research method while working on filed |
| | | Understanding of preparation of questionnaires, methodology and Research Report |
| | **Gg. 355 (GE 1A) Disaster Risk Reduction.** | Understanding the types and kind of disaster |
| | | To know what to do in pre, during and post disaster time |
| | | Understating of participation in different NGO'S and their role in disaster management |
| | **SEM-VI** | |
| | **Gg. 361 (DSC 1F) Population Geography.** | Understanding of concept of population and its properties |
| | | Understanding of population as a resource with examples |
| | | Understanding of recent problems of population in day to day life and solutions |
| | **Gg.362 (DSE 3B) Political Geography** | Understanding population geography in relation with National & Global politics |
| | | Understanding geo politics & related theories |
| | | Understanding problems of polities & its relation with geography |
| | **Gg. 363 (DSE 4B) Practical in Physical Geography** | Understanding of SOI topsheets& its ground applications |
| | | Reading, Understanding & interpretation of IMD maps |
| | | Understanding an importance of Village survey & tour Report |
| | **Gg. 364 (SEC 4) Geographical Information System.** | Understanding fundamental concept of GIS & related field |
| | | Knowing applications of GIS in various filed |
| | | Understanding of different type of Job opportunities in various GIS companies |
| | **Gg. 365 (GE 1B): SUSTAINABILITY AND DEVELOPMENT** | Understanding actual concept of Sustainable development & its importance |
| | | Understanding role of individual in sustainable development while living day to day life |
| | | Understanding problems associated with sustainable development |

| Class | Course | **Outcomes (**After completion of this course, the students will be able to**)** |
|---|---|---|
| | **Semester-I** | |
| M.A./ M.Sc.I Geog. | Gg. 101: Principles of Economic Geography | 1. Evaluate the applicability and importance of economic geography in analyzing the modes of societies and economies" operation. |
| | | 2. Establish and analyze spatial patterns of economic development. |
| | | 3. Explain the role of natural and cultural factors in determining economic development of India. |
| | Gg. 102 : Principles of Population Geography. | 1) To understand the concepts in Population geography. |
| | | 2) Students able to evaluate different theories of population growth. |
| | | 3) Students compare different population zones. |
| | | 4) Students know the various problems of population. |
| | GG-103 : Practical in Interpretation of SOI Topographical Maps and Surveying by GPS. | 1. Enhance interpretative skills of the students. |
| | | 2. Identify the physical and cultural features in SOI topographical maps. |
| | | 3. Adopt the knowledge of drawing profiles. |
| | | 4. Understand the GPS and its functions, work, types and components for a filed survey. |
| | GG-104 : Practical in Human Geography. | 1. Evaluate and investigation the population data. |
| | | 2. Understand the data analysis techniques in Human Geography. |
| | | 3. Understand the various basics statistical Techniques for analysis of the geographical data. |
| | GG: 105, Tourism Management | 1. Tourism Management graduates are hired by both private and government sector companies. |
| | | 2. Tourism Management course helps students specialize in the industry-specific knowledge and make them business ready for fields such as hotels, vacation resorts, retreat hotels, campgrounds. |
| | AC-101: Practicin Cleanliness (Compulsory; Audit Course; Practical; 2 Credits) | AC101.1 Identify need at of cleanliness at home/office and other public places. |
| | | AC101.2 Plan and observe cleanliness programs at home and other places. |
| | | AC101.3 Practice Japanese 5-S practices in regular life. |
| | | |
| | **Semester-II** | |
| | GG-201: Geographical Thoughts. | 1. Appreciate the contribution of the thinkers in Geography. |
| | | 2. Strengthen point presentations on different schools of geographical thought. |
| | | 3. Know relationship of geography with other disciplines and man-environment relationships. |
| | GG. 202 : Social and Cultural Geography. | 1. Acquire skills related with socio-cultural factors. |
| | | 2. Familiar to information about various social factors |
| | | 3. Identify various types of cultural landscape of the world. |
| | Gg. 203 : Remote Sensing. | 1) Recognize and explain basic principles of remote sensing including electromagnetic spectrum; the emission, scattering, reflection and absorption of electromagnetic radiation (EMR); variations in EMR interactions with many substances. |

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| | | 2) Recognize and explain properties of remote sensing data acquisition, storage and processing. |
| | | 3) Recognize properties of aerial photographs and satellite imageries. |
| | | 4) Recognize and describe applications of remote sensing data in different fields. |
| | Gg. 204 : Practical in Cartographic Techniques with the Help of GIS | 1)Explain the importance concept of GIS and importance of QGIS in Cartography |
| | | 2) Undertake the process of georefencing a toposheet or a scanned map. |
| | | 3) Create different Political and Physical maps using QGIS. |
| | | 4) Create chloropheth maps based on attribute data tables. |
| | Gg-205 : Practical in Geo-Statistical Methods | 1)Understand the importance and use of statistical methods in geography. |
| | | 2. Use of sampling methods in Geo-statistical data. |
| | | 3. Examine the relationship between two or more variables with the help of Correlation and regression analysis. |
| | | 4. Measure probability using some probability distributions. |
| | | 5. Apply large and small sample tests in Geo-statistical data. |
| | AC-201(D): Introduction to Indian Music (Personality and Cultural Development Related Audit course; Practical; 2 Credits) | AC201D.1 Identify different types of Indian music. |
| | | AC201D.2 Develop more interest to learn and practice Indian music. |
| | | |
| **M.A/M.Sc-IInd** | Gg. 301 (A) : Regional Geography of U.S.A | • Understand the location, geostrategic importance, characteristics of size ofUSA |
| | | • To examine the physiographic features ofUSA |
| | | • To understand climatic variations, types of soil and vegetation and theirproblems. |
| | | • To extract and understand the natural resources, energy and mineralresources |
| | | • Understand to agricultural activities, patterns, regions, problems and prospect, and some important issues related toUSA. |
| | | |
| | Gg302: Environmental Geography | • Understand the fundamental concept related to environment, meaning, structure, types, component, geography and environment, man’s interaction with environment |
| | | • To study about the nature, scope, basic concept, interdisciplinary science, and studymethods. |
| | | • Understand the types, functions and component of ecosystem and biodiversity, its types, conservation methods, and preservation ofecosystem. |
| | | • To understand the environmental global problems such as deforestation, desertification, depletion of ozone, global warming, La-nina and El neon. |
| | | • Understand the role of environmental legislation laws and acts for environment protection andconservation. |
| | | • Study the environmental planning and management for future and also understand the climatic changes and its effect on environment and humanbeing. |
| | | |
| | Gg. 303: Geographical Information System | • UnderstandtheallfundamentalconceptofGIS,potentialofGIS,conceptofspace&time,objectivesofGIS,elementsofGIS,GIStasks,historyofGISandGISapplications in different field. |

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| | | • To examine and understand the spatial and non spatial data models and all its functions components and applications ingeography. |
| | | • ExtracttheknowledgeandinformationaboutgeospatialanalysisanddatabasequeryandGISdataanalysisthevariousconceptandproblemsinanalysedinGISenvironment. |
| | | • Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes ingeography. |
| | | • GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land useplanning. |
| | | |
| | Gg 304: Watershed Management & Planning | • Understand the fundamentals concepts related to watershed, significances of watershed development, demarcation of watershed, types of water shed according to area and shape. |
| | | • Study about the physical parameters of watershed, channel geometry and basinmorphology. |
| | | • Understand the hydrological parameters, rainfall, aerial precipitation, evaporation and transpiration, infiltration, run off anddrainage. |
| | | • Understand the watershed development planning and sample of watershed management and planning for appropriate development of watershed management for water conservation and development. |
| | | |
| | Gg. 305: Practical of Physical Geography with the Help of G.I.S | • Understand the introduction of GIS software's special reference of ILWIS, to examining the types of GIS software and applications, introduction of menu, tools, page layout and setting, scanning image, import of image in the software. |
| | | • To study and understand the image registration and its analysis done insoftware. |
| | | • To understand and prepare the topology of point, line and polygon and understand non spatial dataanalysis. |
| | | • Topreparethedifferentkindsofmap using GISsoftwareandalsocreatetheprofile ofreliefrepresentation. |
| | | • To understand the GPS and its functions, work, types and components for filed survey and make project report using both GPS and GISsoftware. |
| | | |
| Sem.IV | Gg. 401: (B) INDUSTRIAL GEOGRAPHY | • Understand study about the industrial geography, its nature, scope, and different studymethods. |
| | | • To study the locations of industry and their activities primary and secondary and its factors responsible forsame. |
| | | • To review on world distribution of some industries and selectedcountries. |
| | | • To understand the global nature of industrialization and related problems, methods of measuring the spatial distribution ofmanufacturing. |
| | | • Understand the environmental degradation, industrial hazards and occupational health, manufacturing industry, role and factors affecting on thesame. |
| | | |
| | Gg. 402 (B): Geography of Trade & Transportation | • Understand the concept, development and significance of trade, its types, role of tread in the worldetc. |
| | | • To understand the trading blocks and trading pacts and international trade, its history, factors influencing, and India's foreign trade. |
| | | • Tostudythetransportanditsbasics,physical,economical,socialandculturalandmodesoftransportation,landways,waterways,andairwaysandallits functions. |
| | | • Examining the transportation network, measurement of accessibility, its hierarchies, hinterlands, models of network changes, gravity models and transport network and economic development. |

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| | | • Understand the problems and urban transport with growth of urban transportation in developingcourtiers |
| | | |
| | Gg. 403: (A) Research Methodology | • Examining the introduction of research, motivation in research, types of research, significance of research, research process and criteria of goodresearch. |
| | | • To understand their search problems, selecting research problems, literature view and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research. |
| | | • To understand the research design, need, features, basic principal and developing of research plan, and sampling design and its basic types,steps,characteristicsofsampling design. |
| | | • Study about type's data and methods of data collection and study the processing and analysis of data using different statistical methods. |
| | | • Understandtheinterpretationandreportwriting,techniques,precautionofinterpretation,layoutofresearchreport,typesofreportsandoralpresentationmechanicsofwriting a researchreport. |
| | | |
| | Gg. 404 (A): Geography of Tourism | • Examining the introduction to understand concepts and processes in Tourism. |
| | | • Run by the students with the various aspects in the tourism sector. |
| | | • Run by students the different organization of tourism industry. |
| | | • Gain wide knowledge of the existing and emerging trends in tourism. |
| | | • Understands the pros and cons of sustainable tourism. |
| | | |
| | Gg. 405 : Practical Geography | • Understand the topographical maps, its introduction, types, index, grid reference, and interpretation of topographicalmaps |
| | | • Study the satellite imageries- introduction, calculation of geographical area, interpretation of satelliteimageries. |
| | | • Understand the aerial photographs-introduction, definition, types, geometry of aerial photographs, methods, measurement of geographical area, elements of photo interpretation using stereoscope. |
| | | • Studyandunderstandthetechniquesofsurveying,usingdumpylevelandtheodoliteinstrumentforpracticalandfieldwork,research,andmeasurementandmanagementof area. |

# DEPARTMENT OF HINDI

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| | | |
| FYBCom | HIN 102 - F. Y. B COM - OPTIONAL HINDI | • develop Hindi reading and linguistic comprehension ofstudents. |
| | | • develop interest in literature, fiction and poetry. |
| | | • use their vocabulary for developing moral and social sense inlife. |
| | | • make special use of language for theirexpression.. |
| | | |
| FYBA | HIN 111 General Hindi | • Develop the comprehensiveability. |
| | | • Inculcate moral and human values withinthemselves. |
| | | • Understand the basic forms of fiction andpoetry. |
| | | |
| SYBA | HIN 231 S.Y.B.A GENERAL 2 :- Short Story | • Develop literarytendencies. |
| | | • Understand the types of Hindi Short storywriting. |
| | | |
| | HIN 232 S.Y.B.A SPLCIAL I :- Kavyashatra | • Know Indian Poetry structure in ancient and modernera. |
| | | • Know the importance ofcriticism. |
| | | • Increase vision regarding literaryvalue. |
| | | • Know the concept and process ofliterature. |
| | | |
| | HIN 233 S.Y.B.A SPLCIAL II :- Upnyas and Natak | • understand novel forms and theirtypes |
| | | • know the concept and process ofdramatics |
| | | |
| Class | Course | Outcomes (After completion of this course, the students will be able to) |
| T.Y.B.A | SEM V | |
| | MIL-III Hindi DSC | To make student aware of media intaface Language to make student aware of editionals in newpapers |
| | DSC-E(A) Hindi | To make student aware of basic Principlas of "YatraSahitya" |
| | SEC-III Hindi | To make student aware of grammar and Sentence Compositions in Hindi language . |
| | DSE - III (A) Hindi | To make student aware of History & Hindi Litreture |
| | DSE VI-(A) Hindi | To make student aware development in Hindi language . |
| | GE-(A) Hindi | To introduce students with "Hindi KavyaDhara " |
| | | |
| T.Y.B.A | SEM VI | |
| | MIL-IV Hindi DSC | To introduce students with the History & Hindi Cinema . |
| | DSC-F (A) Hindi | To introduce students to BhartiyaSantKavya. |
| | SEC-IV Hindi | To introduce students with Standerdlanguage . |
| | DSE - III (B) Hindi | To make student aware of History & Hindi Litreture |
| | DSE - III (B) Hindi | To make student aware devlopement in Hindi language . |
| | GE-I (B) Hindi | To introduce students Khandesh FlokLitreture. |
| | | |
| MA-I | HIN 1110 : General level – Katha Sahitya | • Get information about the Novel and StoryLiterature. |
| | | • Get information about Hindi Literature Forms. |
| | | • Understand Socio-Cultural & Political Impact on HindiLiterature. |
| | | |

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| | HIN 1120 : Special level : AadikalinavamMadhyayuginkavya | • get information about Sant poet & theirLiterature. |
| | | • get information about Hindi‟s Historical LiteratureForms. |
| | | • get information Well Known poet Vidyapati&SantTulasidaas |
| | | |
| | HIN1130:Speciallevel:Bhartiyakavyashastrakesiddhantavama | • know Indian Poetry structure in ancientera |
| | | • know the importance ofcriticism. |
| | | • increase vision regarding literaryvalue. |
| | | • know the concept and process ofliterature. |
| | | |
| | HIN 1140 : Special level : Aatmkatha | • get information Well Known female writer in Hindi |
| | | • know the literary contribution of femalewriter |
| | | • know the gender equality among theliterature. |
| | | • know the importance offeminism. |
| | | • know the characteristics of femininelliterature. |
| | | |
| | HIN 1210 : General level : kathetargadyasahitya | • get introduction of Hindiwriter. |
| | | • get information about the autobiography, essay and dramaLiterature. |
| | | • get information about Hindi Literature Forms. |
| | | • understand Socio-Cultural & Political Impact on HindiLiterature. |
| | | |
| | HIN 1220: Spl. – Ritikalinkavya | • know the Medieval Hindiliterature |
| | | • get information about Hindi‟s Historical LiteratureForms. |
| | | • get information Well Known poet Bihari, Ghananand&Bhushan |
| | | |
| | HIN 1230 : Spl. Level – PaschatyakavyshastraevamVaad | • know western Poetry structure in ancient and modernera |
| | | • know the importance ofcriticism. |
| | | • increase vision regarding literaryvalue. |
| | | • know the concept and process ofliterature. |
| | | |
| | HIN 1240 : Spl. Optional : Dalit Vimarsh | • get introduction of Dalit agitation ( India &World) |
| | | • know the history of the Dalit movement inIndia |
| | | • study of literature in Dalitapproach. |
| | | |
| | HI 2310 : General level : poetry | • get acquainted with the language, poetic style, diction of the age to which itbelongs. |
| | | • learn values through literaryworks. |
| | | |
| | HI 2320 : Spl. level : Bhashavigyan | • know the importance of language in humanlife. |
| | | • know the various methods to the the study oflanguage. |
| | | • understand the communication process and method |
| | | |
| | HI 2330 : Spl. level : Hindi sahityakaEtihas | • Study the historical Development of HindiLiterature. |
| | | • know the brief literature in sameperio |

| | | |
|---|---|---|
| | | • know the various literary form in sameperiod. |
| | | |
| | HI 2340 : Spl. level optional : Loksahitya | • know the concept of folk-literature. |
| | | • know the tradition of folk literature inIndia |
| | | • know the co-relation between folk literature and otherbranches. |
| | | • know the new trends study of folk literature in newera. |
| | | |
| | HI 2410 : General level : poetic Drama, New Poetry and Gazal | • know the new trends study of poetic Drama, New Poetry and Gazal literature in newera. |
| | | • get acquainted with the poetic style, diction of the age to which itbelongs. |
| | | • learn values through literaryworks. |
| | | |
| | HI 2420 : Spl. level – Hindi Bhasha | • know the importance of language in humanlife. |
| | | • know the various methods to the study of Hindilanguage. |
| | | • understand the communication process and method. |
| | | • know the importance of Devnagari Script |
| | | |
| | HI 2430 : Spl. level – Hindi SahityakaaadhunikEtihas | • study the socio-cultural & political Background of from 1900 to 2000periods. |
| | | • know the brief literature in sameperiod. |
| | | • know the various literary form in sameperiod. |
| | | • |
| | HI 2440 : Spl. level optional- Prayojanmoolak Hindi | • understand the communication process and method |
| | | • introduce the mediawriting |
| | | • introduce the Devnagari script variousaspect. |
| | | • |
| Class | Course | Outcomes (After completion of this course, the students will be able to) |
| T.Y.B.A | SEM V | |
| | MIL-III Hindi DSC | To make student aware of media intaface Language to make student aware of editionals in newpapers |
| | DSC-E(A) Hindi | To make student aware of basic Principlas of "YatraSahitya" |
| | SEC-III Hindi | To make student aware of grammer and Sentence Compositions in Hindi language . |
| | DSE - III (A) Hindi | To make student aware of History & Hindi Litreture |
| | DSE VI-(A) Hindi | To make student aware devlopement in Hindi language . |
| | GE-(A) Hindi | To introduce students with "Hindi KavyaDhara " |
| Class | Course | Outcomes (After completion of this course, the students will be able to) |
| T.Y.B.A | SEM VI | |
| | MIL-IV Hindi DSC | To introduce students with the History & Hindi Cinema . |
| | DSC-F (A) Hindi | To introduce students to BhartiyaSantKavya. |
| | SEC-IV Hindi | To introduce students with Standerdlanguage . |
| | DSE - III (B) Hindi | To make student aware of History & Hindi Litreture |
| | DSE - III (B) Hindi | To make student aware devlopement in Hindi language . |
| | GE-I (B) Hindi | To introduce students Khandesh FlokLitreture. |

# DEPARTMENT OF HISTORY

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| FYBA | HIS-101-History of India (1857-1950 | • To introduce various perspectives of the Indian Freedom Movement. |
| | | • To develop the spirit of nationalism among students. |
| | | • To bring an awareness among the students as responsible citizen of the country. |
| | | • To bring an awareness among the students as responsible citizen of the country. |
| | | • To bring an awareness among the students as responsible citizen of the country. |
| | | • To inculcate the rational thinking among the students. |
| | | |
| SYBASem. III | HIS-231-History of Marathas (AD 1605 - AD 1750) | • To Create and enhance interest about regional History among the students. |
| | | To acknowledge students how ShivajiMaharaj created the empire in adverse circumstances. |
| | | • To motivate students for the research work of the Maratha History |
| | | • Useful for the preparation of the competitive examinations. |
| | | |
| | HIS-232- History of United States of America (A.D.1776 - A.D. 1945) | • To understand the importance of America (USA) in the world history. |
| | | • To study the foreign policy of America (USA). |
| | | • To study the foreign policy of America (USA). |
| | | • To evaluate the progressive era of America (USA) and its important the world. |
| | | • To study and the Role of America between two world wars. |
| | | • Focus on the Human Rights Movement in America (USA). |
| | | • |
| | HIS-233-History of Ancient India (B.C 3000 to B.C 600) | • To acquaint the students with different sources of Ancient Indian History. To enable the students to understand the Political, Socio-Economic and Cultural Developments in the Periods under study and appreciate the rich Cultural Heritage in India. |
| | | • To Survey the Sources of History of Ancient India. The Course intends to Provide and Understanding of the Social, Economic, Religious and Institutional Bases of Ancient India. |
| | | • |
| | HIS-234 Research Methodology in History (SKILL COURSE) | The paper is designed to provide adequate conceptual base, bring better<br>• understanding of history and its forces, help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences and attain certain level of Interdisciplinary approach. |
| | | • |
| SYBA Sem.IV | HIS-231-History of Marathas (AD 1605 - AD 1750) | • To Create and enhance interest about regional History among the students. |
| | | To acknowledge students how ShivajiMaharaj created the empire in adverse circumstances. |
| | | • To motivate students for the research work of the Maratha History |
| | | • Useful for the preparation of the competitive examinations. |
| | | |
| | HIS-232- History of United States of America (A.D.1776 - A.D. 1945) | To understand the importance of America (USA) in the world history. |
| | | To study the foreign policy of America (USA). |

| | | |
|---|---|---|
| | | Focus on the Role of America (USA) in world politics. |
| | | To evaluate the progressive era of America (USA) and its important the world. |
| | | To study and the Role of America between two world wars. |
| | | Focus on the Human Rights Movement in America (USA). |
| | | |
| | HIS-233-History of Ancient India (B.C 3000 to B.C 600) | To acquaint the students with different sources of Ancient Indian History. To enable the students to understand the Political, Socio-Economic and Cultural Developments in the Periods under study and appreciate the rich Cultural Heritage in India. |
| | | To Survey the Sources of History of Ancient India. The Course intends to Provide and Understanding of the Social, Economic, Religious and Institutional Bases of Ancient India. |
| | | |
| | HIS-234 Research Methodology in History (SKILL COURSE) | The paper is designed to provide adequate conceptual base, bring better<br>understanding of history and its forces, help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms of formulating hypotheses and developbroad frames of interaction with other social sciences and attain certain level of Interdisciplinary approach. |
| | | |
| | DSC- HIS-241- History of the Marathas (A.D. 1605- A.D. 1750 ) | To Create and enhance interest about regional History among the students. |
| | | To acknowledge students how ShivajiMaharaj created the empire in adverse circumstances. |
| | | To motivate students for the research work of the Maratha History |
| | | Useful for the preparation of the competitive examinations. |
| | | |
| | DSE - HIS - 242 History of United States of America (A.D. 1776 - A.D.1945) | To understand the importance of America (USA) in the world history. |
| | | To study the foreign policy of America (USA). |
| | | Focus on the Role of America (USA) in world politics. |
| | | To evaluate the progressive era of America (USA) and its important the world. |
| | | To study and the Role of America between two world wars. |
| | | |
| | DSE-HIS- 243 History of Ancient India (B.C 600 - A.D 1206) | To acquaint the students with different sources of Ancient Indian History. To enable the students to understand the Political, Socio-Economic and Cultural Developments in the Periods under study and appreciate the rich Cultural Heritage in India. |
| | | To Survey the Sources of History of Ancient India. The Course intends to Provide and Understanding of the Social, Economic, Religious and Institutional Bases of Ancient India. |
| | | |
| | SEC-HIS-244 An Introduction to Archives in India | To create awareness among the students about the role of Archives in the preservation of Heritage. |
| | | To introduce the importance of Archives in study of History. |
| | | To create awareness to conserve the historical records in their local areas. |
| | | To create interest of students to pursue career in the field of Archives. |
| | | To encourage students to visit Archives. |
| | | • Understand emergence of feudal system in Indiansociety |

| | | |
|---|---|---|
| | | • Understand the History of Satvahanas, Shungas, Kushans, andHunas. |
| | | • Know about the Sangam age, the Cholas, Pallavas andChalukyas. |
| | | |
| | **SEM V** | |
| **T.Y.B.A (History)** | **HIS -351 -History of Modern Europe (AD 1781 - AD 1913)** | 1. Students will be able to Understand the concept and meaning of the` History of Modern Europe. |
| DSC-1E | | 2. Students will be able to Explain important information of the `History of modern Europe`. |
| | | 3. Students will be able to introduce various perspectives of the History of modern Europe. |
| | | 4. Students will be able to Cover an Important topic of the `History of Modern Europe`1781 to 1945. |
| | | 5. Students will be able to inculcate Liberty, Equality and fraternity among the students. |
| DSE 1 C | **HIS 352 History of India (AD 1750 – AD 1857)** | 1. To introduce various perspectives of the Modern India |
| | | 2. To develop the spirit of nationalism among students. |
| | | 3. To bring an awareness among the students as responsible citizen of the country. |
| | | 4. To inculcate Liberty, Equality, and Fraternity among the students. |
| | | 5. To inculcate the rational thinking among the students. |
| DSE 2 C | **HIS 353 History of India (AD 1206 – AD 1526)** | 1. Students learn about the various polity and sultanate period's (1206-1526) in India. |
| | | 2. Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India. |
| | | 3. Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in sultanate period. |
| SEC 3 | **HIS 354 Travel and Tourism in India** | 1. Students will be able to Understand the concept and types of Tourism. |
| | | 2. Students will be able to Acquire adequate knowledge about various aspects in Tourism planning. |
| | | 3. Students will be able to Explain important information of some Historical tourist places. |
| | | 4. Students will be able to Develop career in Tourism industry. |
| GE 1 A | **HIS 355 Making of Contemporary India - 1** | 1. This course presents some important vignettes of a complex, highly diverse India that is also witnessing unprecedented changes since its formal independence in 1947 from Great Britain. |
| | | 2. The course revolve around social dimensions of change, political democracy, economic transition from the state to the market, gender relations, India's economic globalization and changing world view. |
| | | 3. It would be helpful if students are aware of the socio political dynamics at play in contemporary India and keep themselves abreast with current affairs and debates in the country to fully appreciate the various dimensions and contours if the subject matter in the course. |
| **T.Y.B.A (History)** | **Semester-VI** | |
| DSC 1 F | **HIS 361 History of Modern Europe** | 1. Students will be able to Understand the concept and meaning of the` History of Modern Europe. |

| | | |
|---|---|---|
| | **(AD 1914 - AD 1945)** | |
| | | 2. Students will be able to Explain important information of the `History of modern Europe. |
| | | 3. Students will be able to introduce various perspectives of the History of modern Europe. |
| | | 4. Students will be able to Cover an Important topic of the `History of Modern Europe 1781 to 1945. |
| | | 5. Students will be able to inculcate Liberty, Equality and fraternity among the students. |
| DSE 1 D | **HIS 362 History of India (AD 1750 – AD 1857)** | 1. To introduce various perspectives of the Modern India |
| | | 2. To develop the spirit of nationalism among students. |
| | | 3. To bring an awareness among the students as responsible citizen of the country. |
| | | 4. To inculcate Liberty, Equality, and Fraternity among the students. |
| | | 5. To inculcate the rational thinking among the students. |
| DSE 2 D | **HIS 363 History of India (AD 1526 – AD 1707)** | 1. Students learn about the various polity and sultanate period's (1206-1526) in India. |
| | | 2. Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India. |
| | | 3. Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in sultanate period. |
| SEC 4 | **HIS 364 An Introduction to Museums in India** | 1. Grasp the concept of Museum. |
| | | 2. Acquire adequate knowledge about Historical Importance of Museums as Sources of History. |
| | | 3. Understand Management of Museums. |
| | | 4. Acquire important information of some Famous Museums in India. |
| | | 5. Develop career in Tourism industry. |
| GE 1 B | **HIS 365 Making of Contemporary India - 2** | 1. This course presents some important vignettes of a complex, highly diverse India that is also witnessing unprecedented changes since its formal independence in 1947 from Great Britain. |
| | | 2. The course revolve around social dimensions of change, political democracy, economic transition from the state to the market, gender relations, India's economic globalization and changing world view. |
| | | 3. It would be helpful if students are aware of the socio political dynamics at play in contemporary India and keep themselves abreast with current affairs and debates in the country to fully appreciate the various dimensions and contours if the subject matter in the course. |
| | | 4. This course presents some important vignettes of a complex, highly diverse India that is also witnessing unprecedented changes since its formal independence in 1947 from Great Britain. |
| **T.Y.B.A (Political Science)** | **Semester-V** | |
| DSC-1E | **Indian Political Thinker Part - I** | 1. This is an introductory paper to the concept ideas and theories developed in India. |

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|---|---|---|
| | | 2. It deals with the main sources of the political traditions in modern India and focusses the development of social Institution and as various patterns of politics that emerged in modern India. |
| | | 3. This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in Pre- and Post-independence India. |
| | | 4. To study this paper is to understand key thinker's seminal contribution to the evolution of political theorizing in India. |
| GE-1A | **Indian Civil Services** | 1. This paper provides the conceptual framework of the civil services and good governance. |
| | | 2. It delves deep in meaning, origin, forms of civil services and good governance in general. |
| | | 3. This course will be helpful and encourage students to acknowledge civil services and good governance process in India. |
| | | 4. An intention of this paper is to understand origin, development, and challenges before good governance in India. |

# DEPARTMENT OF MARATHI

| CLASS | COURSE | OUTCOME |
|---|---|---|
| FYBA SEM -I | Mar -111 A Specific Type of Study Story | understand the nature and characteristics of this type of story |
| | | know the journey of Marathi Katha on the basis of highlights |
| | | derstand the major components of story telling |
| FYBA SEM -II | MAR -121 A Specific Types of Study Poems | understand the nature and features of this poetic type |
| | | know the nature of two important types of poetry |
| | | To know the expressions of different types of poems in the edited poetry collection |
| SYBA SEM III | DSC 1 MAR 232-A Modern Literature: Novel | know the nature and characteristics of this growing type of novel |
| | | nsulting on the progress of modern Marathi novels. |
| | | develop the vision of evaluating and evaluating the novel |
| SYBA SEM IV | DSC 1 MAR 242-B Modern Wadmay Type Poems | know the nature and features of these types of poems |
| | | To consult the movement of modern Marathi poetry |
| | | My University's evaluation of this collection of poems |
| SYBA SEM III | C (S2) Mar 233 ShityaVichar( Indian and Western) | roducing Indian and Western thought |
| | | Understanding the experimental nature of the material |
| | | To know various questions of literature production 4 To know the main and merit reasons of literature production |
| | | |
| SYBA SEM IV | DSC (S2) Mar 243 ShityaVichar( Indian and Western) | Introducing Indian and Western literary ideas |
| | | Understanding the nature and type of vocabulary while learning the nature of the language of literature |
| | | To know the nature of happiness derived from literature |
| SYBA SEM III | DSC Mar 231 A Studies of Specific Literary Types | To introduce the tradition of ideological prose writing in Marathi |
| | | To know about the life work of Mahatma JyotiraoPhule and his personal ideological connection |
| | | To get information about the writings of Mahatma JyotiraoPhule |
| | | Understanding the nature and characteristics of the conceptual content of farmers in Asud |
| SYBA SEM IV | DSC Mar 241 A The study of Character-Autobiography Writing | To know the social and literary importance of writing autobiography |

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|---|---|---|
| | | To introduce the tradition of character writing in Marathi |
| | | To introduce the tradition of writing autobiography in Marathi |
| SYBA SEM III | MIL- Mar 236- Writing for Print Media | To get special introduction of the medium in the newspaper |
| | | To know the function of this printed medium and its usefulness |
| | | To be aware of the nature and technique of news writing to be done for the newspaper medium. |
| SYBA SEM IV | MIL- Mar 246 Writing and Communication For Audio Media | To get special introduction of this audio medium in the air |
| | | To know the function of this audio medium and its usefulness |
| | | To make them aware of the nature and technique of speech writing for the radio medium |
| | | To assimilate the nature and technique of the statement to be made for public and private radio |
| SYBA SEM III | SEC- Mar 243 Writing Skills Printing | Know the nature and requirements of printed search |
| | | Acquire printed search skills |
| | | To know the meaning and application of printed search marks |
| | | Practice print search |
| SYBA SEM IV | SEC- Mar 244 Writing Skills Creative Writing | Knowing the nature and features of creative writing |
| | | Understanding the creation process of story writing |
| | | Understand the production process of dramatic writing |
| | | Practice story writing |
| | | |
| **Class** | **Course** | **Outcomes (**After completion of this course, the students will be able to**)** |
| | **SEM V** | |
| **T.Y.B.A.** | DSC- Marathi E | 1. The students got to know the nature and features of this type of drama.<br>2. Students understood the nature and style of writing Dalit one-act plays. |
| | DSC 3 Marathi A | 1 Students got acquainted with the history of medieval Marathi Vadmayacha. |

| | | |
|---|---|---|
| | | 2) The students learned the inspiration behind the creation of medieval Marathi Vadmaya.<br>3) The students learned the salient features of shayari poetry by observing its nature. |
| | DSE 4 Marathi A | 1 The students learned the nature of language and its function.<br>2 students were introduced to different colors of language stud.y<br>3 The students got to know the opinions regarding the epithet of Marathi language and took note of the background of Marathi. |
| | GE Marathi A | 1 students learned the concept of folklore .<br>2 students got to know the nature of folk theater and got acquainted with the features .<br>3 students learned the nature and features of traditional forms of kirtan and bharud . |
| | MIL Marathi 3 | 1 The students got a special introduction to the audio-visual medium of television .<br>2 students learned about the function of television and its usefulness .<br>3 students learned the nature and technique of writing advertisements for television . |
| | SEC Marathi 3 | 1 Students acquired essay writing skills .<br>2 which he learned the nature of essay writing and its components .<br>3 students practiced their writing considering the type of essay . |
| | | |
| F.Y.B.SC SEM I/II | Study of story and communication skills | Notice the characteristics of the stories in the MandeshiManasan story collection. |
| | | Notice the conflicting narrative and language features of the stories in this Mandeshi people collection. |
| | | Performing formal and informal types of fairies |
| | | Introduce the essentials for communication skills |
| S.Y.B.SC SEM I | Science fiction and record writing | Introducing this type of science fiction story |
| | | Encourage writing in Marathi on various subjects in the field of science |
| | | Learn the skills of people to write useful on various subjects in the field of science |
| S.Y.B.SC SEM II | Humorous stories and science fiction writing | Introduce these types of comedy stories |
| | | |
| MA-I | MAR111:MadhyayuginMarathiVangmayachaItihas(Prarambhto | • get Information about the history of Medieval MarathiLiterature. |
| | | • get Information about Medieval Marathi LiteratureForms. |
| | | • study Social Change effect on Medieval MarathiLiterature. |
| | | • understand Socio-Cultural & Political Impact on Medieval MarathiLiterature. |
| | | |

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|---|---|---|
| | MAR121:MadhyayuginMarathiVangmayachaItihas(1650to181 | • get Information about Sant, Pandit&Sahir Medieval MarathiLiterature. |
| | | • get Information about Medieval Marathi LiteratureForms. |
| | | • get Information Well Known poet SantTukaram&Ramdas. |
| | | |
| | MAR 112: Samiksha | • know the importance ofcriticism. |
| | | • increase vision regarding literaryvalue. |
| | | • know the concept and process ofliterature. |
| | | |
| | MAR 122: SANSHODHAN PRAKRIYA | • develop of critical approach about Art &literature. |
| | | • know the research methodology &process. |
| | | • know the importance ofresearch. |
| | | |
| | MAR 113: sahityik:Annabhausathe | • know the literary contribution of thewriter. |
| | | • know the life value among theliterature. |
| | | • getIndroduction ofwriter. |
| | | |
| | MAR 123: Lokshahir: Annabhausathe | • know the folksong ofannabhau |
| | | • study life and literary value of Annabhau``sPovada AndLavani |
| | | • Study of Annabhau``s folk-Drama |
| | | |
| | MAR 114/A: StrivadiSahitya | • introduce new trends in Marathiliterature. |
| | | • know the importance offeminism. |
| | | • know the characteristics of feminineliterature. |
| | | |
| | MAR 124/A: StrivadiSahitya | • get Introduction of feminine agitation ( India &World) |
| | | • know the history of the feminine movement inMaharashtra. |
| | | • study of literature in feministicapproach. |
| | | |
| MA-II | MAR 231 Aadhunik Marathi Vangamayachaitihas (1945-90) | • study the socio-cultural & political Background of 1945 to 1960periods. |
| | | • know the brief literature in sameperiod. |

# DEPARTMENT OF MATHEMATICS

| Class | Course | Outcomes |
|---|---|---|
| FYBSc | 1.MTH 101: Matrix Algebra | Upon successful completion of this course the student will be able to: |
| | | • understand concepts on matrix operations and rank of the matrix. |
| | | • understand use of matrix for solving the system of linear equations. |
| | | • understand basic knowledge of the eigen values and eigen vectors. |
| | | • applyCayley-Hamilton theorem to find the inverse of the matrix. |
| | | • know the matrix transformation and its applications in rotation, reflection, translation. |
| | 2.MTH 102: Calculus | Upon successful completion of this course the student will be able to: |
| | | • understand basic concepts on limits and continuity |
| | | • understand use of differentiations in various theorems. |
| | | • know the Mean value theorems and its applications. |
| | | • make the applications of Taylor's, Maclaurin's theorem. |
| | | • know the applications of calculus. |
| | 3.MTH 103(B): Graph Theory | Upon successful completion of this course the student will be able to: |
| | | • know the types of graphs |
| | | • know the concept of trees |
| | | • know the directed graphs |
| | | • know the applications of graphs |
| | 4. MTH 201: Ordinary Differential Equations | Upon successful completion of this course the student will be able to: |
| | | • To understand the necessity of differential equations |
| | | • To learn about forming differential equations from physicalsituations |
| | | • To know various types of differential equations |
| | | • To practice methods of solution for various types of differentialequations. |
| | | • It is used in all branches of engineering. |
| | 5. MTH 202: Theory of Equations | Upon successful completion of this course the student will be able to: |
| | | • To know about number system |
| | | • To learn division algorithm and itsapplication |
| | | • To know about congruence classes |
| | | • To understand the famous Fermat"stheorem. |
| | | • To learn how to solve various types of equations. |
| | 6. MTH 203(A): Laplace Transform | Upon successful completion of this course the student will be able to: |
| | | • understand basic concepts on Laplace and Inverse Laplace transforms. |
| | | • understand convolution theorem. |
| | | • Know the applications in engineering. |
| | | • to learn properties of Laplace and inverse Laplace transforms. |
| FYBSc (Statistics) | 1. ST-101 DESCRIPTIVE STATISTICS-I | Upon successful completion of this course the student will be able to: |
| | | • know the concept of statistics |
| | | • understand the population and sample |
| | | • understand the presentation of data |
| | | • know the measures of central tendency |
| | 2. ST-102 PROBABILITY AND PROBABILITY DISTRIBUTIONS-I | Upon successful completion of this course the student will be able to: |
| | | • know th sample space and events |
| | | • know the concept of probability |
| | 3. ST-201 DESCRIPTIVE STATISTICS-II | Upon successful completion of this course the student will be able to: |
| | | • know the skewness and kurtosis |
| | | • know the correlation |
| | | • know the regression |
| | | • know the attributes |
| | 4. ST-202 PROBABILITY AND PROBABILITY DISTRIBUTIONS-II | Upon successful completion of this course the student will be able to: |
| | | • know the bivariate probability distribution |
| | | • know the bivariate random variable |
| | | • know the concept of p.m.f. and c.d.f. |

| | | |
|---|---|---|
| SYBSc | 1.MTH -301: Calculus of Several Variables | **Upon successful completion of this course the student will be able to understand:** |
| | | • limit and continuity of functions of several variables |
| | | • fundamental concepts of multivariable Calculus. |
| | | • series expansion of functions. |
| | | • extreme points of function and their maximum, minimum values at those points. |
| | | • meaning of definite integral as limit as sums. |
| | | • how to solve double and triple integration and use them to find area by double integration and volume by triple integration. |
| | 2. MTH -302(A): Group Theory | **Upon successful completion of this course the student will be able to:** |
| | | • understand group and their types which is one of the building blocks of pure and applied mathematics. |
| | | • understand concept of automorphism of groups |
| | | • understand concepts of homomorphism and isomorphism |
| | | • understand basic properties of rings and their types such as integral domain and field |
| | 3.MTH 304: Set Theory and logic (SEC-I) | **Upon successful completion of this course the student will be able to:** |
| | | • understand the issues associated with different types of finite and infinite sets via countable uncountable sets |
| | | • know the knowledge of the concepts and methods of mathematical logic, set theory, relation calculus, and concepts concerning functions which are included in the fundamentals of various disciplines of mathematics |
| | | • provide the logical mathematical reasoning, formulate theorems and definitions |
| | 4. MTH -401: Complex Variables: | **Upon successful completion of this course the student will be able to:** |
| | | • understand the concept of analytic function |
| | | • understand the Cauchy Riemann Equations |
| | | • understand harmonic functions |
| | | • understand complex integrations |
| | | • understand calculus of residues. |
| | | • acquire the skill of contour integrations. |
| | 5. MTH-402(A): Differential Equations | **Upon successful completion of this course the student will be able to:** |
| | | • aware of formation of differential equations and their solutions |
| | | • understand the concept of Lipschitz condition |
| | | • understand method of variation of parameters for second order L.D.E |
| | | • understand simultaneous linear differential equations and method of their solutions |
| | | • understand Pfaffian differential equations and method of their solutions |
| | | • understand difference equations and their solutions |
| | 6. MTH 404: Vector Calculus(SEC-II) | **Upon successful completion of this course the student will be able to:** |
| | | • understand scalar and vector products |
| | | • understand vector valued functions and their limits and continuity and use them to estimate velocity and acceleration of partials. |
| | | • Calculate the curl and divergence of a vector field. |
| | | • Set up and evaluate line integrals of functions along curves. |
| | | • |

| Class | Semester | Course | Outcomes |
|---|---|---|---|
| **TYBSC** | **SEM-V** | MTH - 501: Metric Spaces | nderstand the concept of metrics spaces.<br>earn the continuous function on metric space.<br>nderstand the connected metric space.<br>now the completeness and connectedness of metric space. |
| | | MTH - 502: Real Analysis –I | nderstand the structure of Riemann Integration<br>epresent lattice in diagrammatic form.<br>nderstand the Improper integrals with finite limit and infinite limit their properties.<br>earn the concepts of Beta and Gamma Integrals. |
| | | MTH - 503: Algebra | now the use Permutation Groups<br>now normal Subgroups and group isomorphisms |

| | | | |
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| | | | know Ideals in rings, Quotient Rings and Isomorphism of Rings<br>know polynomial Rings and irreducibility of polynomials |
| | | MTH - 504: Lattice Theory | nderstand the structure of poset and lattice.<br>epresent lattice in diagrammatic form.<br>Understand the terms Maximal element, Minimal element, Greatest element, Least elements.<br>Learn the concepts of ideals and their properties.<br>Learn the concepts of homomorphism.<br>Understand modular and distributive lattice and their interrelation.<br>Understand complemented and relatively complemented lattice |
| | | MTH - 505: Integral Transforms | Know the use of Fourier transform in Wave equation<br>Solve Boundary Value Problems, also problem on Heat-flow in semi-infinite bar.<br>Use Fourier transform in communication theory and signal analysis, image processing and filters, data processing and analysis, solving partial differential equations for problems on gravity.<br>Students will be able to use Z-transform in the characterization of Linear Time-Invariant system ( LTI ), in development of scientific simulation algorithms |
| | | MTH – 506(B): Number Theory | olve Diophantine equations<br>se Fermat's theorem, Euler's theorem and Wilson's theorem for finding remainders<br>nderstand perfect, Mersenne and Fermat's numbers.<br>nderstand Fibonacci sequence<br>olve Diophantine equations by using finite continued fractions |
| | | TH – 507: Practical Course based on (MTH-501& MTH-502) | dents will develop problem solving problems on metric spaces and Riemann integrations. |
| | | TH – 508: Practical Course based on (MTH-503 & MTH-504) | velop problem solving skills |
| | | TH – 509: Practical Course based on (MTH-505, MTH- 506(B)) | levelop problem solving skills<br>evelop computer programs for problems of number theoretic problems. |
| | **SEM-VI** | MTH - 601: Measure Theory | earn measurable sets. Learn the concept of Sets of measure zero.<br>Understand why a more sophisticated theory of integration and measure is needed.<br>Show that certain functions are measurable.<br>Understand properties of the Lebesgue integrals. |
| | | MTH - 602: Real Analysis – I | olve Convergence and divergence<br>se Test for absolute convergence<br>nderstand Fourier series for even and odd functions<br>nderstand Sine and cosine series in half range |
| | | MTH - 603: Linear Algebra | olve Rank and nullity theorem<br>seCayley Hamilton theorem, Euler's theorem and finding Eigen values and Eigen vectors of linear transformation.<br>nderstand Kernel and image of linear transformations. |

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|---|---|---|---|
| | | | nderstand Singular and non-singular linear transformations |
| | | ATH - 604: Ordinary and Partial Differential Equations | Know the exact differential equation and its solution.<br>Solve the exact differential equations by using integrating factor.<br>Solve the linear differential equation of second order by using various methods. |
| | | MTH - 605: Graph Theory | Understand a definition & types of graphs.<br>Understanda concept of Cut set and cut vertices.<br>Know the applications of graphs.<br>Know the colouring of graphs. |
| | | MTH – 606(B): Operations Research | olve the linear programming problem by graphical method and simplex method.<br>earn the unbounded, alternative and infeasible solutions of LPP by graphical and simplex method.<br>nderstand the standard and canonical form of LPP.<br>ind the optimal solution of TP by MODI method.<br>olve the solution of assignment problems by Hungerian Method.<br>Understand the unbalanced, balanced, maximization, restricted AP and alternative solution of AP.<br>nderstand the saddle point, maximin-minimax principal, twoperson zero sum game.<br>se of dominance property to find the solution games |
| | | TH – 607: Practical Course based on (MTH-601, MTH-602) | velop problem solving skills. |
| | | TH – 608: Practical Course based on (MTH-603 & MTH-604) | derstand basics of vector spaces and method of solving differential equations. |
| | | TH – 609: Practical Course based on (MTH-605, MTH- 606(B)) | velop problem solving analytical and computational skills. |

# DEPARTMENT OF MICROBIOLOGY

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| FYBSc | MB 101: Microbial Diversity | • Understand the basic microbial structure and study the comparative |
| | | • Characteristics of prokaryotes and eukaryotes and also Understand the structural |
| | | • Similarities and differences among various physiological groups of bacteria/archaea |
| | | |
| | MB-102: Microscopy and Basic Biochemistry | • Demonstrate theory in microscopy and their handling techniques and staining procedures |
| | | • Know various Culture media and their applications and also understand various physical and chemical means of sterilization |
| | | • Know general bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae |
| | | • Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively |
| | | |
| | MB-103: Microbiology Practical paper I | • Develop basic skill in asepticteчniques |
| | | • Understand various accessories for microbiology practical |
| | | • Develop ability to use quantitative reasoning to solve problems in microbiology |
| | | • Cultivate bacteria with different cultivationtechnique |
| | | |
| | MB-201: Basic Biochemistry and Cytology | • Understand concepts of growth and reproduction ofbacteria |
| | | • Know anatomy of prokaryoticcell |
| | | • Know structural detail of eukaryoticcell |
| | | • Understood various parts of cell and itsimportance |
| | | |
| | MB-202: Microbial Techniques | • Know general bacteriology and introduce microbial techniques for isolation of |
| | | • pure cultures of bacteria, fungi, algae and virus |
| | | • Demonstrate theory and practical skills in handling microbial culture |
| | | • Know various bacteria based on nutritional needs and also understand various |
| | | |
| | MB: 203 Microbiology Practical Paper II | • Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method |
| | | • Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations |
| | | • Introduce microbiology Laboratory Skills |
| | | • Become conversant in basic biochemistry methods and biochemical methods in microbiology |
| | | |
| SYBSc | MB:301 Basic Microbial Enzymes and Metabolism | |
| | | • Understand the basic of microbial enzymology, nature of enzyme, their nomenclature, working, mechanism, classification based on their action etc. |
| | | • know how about different parameters affecting the activity of enzyme. |
| | | • learn about nutrient uptake by microbes, various mechanism used to transport ions and molecules in microbial cells. |
| | | • cognizant about various pathways used by microbes to break down molecule and generate ATP as a source of energy. |
| | | |

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| | MB:302 Microscopy and Microbial Ecology | • To demonstrate theory in microscopy and acquaint with advanced microscopy. |
| | | • know the basic concepts of microbial ecology such as biotic and abiotic factors, microbial interactions etc. |
| | | • learn the establishment of symbiosis, some positive and negative interactions of microbes with plants, animals and other microbes. |
| | | • understand the microbial interactions in extreme habitats. |
| | | |
| | MB:303 – Microbiology Practical Paper III | • learn proper handling of micropipette, pH meter, graduated pipette and volumetric flask along with their calibrations.<br>• perform specific staining techniques and acquired skill of handling microscope while observing stained preparations.<br>• able to demonstrate basic biochemical characteristics of bacteria and able to check potability of water.<br>• know characteristics and significance of extremophiles. |
| | | |
| | MB 304 – SEC I Microbiological Analysis of Air, water and soil | |
| | | • Learn proper handling of micropipette, pH meter, graduated pipette and volumetric flask along with their calibrations. |
| | | • Perform specific staining techniques and acquired skill of handling microscope while observing stained preparations. |
| | | • Able to demonstrate basic biochemical characteristics of bacteria and able to check potability of water. |
| | | • Know characteristics and significance of extremophiles. |
| | | |
| | MB:401 Genetics and Immunology | • understand the basic of microbial enzymology, nature of enzyme, their nomenclature, working mechanism, classification based on their action etc. |
| | | • understand the concepts like gene, chromosome, Structural organization of chromosome, extra chromosome: plasmid and its types |
| | | • learn about infection: mode and source. |
| | | • learn mutation, type, agent causing mutation and their mechanism, test to detect mutation etc. |
| | | |
| | MB 402 - Basic Microbial Biotechnology | • understand the basics of fermentation technology, screening techniques, microbial culture preservation techniques etc. |
| | | • know the concepts of inoculum development and media sterilization for fermentation process. |
| | | • learn about the typical structure of fermenter and its parts, types of fermentation processes and synchronous growth. |
| | | • understand the basics of fermentation technology, screening techniques, microbial culture preservation techniques etc. |
| | | |
| | MB:403 - Microbiology Practical Course IV | • understand the Structure and functions of nucleus and volutin granules. |
| | | • Able to carry out titrations skillfully. |
| | | • Understand structure, working principle and significance of each and every part of fermenter. |
| | | • Know chromatography techniques. |
| | | |
| | MB:404 – SEC- II - Biofertilizers and Biopesticides | |
| | | • Completion of the course will give an overview of relevant use of microbial biofertilizers and biopesticides. |
| | | • The students will become familiar with the vast reserves of available microbial biodiversity that provide abundant opportunities to harness the ability of micro -organisms and their chemical constituents |
| | | • To sustainably minimize damage from pests or increase agricultural productivity and production. |

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| TYBSc | MB351 Microbial genetics | • Concept of central dogma of molecular biology |
| | | • Process of DNA replication transcription, translation |
| | | • Viral genetics |
| | | • Various method used for genetic recombination |
| | | |
| | MB352 Fermentation Technology | • Bbioreactors, |
| | | • Industrial sterilization |
| | | • Strain improvement |
| | | • Scale up and large scale production |
| | | |
| | MB353 Microbial Metabolism | • Concept of bioenergetics |
| | | • Anabolism and catabolism with examples |
| | | • Laws of thermodynamics |
| | | • Bacterial photosynthesis |
| | | |
| | MB 354 Medical Microbiology | • Various concepts of medicalmicrobiology |
| | | • Role of international organizations such as CDC andWHO |
| | | • Anatomy of humansystem |
| | | • Various chemotherapeutic agent and their mode ofaction |
| | | |
| | MB355 Immunology | • Concept related to cells and organs related to immunesystem |
| | | • Immune response and immunemechanism |
| | | • Immunologicaldisorders |
| | | • Concepts related toImmunodeficiency |
| | | |
| | MB356 Applied Microbiology | • Milk microbiology- technique used in milkindustry, |
| | | • Food microbiology – technique used in foodindustries, |
| | | • Microbial foodpoisoning |
| | | • Concepts related to geo-microbiology andnanotechnology |
| | | |
| | MB361 Molecular Biology | • Concept of generegulation |
| | | • Principals and applications of various moleculartechniques |
| | | • Concept, methods and application of r-DNAtechnology |
| | | • Gene library and genemapping |
| | | |
| | MB362 Pharmaceutical Microbiology | • Quality control and assurance, |
| | | • Concepts of GMP and GL Pregulations |
| | | • Standard protocols in pharmaceutical industry - IP, BP, USP andEP, |
| | | • Pharmaceutical audit and testing procedures for fermentation process |

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| | MB 363 Enzymology | • Vitamin as cofactor, its role in metabolism, |
| | | • Regulation of enzyme |
| | | • Various methods used for enzymepurification |
| | | • Enzymeassays |
| | | |
| | MB 364 Clinical Microbiology | • Various viral disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis,prophylaxsis |
| | | • Various bacterial disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis,prophylaxsis |
| | | • Various fungal disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis,prophylaxsis |
| | | • Various protozoal disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis,prophylaxsis |
| | | |
| | MB 365 Diagnostic Immunology | • Various antigen antibodyreaction, |
| | | • Different immunologicaltechniques |
| | | • Concepts related totransplantation, |
| | | • Concept of tumor immunology, type of tumors, immune mechanisms againsttumors |
| | | |
| | MB366 Environmental Microbiology | • Concepts related to Plantpathology |
| | | • Various plant pathogens and disease |
| | | • Soil microbiology and xenobiotics |
| | | • Microbial waste treatmentmethods. |
| | | |
| | MB357 Techniques in Diagnostic Microbiology –I | • Isolate and identify microorganism form laboratorysample |
| | | • Perform MIC ofantibiotics |
| | | • ELISA test for diseasediagnosis |
| | | • Immuno-diffusiontechniques |
| | | |
| | MB358 Techniques in Industrial Microbiology –I | • Techniques used in industrial production of alcohol |
| | | • Phenol coefficienttest |
| | | • Evaluation of sterilizationtechniques |
| | | • Temperature relation with microorganism- TDT,TDP |
| | | |
| | MB359 Techniques in Applied Microbiology –I | • Various techniques to estimate size ofmicrobes |
| | | • Isolation of bacteriophage and endophyticmicroorganism |
| | | • Check quality ofmilk |
| | | • Awareness of material safety Datasheet. |
| | | |
| | MB367 Techniques in Diagnostic Microbiology –II | • Isolate and identify microorganism form laboratorysample, |
| | | • Antibiotics senstitivity and resistancetest |
| | | • Detection of parasite |

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|---|---|---|
| | | • Handling of blood and bodyfluids |
| | | |
| | MB368 Techniques in Industrial Microbiology –II | • Techniques used in industries –Citric acidfermentation, |
| | | • UV-survivalcurve |
| | | • Enzyme production and determination of itsactivity |
| | | • Validation techniques of instruments and immobilizationprocess. |
| | | |
| | MB369 Techniques in Applied Microbiology -II | • Various methods used in agriculturally importantmicrobes |
| | | • Tests in waste watertreatment |
| | | • Antimicrobial action of plantextract |
| | | • Test for milk quality |
| | | |
| M.Sc-I : | MB 101 Microbial Taxonomy and Diversity | |
| | | • Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic. |
| | | • Structure, properties, pathways and significance of biomolecules. |
| | | • Applications of microbial biomolecules in various fields. |
| | | • Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic. |
| | | |
| | MB 102 Microbial Biochemistry | • Structure and properties ofBiomolecules |
| | | • Transport and energymetabolism |
| | | • Metabolism of carbohydrates, lipids, amino acid,nucleotide. |
| | | • Metabolic pathways andBioenergetics |
| | | |
| | MB-103 Bioanalytical Techniques | • Principles, working and application of bioinstruments used in isolation and identification of microbes and structural determination of biomolecules. |
| | | • Methods of separationtechniques |
| | | • Radio-labelingtechniques |
| | | • Microscopic techniques for electronmicroscopy |
| | | |
| | MB 104 Methods in Microbiology | • Biosafty procedures in microbiology |
| | | • Cultivation of algae, andfungi |
| | | • Nucleic acid and protein separationtechniques |
| | | • Advance instrumentation such as HPLC, GC,AAS |
| | | |
| | MB 105 Methods in Biochemistry | • Basic biochemistry perpetrations |
| | | • Biochemical analysis of sugar, protein, by variousmethods |
| | | • Quantitative and qualitative estimation of nucleicacid |
| | | • Basic bioinformaticssoftwares‘‘ |
| | | |

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| | MB201 Microbial Genetics | • Basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses. |
| | | • Causes, mechanisms and consequences of defect in gene/genome of microorganisms. |
| | | • DNA damage andrepair |
| | | • Gene regulations in bacteria, virus andeukaryotes |
| | | |
| | MB202 Microbial Enzymology | • Basic concepts of microbial enzymes, enzyme kinetics, regulation of enzyme activity, industrial applications of enzymes. |
| | | • Biotechnological significance of enzymes from extremophiles in agriculture, environment, medicine and industry. |
| | | • Enzyme function in non-aqueous environment |
| | | • Industrial applications of enzymes and extremozymes |
| | | |
| | MB203 Immunology | • Understanding of immune system, immunity and immune mechanisms |
| | | • Understanding of fundamental and advanced immunological techniques |
| | | • Immune response to infections anddiseases |
| | | • Histochemical and immunetechniques |
| | | |
| | MB 204 Methods in Enzymology | • Qualitative and quantitative enzymeassay |
| | | • Effect of environmental factors onenzyme |
| | | • Enzyme kinetics andimmobilization |
| | | • Purification of enzymes |
| | | |
| | MB 205 Methods in Molecular Biology | • Methods used in molecularbiology. |
| | | • DNA amplification using PCR technique |
| | | • Isolation of plasmid and fungalDNA |
| | | • Protein and DNA separationtechniques |
| | | |
| | MB301 Applied and Environmental Microbiology | • Method of sampling, investigation and examination offood |
| | | • Different techniques used to treat wastewater |
| | | • Biological conversion of lignocellulosicwaste, |
| | | • Bioremediation and biodegradation of xenobiotic compound, biomarkers andbioreporters |
| | | |
| | MB302 Molecular Biology and Bioinformatics | • Basic concept of molecularbiology |
| | | • Basic concept inBioinformatics |
| | | • Process of transcription,translation, |
| | | • Protein targeting anddegradation. |
| | | |
| | MB303 Pharmaceutical Microbiology | • Antibiotics and synthetic antimicrobialagents |
| | | • Regulations aspects in pharmaceutical industry |
| | | • Production of few biopharmaceuticals |
| | | • Concept of drug design |

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| | MB 304 Methods in Biostatistics and Bioinformatics | • Different computational methods used in basicbiostatistics |
| | | • Software used in thebioinformatics |
| | | • Biological databases for protein and nucleicacid |
| | | • Multivariate analysis inbiostatistics |
| | | |
| | MB 305 Methods in Applied Microbiology | • Validation ofinstruments |
| | | • Microbiological assay ofvitamin |
| | | • Environmental monitoring in pharmaceuticalindustry |
| | | • Analytical tests such as Microbial limit tests, Phenol coefficient,LAL |
| | | |
| | MB401 Fermentation Technology | • Principals in upstream process in fermentation industries. |
| | | • Design and application ofbioreactor |
| | | • Downstream processing andrecovery |
| | | • Production of few microbialproducts |
| | | |
| | MB402 Applied Molecular Biology | • Tools of molecular biology for rDNAtechnology |
| | | • Methods in r DNAtechnology |
| | | • Concept of microbialgenome |
| | | • Protein engineering andproteomics |
| | | |
| | MB403 Agricultural Microbiology | • Approaches used in agriculture to control disease inplant |
| | | • Microbial ecology and microbialinteraction |
| | | • Pathogenic interactions withplant |
| | | • Microbial biocontrolagents |
| | | |
| | MB 404 Methods in Biotechnology | • Analysis of biogas digestedslurry |
| | | • Isolation and estimation of RNA/DNA from varioussources |
| | | • Protocols regarding siderophore, VAM fungi spores,PGPR |
| | | • Protocols regarding DNA fingerprinting, GFPmarker |
| | | |
| | MB 405 Laboratory course (Project Dissertation) | • Selection of research topic |
| | | • Collection and compilation of literature |
| | | • Designing of experiment withobjectivity |

# DEPARTMENT OF PHYSICS

# Course Outcomes Department of Physics

| Class | Course | Outcomes (Students will be able to) |
|---|---|---|
| **F.Y.B.Sc.** | **PHY-101: Basic Mechanics** | • Apply the concept of use of knowledge of mechanics to real life problems.<br>• Empower the students to acquire engineering skills and practical knowledge which will help them in everyday life.<br>• Understanding of the course will create scientific temperament. |
| | **PHY-102: Dynamics and Elasticity** | • Kinematics and dynamics of rigid body in detail.<br>• Study the elastic behavior and working of torsional pendulum<br>• To understand torsional pendulum and time period calculation. |
| | **PHY-103: Lab-I** | • Understand the principles of measurement and error analysis and develop skills in experimental design.<br>• To study the elastic behavior of materials<br>• To understand the calculations of moment of inertia. |
| | **PHY-201: Electricity and Electrostatics** | • This course helps the students to provide a foundation in electricity which have the key role in the development of modern technological world.<br>• Have gained elaborated knowledge about electrostatics and laws governing the charge distribution. |
| | **PHY-202: Dielectrics, Magnetism and Electromagnetism** | • The students should have understood the basics of electromagnetism.<br>• Understand the basic idea about types of magnetization. |
| | **PHY-203: Lab-II** | • Thermal conductivity of a bad conductor by Lee's method.<br>• To study the variation of thermo e. m. f. across two junctions of a thermocouple with temperature.<br>• To determine the Refractive Index of the Material of a given Prism using Sodium Light.<br>• Study of spectrometer and determination of angle of prism.<br>• Understand basics of electrical circuits. |
| **S.Y.B.Sc.** | **PHY-301: Thermodynamics and kinetic theory of gases** | • To apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.<br>• Understand basic concept of thermodynamics and to distinguish between work done due to Adiabatic and isothermal changes.<br>• To state laws of thermodynamics and concept of internal energy.<br>• To understand Carnot's ideal heats engine, Carnot cycle and its efficiency, Carnot's theorem, Otto and Diesel engines with their efficiencies.<br>• To understand Concept of entropy, Change of entropy in Reversible process and Irreversible process, T-Sdiagram. |
| | **PHY-302(A): Electronics-I** | • Acquires knowledge about how a semiconductor diode rectifies an input a.c. signal.<br>• To distinguish between P-N diode, Zener diode, LED, solar cell and Photodiode.<br>• To understand half wave, full wave and bridge rectifiers.<br>• To demonstrate voltage regulation using Zener diode.<br>• To understand basic construction and operation of bipolar transistors (NPN and PNP)<br>• Know about various number systems and their applications.<br>• To understand the Boolean algebra and simplification of logic circuits. |
| | **PHY-303: Lab III** | • To test thermal conductivity of a bad conductor.<br>• To study the variation of thermo e.m.f across two junctions of a thermocouple with temperature.<br>• To determine the Refractive Index of the Material of a given Prism using Sodium Light.<br>• Study of spectrometer and determination of angle of prism.<br>• Study of I-V characteristics of solar cell.<br>• Experimental verification of logic gates. |
| | **PHY-304: Skill Enhancement course I** | • Make interpretation about the renewable energy sources.<br>• Understand the types of energy, energy storage and energy conversion systems.<br>• Understand availability of solar radiation, solar geometry, instrument used for measuring solar radiation<br>• Learn about the energy and environment, air pollution climate changes and its impacts on sustainable development |
| | **PHY-401: Waves, Oscillations and Acoustics** | • To demonstrate Lissajous figures by mechanical, optical and electrical methods.<br>• To understand composition of two S.H.M.s of equal frequencies along same line of vibration, at right angles.<br>• To demonstrate Resonance and its types- Mechanical resonance, Acoustic resonance, Electrical resonance and Optical resonance.<br>• To understand the concept of sound and to classify sound frequencies.<br>• To understand Doppler effect in sound and light and its application. |

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| | **PHY-402: Optics and Lasers** | • Understand the basics of solving problems of geometrical optics.<br>• Gain knowledge on various theories of light.<br>• Understand the natural behaviour of aberration in lens<br>•Understand the basic principle of laser and characteristics.<br>• Use the principles of wave motion and superposition to explain the physics of interference, diffraction and polarization. |
| | **PHY-403:Lab-IV** | • Study the basic ideas of the experiments.<br>• To analyse frequency response of LCR circuit. |
| | **PHY-404:Electrical circuits and network skills** | • To understand basic knowledge in the analysis of electric network.<br>• Apply knowledge to design of electrical circuits. |
| **Class** | **Course** | **Outcomes (**After completion of this course, the students will be able to**)** |
| | **SEM V** | |
| **T.Y.B.Sc. SEM V** | **Physics paper I**<br>**PHY 501: Mathematical physics** | 1. Apply the concept and knowledge of Mathematical physics to understand and solve real life problems.<br>. |
| | | 2. Understanding of the course will create scientific temperament |
| | **Physics paper II**<br>**PHY 502: Solid State physics** | Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems |
| | | Understanding of the course will create scientific temperament |
| | **Physics paper III**<br>**PHY 503: Atomic and Molecular physics** | Apply the concept and knowledge of Atomic and Molecular Physics to understand and solve the real life problems |
| | | Understanding of the course will create scientific temperament |
| | **Physics paper IV**<br>**PHY 504(A): Electronics-II** | Apply the concept and use of knowledge of Electronics and Digital Electronics to real life problems |
| | | Understanding of the course will create scientific temperament |
| | **Physics paper IV**<br>**PHY 504(B): Instrumentation-II** | Apply the concept and use of knowledge of Instrumentation to understand and to solve real life problems |
| | | Understanding of the course will create scientific temperament. |
| | **Physics paper V**<br>**PHY 505: Solar energy and applications** | Apply the concept of use of knowledge of energy resources, solar radiations and conversion to real life problem. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | 3. To impart knowledge of basic concepts of solar cell fundamentals. |
| | | 4. To provide the knowledge and methodology of conversion of solar energy into electricity |
| | **Physics paper VI**<br>**PHY 506(A): Technical Electronics-I** | Apply the concept of use of knowledge of Technical Electronics to real life problems. |
| | | Understanding of the course will create scientific temperament |
| **T.Y.B.Sc. SEM VI** | **Physics paper I**<br>**PHY 601: Quantum mechanics** | Apply the concept and use of knowledge of Quantum Mechanics to real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | **Physics paper II**<br>**PHY 602: Material Science** | Apply the concept of use of knowledge of Material Science to real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | **Physics paper III**<br>**PHY 603: Nuclear Physics** | Apply the concept and use of knowledge of Nuclear Physics to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament |
| | **Physics paper IV** | Apply the concept and use of knowledge of Modern and Applied Physics to understand and solve the real life problems. |

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| | **PHY 604: Modern and Applied Physics** | 2. Understanding of the course will create scientific temperament. |
| | **Physics paper V**<br>**PHY 605: Basic Instrumentation Skills** | Handle and use various basic mechanical and electrical measuring instruments |
| | | |
| | | 2. Understanding of the course will create scientific temperament |
| | **Physics paper VI**<br>**PHY 606(A): Technical Electronics II** | Apply the concept of use of knowledge of Technical Electronics to real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| **M.Sc. Part I Semester** I | **PHY - 101: Mathematical Methods for Physics** | Course outcome: Learner will be able to ….<br>Apply the concept and knowledge of Mathematical physics to understand and solve real life problems |
| | | Knowledge about Vector calculus, Bessel Functions, Legendre Differential equations, complex variable, Laplace transforms, Fourier Series etc and their physical significance is learnt by students. These mathematical concepts are widely used in various physics derivations. |
| | | Understanding of the Basic Mathematical physics will create scientific temperament. |
| | **PHY-102: Classical Mechanics** | Outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Classical Mechanics to real life problems. |
| | | 2. Understanding of the Classical Mechanicswill create scientific temperament. |
| | | This paper enables the students to understand :<br>• The Lagrangian and Hamiltonian approaches in classical mechanics.<br>• The classical background of Quantum mechanics and get familiarized with Poisson brackets and Hamilton -Jacobi equation. |
| | **PHY - 103: Solid State Physics** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament.. |
| | | After successful completion of this paper, the student will be well<br>• Introducing the behavior of ferroelectric and ferromagnetic material in terms of their properties and applications.<br>• Superconductivity and lattice defects.<br>• Introducing basic concepts via diffraction methods, lattice vibrations and free electrons, Hall effect.<br>• Understanding the basic transport properties of metals and semiconductors.<br>• Their introduction to the band structures for studying different materials. |
| | **PHY - 104: (A) Physics of Semiconductor Devices** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Physics of Semiconductor Devices to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | On completion of this course the student will learn about :<br>• Operational amplifiers, comparator and applications, Voltage regulators and features of Timer 555.<br>• Modulation and communications.<br>• Comparator and applications |
| | **PHY - 104: (B) : Electronic** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Physics of Electronic Instrumentation to understand and solve the real life |

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| | **Instrumentation** | problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | On completion of this course the student will learn about :<br>• Fabrication of integrated devices.<br>• Applications of electronic system.<br>• Bio-electric Signals and Electrodes |
| | **PHY - 104: (C) Bio-Physics** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Bio-Physics to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | On completion of this course the student will learn about :<br>• Cell components-structure and function.<br>• Membrane Biophysics & Transport.<br>• Bioenergetics.<br>• Neuro biophysics: Structure and function of neuron, types of synapses, testing potential. |
| | **PHY-105: Basic Physics Laboratory – I** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems. |
| | | 2. Understanding of the Basic Physics Laboratory course which will create scientific temperament. |
| | | Students will have hand on experience of :<br>• Amplifiers, diodes, various logic gates, flip-flops and multivibrator.<br>• Solar cell, Michelson interferometer, photovoltaic cell, lasers and various optoelectronic devices.<br>• Hall coefficient, Curie temperature, B-H curve.<br>• Digital electronics experiments.<br>• Understands in depth about thin film preparation and production controlling techniques and the application of thin films in the field of science & Technology. |
| | **AC-101: Practicing Cleanliness** | Identify need at of cleanliness at home/office and other public places. |
| | | Plan and observe cleanliness programs at home and other places. |
| | | Practice Japanese 5-S practices in regular life. |
| M.Sc. Part I Semester II | **PHY – 201: Statistical Mechanics** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Statistical Mechanics to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament.. |
| | | The students should be able to :<br>• Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.<br>• Apply the principles of statistical mechanics to selected problems.<br>• Grasp the basis of ensemble approach in statistical mechanics to a range of situations.<br>• To learn the fundamental differences between classical and quantum statistics and learn about quantum statistical distribution laws.<br>• Study important examples of ideal Bose systems and Fermi systems. |

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| | **PHY - 202: Classical Electrodynamics** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Classical Electrodynamics to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | 3 After successful completion of the course, the student is expected to :<br>• Have gained elaborated knowledge about the electrostatics and laws governing the charge distribution.<br>• Have gained ability to apply Laplace equation for calculating potentials.<br>• Study in depth about Polarization, bound charges and boundary conditions.<br>• Realize the importance of application of BiotSavarts Law and Amperes law.<br>• Understand the relevance of different magnetization and the boundary condition of magnetic field. |
| | **PHY - 203: Quantum Mechanics** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Quantum Mechanics to real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | After successful completion of this paper, the student will be well<br>• Linear vector spaces, versed in Hilbert space, concepts of basis and operators and bra and ket notation.<br>• Both Schrödinger and Heisenberg formulations and their applications.<br>• Theory of angular momentum and spin matrices, orbital angular momentum and ClebshGordan Coefficients.<br>• Space -time symmetries and conservation laws, theory of identical particles, Oscillators<br>• Time Dependent and independent Perturbation Theory, Variational Method, WKB Method, Collision Theory and Relativistic Quantum Mechanics. |
| | **PHY - 204: Material Science** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of Physics of material Science to understand and solve the real life problems. |
| | | 2. Understanding of the course will create scientific temperament. |
| | | 3 The student will get familiar with<br>• Crystal imperfections.<br>• Diffusion in solids and mechanical properties.<br>• Phase transformations and heat treatment |
| | **PHY- 205: Basic Physics Laboratory – II** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems. |
| | | 2. Understanding of the Basic Physics Laboratory course which will create scientific temperament. |
| | | Students will have hand on experience of :<br>• Zeeman effect using LG plate.<br>• Construction & study of Pb-Sn binary phase diagram Hall coefficient.<br>• Dielectric constant at high frequency.<br>• Magnetic susceptibility.<br>• Design, build & test square, triangular and sine wave generator etc. |
| | **AC-201(A): Soft Skills** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Soft Skillsto real life problems. |
| | | On completion of this course the student will learn about:<br>• Self-Assessment. |

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| | | • Communication Skills.<br>• Formal Group Discussion, Personal Interview & Presentation skills.<br>• Aptitude and analytical skills.<br>• Life skills, Time management etc. |
| | | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Soft Skillsto real life problems. |
| | **AC-201(B): Practicing Sports Activities** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Sports to real life problems |
| | | On completion of this course the student will learn about: Varies type of Games,<br>• General Fitness<br>• Basic Fitness<br>• Specific Fitness<br>• Basic Skill of the Game<br>• Major Skill of the Game and Technique & Tactics of the Game |
| | **AC-201(C): Practicing Yoga** | Course outcome: Learner will be able to ….<br>1. Apply the concept and use of knowledge of the Yoga to real life problems |
| | | On completion of this course the student will learn about:<br>• Primary Introduction of Ashtanga Yoga<br>• OmkarSadhana, Prayer, Guru Vandana<br>• SukshmaVyayamas<br>• Suryanamaskar (12 Postures) and Asanas<br>• Pranayama : Anuloma-viloma, Bhramari |
| | **AC-201(D): Introduction to Indian Music** | Identify different types of Indian music. |
| | | Develop more interest to learn and practice Indian music. |
| **M.Sc. Part II** | **PHY-301: Atomic and Molecular Physics** | • Become familiar with molecular spectroscopy and have gained basic ideas regarding Infrared spectroscopy and Raman Spectroscopy. |
| | **PHY-302(A): Materials Synthesis Methods** | • Learn different techniques of the synthesis of materials. |
| | **PHY-303(A): Systematic Materials Analysis** | • Basic knowledge of characterization techniques.<br>• To learn about destructive and non destructive techniques.<br>• Understanding various spectroscopic and microscopic techniques for analyzing various material properties. |
| | **PHY-401: Nuclear Physics** | • Understanding the theory behind nuclear experimental technologies to identify particles and radiations.<br>• Understand the working of nuclear detectors and counters and familiar with nuclear particles and different particle accelerators.<br>• Understand the basic forces in nature and classification of particles and study in detail conservation laws and quark model in detail. |
| | **PHY-402(B): Laser and its Applications** | • Have gained basic knowledge of laser and working of different types of lasers.<br>• Understanding about different laser applications. |
| | **PHY-403(A): Renewable Energy Sources** | • Qualitative ideas about solar energy and physical principle of conversion of solar energy into heat energy.<br>• Gets an idea about basic principle of wind energy conversion and basic components of wind energy conversion system.<br>• Elementary idea of geothermal energy sources, its applications and method of obtaining energy from biomass. |
| | **PHY-304 and PHY-404: Special Lab. I and II** | • Practical knowledge of various measurement methods using lasers.<br>• Have knowledge on different experimental techniques. |
| | **PHY-305 and PHY-405: Project Work I and II** | • Apply skill and knowledge of physics at research level. |

# DEPARTMENT OF POLITICS

| Class | Course | Outcomes |
|---|---|---|
| FYBA SEM I | POL-101-Indian Constitution | • The main purpose of this course is to acquaint the student of Indian political & Constitutional system process. |
| | | • These courses will helpful learners to understand dynamics within political process action power system In India and across the country. |
| | | • |
| FYBA SEM II | POL-201-Indian Government | • The main purpose of this course is to acquaint the student of Indian political & Constitutional system process. |
| | | These courses will helpful learners to understand dynamics within political process action power system In India and across the country. |
| | | |
| SYBA SEM III | POL-231-Introduction to Administration of Maharashtra | • This paper is essential for students of any faculty – discipline.Because it is not only useful for G.K.but also necessay for admire the history and administration of our region.We should lern about how our administration is going on ,what is the role of administrator of all internal section,features of govt,internalbrances of administration,structure of govtetc.As well as this paper will help to create further administrator. |
| SEM IV | POL-241-Introduction to Local and District Administration of Maharashtra | • This paper is attempts to discuss about local and district administration of Maharashtra. It is very useful for MPSC/UPSC/Other exams, purpose/aim of this paper is understanding the core of administration and enhance ability to get proper knowledge of rural – urban administration. |
| **T.Y.B.A (Political Science)** | **Semester-V** | |
| DSC-1E | **Indian Political Thinker Part - I** | 1. This is an introductory paper to the concept ideas and theories developed in India. |
| | | 2. It deals with the main sources of the political traditions in modern India and focusses the development of social Institution and as various patterns of politics that emerged in modern India. |
| | | 3. This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in Pre- and Post-independence India. |
| | | 4. To study this paper is to understand key thinker’s seminal contribution to the evolution of political theorizing in India. |
| GE-1A | **Indian Civil Services** | 1. This paper provides the conceptual framework of the civil services and good governance. |
| | | 2. It delves deep in meaning, origin, forms of civil services and good governance in general. |
| | | 3. This course will be helpful and encourage students to acknowledge civil services and good governance process in India. |
| | | 4. An intention of this paper is to understand origin, development, and challenges before good governance in India. |
| **T.Y.B.A (Political Science)** | **Semester-VI** | |
| DSC-1F | **Indian Political Thinker Part - II** | 1. This is an introductory paper to the concept ideas and theories developed in India. |
| | | 2. It deals with the main sources of the political traditions in modern India and focusses the development of social Institution and as various patterns of politics that emerged in modern India. |

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| | | 3. This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in Pre- and Post-independence India. |
| | | 4. The main objective to study this paper is to understand key thinker's seminal contribution to the evolution of political theorizing in India. |
| GE-1B | **Management and Good Governance** | 1. This paper provides the conceptual framework of the civil services and good governance. |
| | | 2. It delves deep in meaning, origin, forms of civil services and good governance in general. |
| | | 3. This course will be helpful and encourage students to acknowledge civil services and good governance process in India. |
| | | 4. An intention of this paper is to understand origin, development, and challenges before good governance in India. |

# DEPARTMENT OF PSYCHOLOGY

| Class | Course | Outcomes (Students will be able to ) |
|---|---|---|
| FYBA SEM I | PSY-101-Foundation of Psychology | • To impart knowledge of the basic concepts and modern trends in Psychology. |
| | | • To relate the fundamental principles of Psychology in everyday life |
| | | • To make the students aware of the applications of Psychological concepts in various fields. |
| | | |
| SEM II | PSY-201-Introduction to Social Psychology | To understand the basics of social psychology and to understand the individual in the social world |
| | | To make the students aware of the applications of the various concepts in Social Psychology in the Indian context. |
| | | |
| SYBA SEM III | PSY-231-C-Human Developmental Psychology-Early Life | To equip the learner with an understanding of the concept and process of human development across the life span. |
| | | To impart an understanding of the various domains of human development. |
| SEM IV | PSY-241-D-Human Developmental Psychology-Later Life | Introduce students to the concepts, theories, and research which define this discipline of psychology. |
| | | Develop the students' capability for connecting discipline content to personal values and behaviour. |
| | | Provide an understanding of the explain issues underlying lifespan development. |
| | | |
| **T.Y.B.A (Psychology )** | **Semester-V** | |
| DSC-2-E | **PSY-351-Manegment of Interpersonal Relations** | **1**. To develop the skills of positive interpersonal communication. |
| | | **2**. To impart an understanding of the various domains of human relationships and processadjustment. |
| | | **3**. To develop the good decision making to career choice. |
| GEC-1A | **PSY-355 Industrial & Organizational Psychology** | **1**. **To acquaint the students with -:** The principles and challenges related to Industrial and Organizational Psychology at the levels of individual, team and organization. |
| | | **2**. **To acquaint the students with -:**The work done in Industrial and Organizational Psychology |
| | | **3. To acquaint the students with -:**Motivation at The Workplace |
| | | **4**. **To acquaint the students with -:**The Importance of Engineering Psychology |
| **T.Y.B.A Psychology** | **Semester-VI** | |
| DSE-3-A | **PSY-361-Adjustment in Life Span** | **1**. To impart an understanding of the self-concept and self-esteem. |
| | | **2**. To develop the skills of coping with stress. |
| | | **3**. To understanding the effect of habit to lifestyle. |
| GEC-1A | **PSY- 355 Industrial and Organizational Behaviour** | **1.To acquaint the students with -:** The Principles and challenges related to Industrial and Organizational Psychology at the levels ofindividual, team and organization. |
| | | **2.To acquaint the students with -:** The work done in Industrial and Organizational Psychology |
| | | **3.To acquaint the students with -:** The personnel selection and training. |
| | | **4.To acquaint the students with -:** The Create a plan to improve their own personal leadership skills |

# DEPARTMENT OF ZOOLOGY

| Class | Course | Outcomes Students are expected to: |
|---|---|---|
| **FYBSc** | **ZOO 101 Animal Diversity I** | learn basic knowledge pertinent to cell as unit, cell organelles and its architecture |
| | | know the structural and functional details of cell. |
| | | ind answers related to the scope of biotechnology eukaryotic cells |
| | | understand how science works |
| | | aware about biotechnology and its application in various fields |
| | | |
| | **ZOO 102 Animal Diversity II** | Demonstrate theory and practical skills in different types of microscopy and their handling techniques and staining procedures |
| | | Understand the fundamental biochemical concepts and familiarize with standard solution, buffer and reactions |
| | | Describe the concepts of pH and its biological significance, buffers, HendersonHasselbalch equation, biological buffer systems and their importance |
| | | Know the terms and terminologies related to basic biochemical aspects |
| | | understand the Principle, general features and significance of biophysical terms like density, sedimentation, centrifugation, surface tension, adsorption |
| | | |
| | **ZOO 103 Animal Diversity I & II) Practical** | Demonstrate practical skills in microscopy, laboratory equipment and their handling techniques and staining procedures. |
| | | Know various stages of cell division and also understand the significance of each event during meiosis and mitosis |
| | | Perform routine tasks safely and effectively |
| | | |
| | **ZOO 201 Comparative Anatomy of Vertebrates** | Overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function of the above mentioned biomolecules |
| | | Specify the biological significance of biomolecules in metabolism |
| | | |
| | **ZOO 202 Developmental Biology of Vertebrates)** | Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and familiarize the structural similarities and differences among various microbes |
| | | Know various Culture media and their applications and also understand various physical and chemical means of sterilization |
| | | Know general bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae |
| | | Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively |
| | | understand the Principle, working and applications of instruments viz, pH meters, spectrophotometer, centrifuge, viscometer, and laminar air flow |
| | | |
| | **ZOO 203 Comparative Anatomy & Developmental Biology of Vertebrates Practical** | Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures |
| | | Understand the basic microbial practices and study the comparative characteristics of prokaryotes and eukaryotes |
| | | Prepare and view specimens using microscopy (bright field microscope). |
| | | Aware and train in aseptic handling of microbial specimens. |
| | | Practice safe microbiology, using appropriate protective and emergency procedures. |
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| **SYBSc** | **ZOO 301 Physiology** | understand basic concept of Gene, DNA |
| | | study mutation and chromosomal variations |
| | | learn basic aspect about gametogenesis and cell cycle. |
| | | understand the Mendel's laws. |
| | | |
| | **ZOO 302 Biochemistry** | develop an understanding of the various aspects of Bioprocess Technology. |
| | | aware with screening of Industrially Important Strains and culture collection centres |
| | | understand principles underlying design of Fermenter, Fermentation Process, upstream and downstream processing |
| | | |
| | **ZOO 303 Physiology & Biochemistry Practical** | acquaint with different problems regarding genetics |
| | | know various stages of cell division and understand the significance of each event during meiosis and mitosis |
| | | develop skill about isolation of industrially important microorganism and familiar with analytical techniques |
| | | |
| | **ZOO-304 SEC I Apiculture** | To understand commercial development of algal culture |
| | | To aware about commercial utilization of algae |
| | | To understand diversity of morphological and biochemical |
| | | To know role of algae in industries |
| | | Know about nutritional and medicinal value of edible mushrooms |
| | | Learn about the cultivation techniques off mushrooms |
| | | Gain knowledge on the present status of mushroom industry in india |
| | | |
| | **ZOO 401 Genetics** | understand basic structure of DNA |
| | | understand central dogma of molecular biology |
| | | understand the process of replication, transcription, translation. |
| | | Learn regulation of all molecular processes. |
| | | |
| | **ZOO 402 Evolutionary Biology** | now the cellular ontogeny and organ involvement in immunity |
| | | explain the principles of self-tolerance and autoimmunity |
| | | know how the immune system can fight infections and cancer, including examples of immunodeficiency diseases |
| | | know the difference between innate and adaptive immunity |
| | | understand what antigens are and how they are presented |
| | | understand the mechanisms involved in control of immune responses |
| | | |
| | | know about the basic concept in immunology. |
| | **ZOO 403 Genetics & Evolutionary Biology Practical** | understand basics in serological practicals and its handling |
| | | ware of molecular biology techniques about isolation of genetic material. |
| | | aware and train spectrophotometric estimations of metabolites |

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| | **ZOO-404 SEC II Medical Diagnostics** | Explain the functioning, maintenance and safety aspects of the basic apparatus used in a Biotechnology lab. |
| | | Explain the principles and applications of Bioanalytical instrumentation |
| | | Utilize the knowledge for the separation of proteins/peptides by selecting appropriate separation techniques |
| | | Characterize certain functionalities of biomolecules by using techniques. |
| | | |
| SYBSc | ZOO 231: Non Chordates-II | • Understand the Characters of class Asterias with help of animal Seastar. |
| | | • Understand the internal as well as external morphology of thatanimal. |
| | | • To study and understand the concepts-Metamorphosis, regeneration andautotomy. |
| | | • Understand the Mouthparts ofinsects. |
| | | • Understand the Canal system insponges. |
| | | • Understand the Locomotion inProtozoa. |
| | | • To observe and study the Foot inMollusca. |
| | | |
| | ZOO 232: Medical Zoology | • To study and understand the scope and branches of MedicalZoology. |
| | | • To aware the students for various parasites and diseases which spreads in human with the help of study of host-parasiterelationship. |
| | | • To increase awareness for the health instudents. |
| | | • Understand the various disease causing vectors likeMosquitoes. |
| | | • To aware about the typhoid, cholera likedisease. |
| | | • Understand the importance of medical diagnostic and also understand the term forensicEntomology. |
| | | |
| | ZOO 241: Chordates -II | • To study and understand the external as well as internal characters of class Aves,by studying animal Columbia liviadomestica. |
| | | • Understand the various systems ofpigeon. |
| | | • Understand the General Topics like Accessory respiratory organs infishes. |
| | | • Able to know the reptiles of Mesozoicera. |
| | | • Understand the adaptations in aquaticmammals. |
| | | |
| | ZOO 242: Applied Zoology | • Introduce the term apiculture to thestudents. |
| | | • To aware the students and provides the economical importance ofApiculture. |
| | | • Understand the Bee keeping equipments and apiarymanagement. |
| | | • To study and understand the various species ofBees. |
| | | |
| | | |
| | ZOO 233: Practical Sem-I | • Understand the external characters and water vascular system in sea star. |
| | | • Understand the locomotion in protozoa and Modification of foot inmolluscs. |
| | | • To understand the viruses like chikungunya, Swine flu,tetanus. |
| | | • To aware the students for virus carrying vectors, like Aedes, culex andanopheles. |
| | | • To understand the various diseases diagnosticmethods. |
| | | |
| | ZOO 243:Practicals sem-II | • Study of Evolutionary history ofanimals. |
| | | • Study and understand the types offins. |
| | | • Understand the adaptation in Aquatic mammals ex. whale andseal. |

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| | | • Study and understand the diseases, pest, parasites and predators of HoneyBee. |
| | | • To study and aware the students for honey bee products and theiruses. |
| | | • To aware the students forAdulteration. |
| | | |
| | SEM V | |
| T.Y.B.Sc. | Zoo - 501: Reproductive Endocrinology | 1. Understand the functioning of male and female reproductive systems particularly in humans. |
| | | 2. Comprehension of the interplay of various hormones in the functioning and regulation of the male and female reproductive systems |
| | | 3. Know about modern contraceptive devices. |
| | Zoo - 502: Cell and Molecular Biology (CMB) | 1. Achieve the knowledge of cell structure and cellular system. |
| | | 2. Predict the outcome of various cellular reactions carried out in cell and cellular system under various conditions. |
| | | 3. Predict the role of genes and its relevance to human genetics and diseases. |
| | Zoo - 503: Mammalian Histology | 1. Enrich themselves with histology of different tissues and systems for research and job opportunities in Pathology and Cancer research centers. |
| | Zoo - 504: Animal Biotechnology | 1. Acquire knowledge about animal cell and tissue culture techniques. |
| | | 2. Become familiar with genetically engineered products for human animal welfare. |
| | | 3. Developing embryo - transfer technology, cloning, transgenic animals. |
| | | 4. Understand applications of hybridoma technique and functions of antibodies. |
| | | 5. Acquire knowledge about stem cell research and its ethical issues. |
| | Zoo - 505: Public Health and Hygiene | 1. Get familiarised with various aspects of environmental risks and hazards. |
| | | 2. Acquire knowledge regarding epidemiology, prevention, control and management of diseases of public health importance. |
| | | 3. Learn about diagnosis of various diseases and methods to prevent them. |
| | Zoo – 506 (A): Pest Management | 1. Impart basic awareness regarding pest problem and crop loss due to their dominance. |
| | | 2. Understand various pests affecting our local crops and select the best method for their control. |
| | | 3. Acquire basic knowledge and skills in agriculture management to enable the learner for self-employment |
| | Zoo - 507: Corresponding practical to DSC Zoo 501& Zoo502 (CB) | |
| | | |
| | | 1. Understand the functioning of male and female reproductive systems particularly in humans. |
| | | 2. Achieve the Knowledge of cell structure and cellular system. |
| | Zoo - 508: Corresponding practical to DSC Zoo 502 (MB)& Zoo503 | 1. Predict the outcome of various cellular reactions carried out in cell and cellular system under various conditions. |
| | | 2. Enrich with Histology of different tissues and systems for research and job opportunities in Pathology and Cancer research centers. |
| | Zoo - 509: Corresponding practical to DSC Zoo 504 | 1. Acquire knowledge about animal cell and tissue culture techniques |
| | | 2. Become familiar with genetically engineered products for human animal welfare, |

| | | |
|---|---|---|
| | | 3. Developing embryo - transfer technology, cloning, transgenic animals |
| | | 4. Understand applications hybridoma technique and functions of antibodies |
| | **SEMESTER- VI** | |
| | Zoo - 601: Study of Leech And Calotes | 1. Understand the systematic position, habit and habitat of Leech and Calotes |
| | | 2. Acquire the knowledge about structural and functional details about Leech as invertebrates and Calotes as vertebrates |
| | | 3. Compare structural and functional details in Leech and Calotes. |
| | Zoo - 602: Chick Embryology | 1. Understand various stages involved in the developing embryo. |
| | | 2. Understand the initial developmental procedures involved in chick. |
| | | 3. Understand the processes involved in embryonic development and practical applications of studying the chick embryology. |
| | Zoo - 603: Applied Zoology | 1. Practice of vermicomposting,vermiculturing and poultry farming. |
| | | 2. Aspire to work in preparing bio compost, vermicomposting and vermiculturing and get employment accordingly. |
| | | 3. Start business for rearing and production of birds and get employment accordingly. |
| | Zoo - 604: Microtechnique | 1. Cell tissue structure, histology of tissues and details of morphology of animals. Job opportunities in Health institutes, Hospitals and Pathological labs. |
| | Zoo - 605: Research Methodology | 1. Understand some basic concepts of research and its methodologies. |
| | | 2. Differentiate between the Quantitative and Qualitative Research and understand different types of Research Design. |
| | | 3. Select and define appropriate research problem and parameters. |
| | | 4. Organize and conduct research project in a more appropriate manner. |
| | | 5. Writing of dissertations, project proposals, project reports, research papers. |
| | | 6. Understand intellectual Property Rights – Biopiracy, copyrights, patent and traditional knowledge and plagiarism. |
| | Zoo – 606 (B) Sericulture | 1. Develop an expert manpower to handle the own sericulture units/entrepreneurship/corporate sector units. |
| | | 2. Provide gainful employment, economic development and improvement in the quality of life to the people in rural area. |
| | Zoo - 607: Corresponding practical to DSC Zoo 601 | 1. Understand the systematic position, habit and habitat of Leech and Calotes |
| | | 2. Acquire the knowledge about structural and functional details about Leech as invertebrates and Calotes as vertebrates. |
| | | 3. Compare structural and functional details in Leech and Calotes. |
| | Zoo - 608: Corresponding practical to DSC Zoo 602 and Zoo 603 | 1. Practice of vermicomposting, vermiculturing and poultry farming. |
| | | 2. Aspire to work in preparing bio compost,vermicomposting and get employment accordingly. |
| | | 3. Rearing and production of birds and get employment accordingly. |
| | Zoo - 609: Corresponding practical to DSC Zoo 604 | 1. Cell tissue structure, histology of tissues and details of morphology of animals. Job opportunities in Health institutes, Hospitals and Pathological labs. |

| Class | Course | Outcomes (After completion of this course, the students will be able to) |
|---|---|---|
| | **SEM –I** | |
| **M.Sc.I** | **Zoo - 101:** Structure and Functional Anatomy of Invertebrates | 1. nlighten themself with knowledge related to structural & functional anatomy of invertebrate animals. |
| | | 2. nrich themselves with understandings of organs and systems oflocomotory, nutrition, digestion and other vital process. |
| | | 3. .Know the larval forms found in invertebrates and their significance. |
| | | 4. Understand the social life in honey bees. |
| | **Zoo - 102:** Cellular organization and Developmental Biology | 1. Enrich themselves with the cellular organization with specific reference to plasma membrane, cell organelles and cell cycle. |
| | | 2. Acquire the knowledge about basic concept of gametogenesis,fertilization and embryonic development. |
| | | 3. Understand the concept of aging, apoptosis and senescence |
| | | 4. Know about the morphogenesis and organogenesis in specific animals. |
| | **Zoo - 103: Practical I (corresponding to Zoo101)** | 1. Perform dissection of Grasshopper or Cockroach related totheir digestive, nervous and reproductive system. |
| | | 2. Acquire practical skills for mountings of various significantparts of Grasshopper/Cockroach |
| | | 3. Classify the invertebrate animals belonging to phylum PoriferatoHemichordata. |
| | **Zoo - 104: Practical II (corresponding to Zoo102)** | 1. Learn about various cell organelles by studying their microphotographs. |
| | | 2. Acquire the principle and protocol of PAS reaction. |
| | | 3. Gain the skill of preparation of mitotic spindle from cellmaterial. |
| | | 4. Acquire technical skill to detect DNA and Protein in the given sample. |
| | | 5. Gain the skill related to detection of Mitochondria. |
| | **Zoo - 105: Goatery** | 1. Understand, appreciate and develop the self-confidence forembarking on self-employment / entrepreneurship. |
| | | 2. Understandvarious breeds of Goat, their characteristics and theiradaptability |
| | | 3. gain the knowledge related to Goat rearing, to devise a simplemarketing and sales strategies and plan for a small business. |
| | **Zoo - 201: Structure and Functional Anatomy of Vertebrates** | 1. Gain the knowledge of the systematic position, habit andhabitat of vertebrate animals |
| | | 2. Acquire the knowledge about structural and functionalanatomy of vertebrates |
| | | 3. Understand distinguishing features between structure andfunction of vertebrates |
| | **Zoo - 202: Biochemistry** | 1. Understand the basic terms related to biochemistry |
| | | 2. Illustrate the importance of pH, buffer and water in livingsystems |
| | | 3. Acquire the knowledge of structure and functions of variousbiomolecules and their interactions. |

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| | | 4. Gain the facts about different forms of DNA, chemistry ofhormones and vitamins |
| | **Zoo - 203:Tools and Techniques in Biology** | 1. Explain the importance and applications of biologicaltechniques. |
| | | 2. Illustrate the principle, working, materials used andapplications of various biological techniques. |
| | | 3. Gain the knowledge related to radio activity andimmunological techniques. |
| | **Zoo - 204: Practical I (corresponding to Zoo 201 + 202 + 203)** | 1. Acquire the knowledge related to characters, classification,anatomy and physiology of vertebrates. |
| | | 2. Gain the knowledge related to principle, class, structure andfunctions of various biomolecules. |
| | | 3. Understand the tools and techniques used in biology. |
| | **Zoo - 205: Aquaculture and Ecology** | 1. Acquire skills of analysis of abiotic and biotic factors present inenvironment and their interactions for various associations. |
| | | 2. Understanding various biodiversity, hotspot and conservation ofecosystems. |
| | **Zoo - 301: (C) Entomology I** | 1. Acquire the knowledge of entomology and insectsandunderstand origin and evolution of insects and their relation toother arthropods. |
| | | 2. Understand the classification of insects up to family withdistinguishing characters and examples of each order andfamily. |
| | | 3. Understand the structure, chemical composition and functionsof Integument and its derivatives, modifications of insectbody regions and their appendages. |
| | | 4. Acquire the knowledge of comparative anatomical andhistological structure of various body systems. |
| | | 5. Understand the location, structure and functions of variousEndocrine and Exocrine glands, Light and Sound producingorgans in various insects. |
| | **Zoo 302 Enzymology and Immunology** | 1. Know about the Enzymology and Immunology. |
| | | 2. Know about the Enzymology and Immunology. |
| | | 3. Understand the basic principles of Enzymology andImmunology. |
| | | 4. To understand the principle and mechanism ofimmunoglobulins |
| **M.Sc. II** | **Zoo - 303: Practical I (corresponding to Zoo 301(C) Entomology I)** | 1. Acquire the knowledge of entomology and insects andunderstand origin and evolution of insects and their relation toother arthropods. |
| | | 2. Give outline of classification of insects up to family withdistinguishing characters and examples of each order andfamily. |
| | | 3. Understand the structure, chemical composition and functionsof Integument and its derivatives, modifications of insectbody regions and their appendages. |
| | | 4. Understand the location, structure and functions of variousendocrine and exocrine glands, light and sound producingorgans in various insects. |
| | **Zoo -304: Practical I Corresponding to Zoo 302 Enzymology and Immunology** | 1. Acquire the knowledge related to process of cell fractionation |
| | | 2. Gain practical skill related enzyme analysis and Km |
| | | 3. Learn various immunological techniques. |
| | **ZOO 305 (B) Forensic Zoology** | 1. Understand the History and development of forensic science. |

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| | | 2. Know about the forensic science laboratories. |
| | | 3. To be familiar with the Biological evidences, collection and packaging. |
| | | 4. Students learn about the analysis of biological fluids. |
| | **Zoo - 401: (C) Entomology II**<br>**Insect Physiology and Applied Entomology** | 1. Acquire the knowledge of process the process of digestion and metabolism, circulation, excretion, respiration, role of hormone in insect reproduction. |
| | | 2. Understand the systematic position, habit and habitat of Insects pests. |
| | | 3. Acquire the knowledge about morphology, physiology, ecology, behavior and physiology of insect pests. |
| | | 4. Acquire the knowledge of identification of insect pests, vectors and their control methods. |
| | **Zoo – 402: Molecular Biology** | 1. Acquire skills related to molecular analysis of biological species, cells and tissues. |
| | | 2. Predict the outcome of various cellular reactions carried out in cell and cellular system under various conditions. |
| | | 3. Predict the role of genes and its relevance to human genetics and diseases. |
| | **Zoo - 403: Practical I (corresponding to Zoo 401 (C) Entomology II)**<br>**Insect Physiology and Applied Entomology** | 1. Acquire the knowledge of process the process of digestion andmetabolism, circulation, excretion, respiration, role of hormonein insect reproduction. |
| | | 2. Understand the systematic position, habit and habitat of Insectspests. |
| | | 3. Acquire the knowledge about morphology, physiology, ecology, behavior and physiology of insect pests. |
| | | 4. Acquire the knowledge of identification of insect pests, vectors and their control methods. |
| | **Zoo 403 Practical correspond to Zoo - 402 Molecular Biology** | 1. Acquire the knowledge related to preparation of DNA model. |
| | | 2. Learn the process of estimation of DNA and vital staining. |
| | | 3. Understand the process of AGE and PAGE. |
| | **Zoo 404: Project** | 1. Develop research interest among the student. |
| | **Zoo – 405 (B):Writing and Presenting Scientific Research Paper** | 1. Acquire the knowledge of writing, presentation and publication of research paper. |
| | | 2. Gain the skills related to presentation of paper. |
| | | 3. Learn to avoid the mistakes in writing research paper. |