Programme Outcomes (Under Graduate Level)

Faculty – Science

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.

Programme Outcomes (Post Graduate Level)

Faculty – Science

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.

Programme Outcomes (Undergraduate Level)

Faculty – Arts / Humanities / Social Sciences

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.

Programme Outcomes (Post Graduate Level)

Faculty – Arts / Humanities / Social Sciences

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

- Acquired a deep knowledge as possible in the subject concerned by making use of 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 articiles, 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.

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

Programme Outcomes (Under Graduate and Post Graduate Level)

Faculty Commerce and Management

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 variouscomponents of corporate financial transactions.
- To provide working knowledge of accounting principles and procedures for recording oftransactions related to corporate entities.
- To provide working knowledge for preparing the corporate accounts and statements inaccordance 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 edgein 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 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.

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

DEPARTMENT OF CHEMISTRY

Outcome of B Sc Chemistry

To provide a broad foundation in chemistry that stresses scientific reasoning and Analytical problem solving with a molecular perspective.

To provide students with the skills required to succeed in graduate school, the chemical industry or professional school.

To expose the students to a breadth of experimental techniques using modern instrumentation.

The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.

The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.

The student will learn the laboratory skills needed to design, safely conduct and interpret chemical research.

The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the primary chemical literature.

The student will develop the ability to effectively communicate scientific information and research results in written and oral formats.

The student will learn professionalism, including the ability to work in teams and apply basic ethical principles.

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 a team.

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.

DEPARTMENT OF BOTANY

- **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, 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 poolution 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.

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DEPARTMENT OF MATHEMATICS

UG :

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

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.
learn properties of inverse Laplace transforms

PG :

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

Understand Lebesgue integrals.
Learn the methods of Real Analysis.
Learn Ordinary and Partial differential equations.
Know the fundamentals of game theory.
Know about differentiation of functions.

DEPARTMENT OF ZOOLOGY

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 Lamarkism, Neo-Lamarkism and Darwinism.
Understand the term ELISA technique and DNA finger printing.
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.

DEPARTMENT OF MICROBIOLOGY

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 Biomolecules and understand various biochemical pathways
- Acquire knowledge and understanding the concepts of Microbial genetics, Molecular biology, Immunology, Enzymology.
- 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.

DEPARTMENT OF BIOTECHNOLOGY

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, micropipettes etc

Adavanced 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

DEPARTMENT OF PHYSICS

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.

DEPARTMENT OF COMPUTER SCIENCES

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, Servlets, and Struts etc.
- Know about linguistics essentials and grammar as part of speech and parsing and differentiating them

COMMERCE AND MANAGEMENT

After Completing Bachelor of Commerce (B.Com) course, students are able to:

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.

To integrate knowledge, skill and attitude that will sustain an environment of learning and 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.

DEPARTMENT OF ECONOMICS

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.

DEPARTMENT OF ENGLISH

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

DEPARTMENT OF GEOGRAPHY

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.

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.

DEPARTMENT OF HINDI

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

DEPARTMENT OF HISTORY

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 recognise the Social, Political, Economic and Cultural aspects of History.

DEPARTMENT OF MARATHI

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 Studant
- Explain the concept of business to Studant through the example of an entrepreneur
- Introduce Studant 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 &LalitGadya)
- Get Information about the history of Medieval Marathi Literature.
- Develop Reading, Writing & Communication Skills of Students.

DEPARTMENT OF POLITICAL SCIENCE

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 organisations.

DEPARTMENT OF PSYCHOLOGY

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 practicalprincipals 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 behavioralproblem and solve it withthe behavior and other therapies.
Administer psychological measurements and their interpretation.

NAAC Reaccredited "A" Grade (CGPA 3.12)

UGC Honored "College of Excellence"

Poojya Sane Guruji Vidya Prasarak Mandal'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 (Students will be able to)
	SEM I	
F.Y.B.Sc.	**Bot. 101: Microbial Diversity, Algae & Fungi**	Understand the diversity among Bacteria, Viruses and Algae.
		Know the systematic, morphology and structure, of Bacteria, Viruses and Algae.
		Understand the life cycle pattern of Bacteria, Viruses and Algae.
		Understand the useful and harmful activities of Bacteria, Viruses and Algae .
	Bot. 102: Plant Taxonomy	Understand the diversity of angiosperms
		Understand the comparative account among the families of angiosperms.
		Understand the economic importance of the angiospermic plants.
		Understand the distinguishing features of angiosperm families.
	Bot. 103: Practical (Based on Bot.101 and Bot.102)	Understand the morphological diversity among Bacteria , Viruses, Algae and Fung
		Observe vegetative and reproductive parts of various life forms of Bacteria, Viruses, Algae and Fung
		Detect chemical contents in various plant products of economic use.
		Know botanical source/s, characteristics and utilities of Plants/ plant products.
		Learn about the industrial applications of various plants and plant products.
	SEM II	
	Bot. 201: Diversity of Archegoniates	Understand salient features of Archegoniates.
		To make students aware of the status of higher cryptogams& gymnosperms as a group in plant kingdom.
		Understand the life cycles of selected genera.
		Understand economic and ecological importance of Archegoniates.
	Bot. 202: Plant Ecology	Understand scope and importance of the discipline.
		Understand plant communities and ecological adaptations in plants.
		Understand about conservation of biodiversity.
		Understand the botanical regions of India and vegetationtypes of Maharashtra.
	Bot. 203: Practical (Based on Bot.201 and	Study of Riccia:Systematic Position,External &Internal morphology

	Bot.202)	Study of Funaria:Systematic Position,External & Internal morphology
		Demonstration, working and uses of the following ecological instruments.
S Y B.Sc	**SEM III**	
	Bot. 301: Plant Anatomy	To know scope and importance of plant anatomy
		To study various tissue systems
		To know primary structure of dicot and monocot plants
		To study normal secondary growth in plants and their causes
		To study protective tissue system
	BOT.-302: Plant Physiology	Know importance and scope of plant physiology.
		Understand the plants and plant cells in relation to water.
		Understand the different process in relation with structure of organism and its environment
		Understand mechanism of absorption of water, gases and solutes.
		To understand growth at various level.
		Understand the plant movements.
	BOT. 303:Practical	Understand the meristem (Permanent slides/ Photographs).
	(Based on BOT. - 301 and BOT. - 302)	Understand the Simple Tissues
		Understand the primary structure of dicot stem
		Understand the secondary growth structure in dicot stem and root
		Understand the effect of two environmental factors (light and wind) on transpiration by excised twig
	SKILL ENHANCEMENT COURSE	Understand the history, scope and importance of mushroom technology
	(SEC)	Understand nutritional and medicinal values of edible mushrooms
	BOT. 304: MUSHROOM CULTURE	Understand about the storage, marketing and various food preparations of mushrooms.
	TECHNOLOGY	Understand the economics of mushroom cultivation.
	SEM IV	
	BOT. - 401: PLANT EMBRYOLOGY	Understand the scope and Importance of Embryology

		Understand structure of micro and megasporangium
		Understand pollination, fertilization, Endosperm and Embryogeny
		Understand exposure of techniques in embryology
	BOT.-: 402 PLANT METABOLISM	Understand the the scope and importance of plant metabolism.
		Understand the properties, mechanism and classification of enzymes.
		Understand the process of photosynthesis in higher plants, C3, C4 and CAM pathways.
		Understand the respiration in higher plants.
	BOT.403: Practical (Based on BOT. - 401 and BOT. - 402)	Understand the following with the help of P.S. / photographs.
		Understand the different kinds of embryo sac with the help of P.S
		Understand the of embryos from suitable seeds
		: Study the activity of catalase and study the effect of pH and enzyme concentration
		paration of amino acids by paper chromatography.
	SKILL ENHANCEMENT COURSE (SEC) BOT.404: NURSERY AND GARDENING	Understand the concept of nursery and Gardening Understand the skills for growing fresh and safe vegetables. Understand awareness about home gardening. Understand develop different skills regarding the gardening operations among the students
	SEM V	
TYBSc	**BOT. 351, PAPER – I CRYPTOGAMS**	Understand salient features of Cryptogamic plants.
		Understand students aware of the status of cryptogams as a group in plant kingdom.
		Understand the life cycles of selected genera.
		Understand economic and ecological importance of Cryptogamic plants.
	BOT.352 – Paper II ANGIOSPERM TAXONOMY	Understand the status of angiosperms in plant kingdom
		Realize the origin of Angiosperms with respect to time, place, origin and probable ancestors.
		Know the Pre-Darwinian and Post- Darwinian systems of Classification.
		Understand various angiosperm families emphasizing their morphology, distinctive features and biology.
		Know the role of cytology and Phytochemistry in Taxonomy.

	BOT. 353 - Paper III **GENETICS AND** **MOLECULAR BIOLOGY**	Gain knowledge about “Cell Science”.
		Understand Cell wall Plasma membrane, Cell organelles and cell division.
		Learn the scope and importance of molecular biology.
		Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material.
		Understand the process of synthesis of proteins and role of genetic code in polypeptide formation.
	BOT. 354 – PAPER-IV **ADVANCED PLANT PHYSIOLOGY**	Understand about mineral nutrition in plants.
		Understand the growth and developmental processes in plants.
		Understand about movement in plants.
		Understand the process of translocation of solutes in plants
		Know the nitrogen metabolism and its importance
	BOT.355 - Paper V **PLANT ECOLOGY AND** **PHYTOGEOGRAPHY**	Know the scope and importance of the discipline.
		Understand plant communities and ecological adaptations in plants
		Understand conservation of biodiversity, Non-conventional Energy and Pollution.
		Discover botanical regions of India and vegetation types of Maharashtra.
		Understand Bioremediation, Global warming and climate change.
	BOT. 356.2 – **Optional Paper II** **Ethnobotany**	Understand scope and importance of Ethnobotany; and its relation to economic botany
		Understand expose various disciplines of ethnobotany and its development in Indianconcept.
		Understand Indian ethno medicines used against human and veterinary diseases.
		Understand Develop the skills among the students for employment or entrepreneurship
		Understand study sources of ethnobotany.
	SEM - VI	
	BOT. 361 - GYMNOSPERMS & **PALEOBOTANY**	Understand Gymnosperms with respect to distinguishing characters, comparison with Angiosperms, economic importance and classification.

		Understand the life cycles of Pinus and Gnetum.
		Know the scope of Paleobotany, types of fossils and geological time scale.
		Understand the various fossil genera representing different fossil groups.
	BOT. 362 - ANATOMY AND EMBRYOLOGY	Understand the scope & importance of Anatomy and Embryology
		Know various tissue systems.
		Understand the normal and anomalous secondary growth in plants and their causes.
		Perform the techniques in anatomy
		Understand structure and development in microsporangium and megasporangium
		Understand microsporogenesis and megasporogenesis
		Understand male and female gametophytes
		Know fertilization, endosperm and embryogeny
	BOT : 363 GENETICS, PLANT BREEDING AND EVOLUTION	Understand the “Science of Heredity”.
		Realize the role of genes in evolution of species.
		3 Understand linkage, segregation and mutation of genes during evolution.
		Understand the science of plant breeding.
		To introduce the student with branch of plant breeding for the survival of human being from starvation.
		To study the techniques of production of new superior crop verities.
		To study the evolution in living organisms
	BOT- 364 PLANT BIOCHEMISTRY	Understand the current status of Biochemistry.
		Recognize the impact of Biochemistry on socioeconomic aspects of life.
		Realize the industrial application of Biochemistry.
		Understand the importance of Biomolecules.
	Bot 365 -Applied Botany	Understand the importance and scope of botanical science in the industries.
		Understand the role of microbial plants in fermentations process.

		Know the process of cultivation of cash crops.
		Understand some plants which are used as herbal cosmetics.
		Understand technique of plant tissue culture and its application.
		Realize the role plants in forensic science.
	BOT. 366.: Optional Paper Horticulture	Understand the scope and importance of horticulture..
		Understand horticulture zones of Maharashtra and India
		Understand different horticultural practices and their methods
		Understand importance, principles and types of Bahar treatment
		Understand role played by green and polyhouses in horticulture
MSc-I	**BOT. 1.1 ANGIOSPERMTAXONOMY**	Know the conceptual development of „taxonomy‟ vis-à-vis „systematics‟
		Understand the general range of variations in the group of angiosperms.
		Trace the history of development of systems of classification emphasizing angiospermic taxa.
		Learn about the characters of biologically important families of angiosperms
		Know the floral variations in angiospermic families, their phylogeny and evolution.
		Understand various rules, principles and recommendations of plant nomenclature
		Know modern trends in taxonomy
		Understand major evolutionary trends in various parts of angiospermic plants
	BOT. 1.2 ENVIRONMENTALBOTANY AND BIOSTATISTICS	Understand the environmental botany.
		Know the nature and its co-relation with human society.
		Realize the impact of human activities on environment.
		Understand global issues concerned with environment.
		Know the sustainable development and care of environment.

		Understand the connection between material wealth & resources exploitation;
		Worth the relationship between economic growth and environmental degradation
	BOT 1.3 CYTOGENETICSANDMOLECULARBIOLOGY	Understand structural organization and variation in chromosome as well as karyotype analysis.
		Learn about the extra-chromosomal inheritance in plant system.
		Know the molecular biology in relation to genetic material, its inheritance, modification, replication and repair.
		Understand transcription, translation post translation modification of protein.
		Know gene regulation in prokaryotes and eukaryotes.
	BOT 2.1 Diversity of Lower Cryptogams	Understand the salient features of Algae and Fung
		Learn about diversity of lower Cryptogrammic plants in nature.
		Understand the life cycle patterns in lower cryptogams.
		They will understand the role of algae and fungi for human welfare.
	BOT.2.2 Diversity of Higher Cryptogams	Become aware of the status of higher cryptogams as a group in plant kingdom.
		Understand the habit and habitat of the higher cryptogams in the field.
		Understand the distinguishing features, interrelationships, phylogeny and evolutionary tendencies of selected orders with their affinities.
		Realize the economic importance of higher cryptogams plants.
	BOT.2.3 PLANT PHYSIOLOGYAND BIOCHEMISTRY	Understand plant structures in the context of physiological functions of plants.
		They will learn about the growth and development of plants and its regulations
		Understand the physiological details of photosynthesis and respiration.
		Understand lipid metabolism in plants.
		Understand the stress of plants and its adaptations.
		They will learn about the metabolites synthesized by plants.
		They will be able to understand the red-ox systems of plants.

M Sc – Part II	**BOT 3.1 GYMNOSPERMS AND PALEOBOTANY**	Understand the diversity of Gymnosperms in India
		Know the evolutionary trends and affinities of living gymnosperms with respect to external and internal features
		Understand the important fossil types in different groups of plants and Indian fossil records.
		Realize the applied aspects of Paleobotany.
	BOT 3.2: PLANT BIOTECHNOLOGY AND BIOINFORMATICS	Understand the fundamentals of totipotency plant tissue culture techniques
		Know the transgenic technology for the improvement of quality and quantity of plant and thereby product.
		Understand the advantages of in vitro propagation in various areas.
		Realize the application and importance of plant tissue culture and transgenic plants.
	BOT.3.33 Genetics and Plant Breeding Special Paper–I	Gain advance knowledge of Cytogenetics in relation to crash crops targeting cell division in them different alterations at genome level and their significance.
		Understand the fertilization barriers in cash crops at different genome level.
		Know the biometrical tools applied in plant breeding.
		Understand the wholesome review on fundamentals of plant breeding.
	BOT.4.1: DEVELOPMENTAL BOTANY	Understand the vascular tissues, structure of woods and anomalous secondary growth
		Detect adulterations and understand forensic botany
		Know historical development of embryology
		Understand structure and development of microsporangium, megasporangium, embryo and endosperm.
		Know the methods of pollination and fertilization
		Understand the applications of embryology in plant tissue culture
		Learn about the structure and development of pollen grains
		Realize the applications of palynology in human welfare
	BOT. 4.23Genetics and Plant Breeding Special Paper-II	Understand the modern strategies applied in Genetics and Plant Breeding to sequence and analyze genomes.
		Know cell differentiation and abnormalities in human cells with respect to oncogenesis.
		Get the detail knowledge about modern strategies applied in Plant Breeding targeted with specific character improvement.
		Know about exploitation of Heterosis, hybrid and variety development and their release

	BOT.4.33Genetics and Plant Breeding Special Paper-III	Understand the vascular tissues, structure of woods and anomalous secondary growth
		Understand the principles,
		Know the intellectual properties and different issues, GMO, current techniques applied in Molecular Plant Breeding for future challenges in crop improvement.

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.

TYBSc	**BT-351: Genetics**	understand the Mendelian and Neo-mendelian genetics
		study the phenomenon of dominance, laws of segregation, independent assortment of genes.
		understand the different types of genetic interaction, incomplete dominance, co-dominance, inter allelic genetic interactions, multiple alleles and quantitative inheritance etc. understand the principles and mechanisms of linkage and crossing over.
		study human sex anomalies including eugenics and euphenics, genetic drift and disorders due to mutant genes.
	BT-352 Agricultural biotechnology	interpret Symbiotic-Non symbiotic nitrogen fixation in leguminous plant
		interpret Assimilation of sulphur and phosphorus by plants
		interpret Bio fertilizer, comparison between bio fertilizer and chemical fertilizer
		understand the Concept of plant pathology,classification of plant diseases based on symptoms
		understand Plant diseases- a)Bacterial blight of pomegranate b) Bacterial blight of cotton c) Whip smut of sugarcane
		understand Integrated pest management(IPM)- insect resistant crop
	BT-353: Animal Biotechnology	Understand the History, scope, principle, merits and demerits of animal cell and tissue culture.
		Understand the Laboratory facilities and culture media for animal tissue culture.
		Understand the Cell lines, application of animal cell and tissue culture, biohazards and Biosafety.
		Get information about transgenic animals, cryopreservation, apoptosis, Animal cloning.
		Understand the Cell transformation, DNA microinjection.
		Understand the Economic aspects of transgenic animals and Ethical issues of animal welfare and animal rights.
	BT-354 Industrial biotechnology	Understand the Concept and types of strain improvement techniques
		Understand the Fermentative productions of representative biomolecules like Enzymes, antibiotics, vitamin, beverages
		Understand the Recovery and purification of biomolecules
		Understand the Quality control procedures like sterility, toxicity, carcinogenicity testing
		Understand the Concept and features of cost economics and GLP

	BT 355-Food Biotechnology	Understand the Primary Source of microbes in various foods
		Understand the Definition, general features and different products of milk
		Understand the Microbial analysis of milk
		Understand the Microbial production of fermented food viz. cheese, bread etc.
		Understand the Causes of food spoilage, Spoilage of fruit, Vegetables, Dairy product
		Understand the Food Preservation –Chemical Method, Physical method
	BT 356-Environmental Biotechnology	Understand the Domestic waste water treatment, Classification Of Waste water treatment
		Understand the Biodegradation-Concept,Biodegradation of hydrocarbon,Measurement of biodegradation
		Understand the Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation)
		Understand the Phytoremediation-Concept(Rhizofiltration,Phytotransformation,Phytostimulation)
		Understand the Xenobiotics and recalcitrant ,Generalize Fate of xenobiotic Degradation
		Understand the Xenobiotic biodegradation, Herbicide Degradation ,Metabolism of Xenobiotics
	BT-357 Industrial Biotechnology	Understand the Fermentative production of biomolecules like vitamin, antibiotics, ethanol etc
		Understand the Biochemical estimation of fermentative products like organic acids, vitamin, antibiotics etc.
		Understand the Chemical estimation of penicillin
		Understand the Industrial visit and demonstrative session at outdoor industry
	BT-358: Animal Biotechnology and Immunology.	Understand the Blood film preparation and identification of blood cells, human blood grouping
		Understand the Immunological techniques, double diffusion, widal test, ELISA.
		Understand the Animal cell culture media preparation and sterilization .
		Understand the Survival curve of bacteria against UV radiation
		Understand the Immobilization of whole cell .
		Understand the Nucleic acid separation using Agarose gel electrophoresis.

	BT-359: Food and environment biotechnology	Understand the Isolate and characterize food fermenting organisms
		Understand the Analyse the mycotoxin from fungus contaminated food materials
		Understand the Microscopic examination of food and milk by breed methods
		Understand the Qualitative checking and evaluation of pasteurization of milk by MBRT test and phosphatise test
		Understand the Study the quality of soil by determining the total carbohydrate, nitrogen and phosphorus.
		Understand the Study the quality of water by determining the Biological oxygen demand and chemical oxygen demand.
	BT-361: Gene biotechnology and bioinformatics	Understand the Basic of rDNA technology, Concept and principle and application of genetic engineering.
		Understand the Principles, material and methodology of techniques involved in rDNA technology, include Gel electrophoresis, blotting techniques, sequencing methods, PCR. RFLP, RAPD, DNA fingerprinting.
		Understand the Definition, history and scope of bioinformatics
		Understand the Classification database used in bioinformatics Primary and secondary.
		Understand the BLAST, gene bank, EMBL, DDBJ, NCBI
	BT-362 Plant Biotechnology	Understand the Preperation of media and sterilization of plant tissue culture materia
		Understand the Methods of plant tissue culture
		Understand the Methods of secondary metabolites production
		Understand the plant pathogen and pathology concepts
		Understand the methods of embrio cullture
		Understand the Methods of biofertilizer preperation
	BT-363 Immunology	Understand the Immune system, types of immunity, primary and secondary lymphoid organ.
		Understand the Innate and acquired immunity, antigen, immuneresponse primary and secondary immune response, complement system, interferons.

		Understand the Ag-abinteractions,precipitation, agglutination, RIA, ELISA, monoclonal antibodies.
		Understand the Immunosuppresion, Vaccines, passive immunization, immunodeficiency disorder.
		Understand the Immunepharmacology, nonsteroidalanti-inflammatory drugs and glucocorticoids.
	BT -364: Advanced bioprocess Technology	Understand concept and types of Biotranformation
		Understand the Enzyme immobilization types and applications
		Understand the Types and principles of biofules
		Understand the Biogas and conversion of lignocellulose to biogas
		Understand the Biosorption and Bioleaching of metals
	BT 365 – Pharmaceutical Biotechnology	Understand the Concept, classification production and applications of secondary metabolites
		Understand the Classification and production and characterization of antimicrobial ganets
		Understand the Biological techniques to estimates antibiotics like MIC
		Understand the Structure, mechanisms and applications of different antibiotics like sulfonamides, griseofulvin, quinolones etc.
		Understand the Concept and principle of protein engineering
		Understand the Molecular aspects of drug designing
	BT-366 Biodiversity and biometry	Understand the Concept of evolutionary, molecular taxonomy
		Understand the Concept, characteristics of biodiversity and its conservation methods
		Understand the Concept, types and applications of bio-indicators
		Understand the Concept of biostatistics and samples
		Understand the Techniques of sampling and data analysis
		Understand the Biological data analysis through various techniques of measures of dispersion
	BT-367 Plant Biotechnology	Understand the Isolation and identification of Xanthomonascitri, Rizobiumsp, Azotobactor
		Understand the Determination of IAA Activity

		Understand the Pereration of stocks and sterization of media for PTC
		Understand the Callus culture of medicinal plants
		Understand the Shoot tip culture of medicinal plants
	BT-368: Genetics and bioinformatics	Understand the Monohybrid and dihybrid crosses, single point and two point crosses,Gene mapping
		Understand the conjugation, competent cell system and transformation.
		Understand the isolation of DNA from E. col
		Understand the various domains of bioinformatics, database.
		Understand the Gene and protein information searching and accessing from web
		Understand the Protein secondary structure prediction using Rasmol.
	BT-369: Pharmaceutical Biotechnology	Understand the Sterility testing of pharmaceutical products injectable/Ophthalmic solution, membrane filter technique
		Understand the Chemical assay of antibiotic (Streptomycin/penicillin), Microbiological assay of Streptomycin or Penicillin by cup plate/ paper disc method, Determination of Minimum Inhibitory Concentration (MIC) of Antibiotic.
		Understand the Microbial limit test (MLT) of pharmaceutical product, Isolation of antibiotic resistant bacteria population by gradient plate method
		Understand the Validation of laminar air flow cabinet, Validation of autoclave using biological indicator

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.

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 complexometric titration
	• Understand the concept and application of gravimetric analysis

TYBSc (Chemistry Courses)

Course	Outcomes (Students will be able to)
Semester- V	
CH 351: Physical Chemistry	• Understand spontaneous and non spontaneous processes.
	• Understand the importance of salt bridge in electrochemical cell.
	• Understand the concept electrochemical cell and determination of potential of cell
	• Understand the laws of photochemistry (Grothus Draper Law and Stark Einstein law)
	• Understand the concept quantum yield and fluoresce and phosphorescence from Jalblonski diagram.
	• Understand the various devices to measure the radiation from radioactive sample.
CH-352: Inorganic Chemistry	• Understand the basic concept of the co-ordination compound, and identify the types of given ligand, chelates.
	• Understand the different physical method for the study of complexes and assumptions, drawbacks and isomerism in Werner‟s theory.
	• Understand Effective atomic number (EAN) and how to calculate EAN for any given complexes.
	• Understand the modern theories of metal-ligand bond related to valence bond theory.
	• Application of CFT related to different geometry e. Square planer, tetrahedral, Octahedral.
	• Understand the basic concept about CFT e. Spin magnetic moment, crystal field stabilization energy related to weak and strong field, limitation of theory.
	• Understand the modern theories of metal-ligand bond related to Molecular orbital theory, and difference between B.T., C.F.T. and M.O.T.
CH-353: Organic Chemistry	• Understand Polarity picture of carbonyl group and nucleophilic addition reaction to it.
	• Introduction concept of aromaticity electrophilic and nucleophilic aromatic substitution reaction.
	• Molecular rearrangement involving migration to C, N and Oxygen.
	• Drawing the resonating structures.
	• Understand Nuclophic substitution reactions.
	• Understanding electrophilic addition reactions.
CH-354: Analytical Chemistry	• Understand procedure of extraction of metal ions using Solvent Extraction process.
	• Understand the application of Ion Exchange Chromatography method for the separation of cations and anions using different types of resins.
	• Understand applications of Size Exclusion Chromatography for the separation of analytes based on their size and shapes.
	• Understand the working of Gas Chromatographic unit and apply the knowledge to separate volatile compounds in sample.
	• Understand Principle, choice of column materials for HPLC and its application.

	• Understand Principles of Electrophoresis and choice of techniques of electrophoresis for various applications
CH-355: Industrial Chemistry	• understand general concept of Industrial chemistry.
	• Understand manufacturing of sugarcane.
	• Understand general idea of differ physical methods used in manufacturing.
	• Understands various types of fertilizer.
	• Understand manufacturing of Beer and spirit.
	• Understand the aspects of small scale industry.
CH 356 (B): Environmental Chemistry	• Understand the concept to awareness about environmental chemistry
	• Understand the concept about atmosphere and different layer and composition
	• Understand the concept. awareness about air pollution and organic inorganic pollutants
	• Understand the concept, water pollution and domestic sewage waste water, industrial pollution agriculture pesticide water pollution.
	• Understand the different methods of water treatment, water effluents and sewage water.
	• Understand the green house gases and global warming.
CH-357: Physical Chemistry Practical	• Prepare molar and normal solutions of various concentrations.
	• determine concentration of unknown solutions by Spectrophotometric method.
	• Measure the pH, pKa and Ka of various acids by potentiometry.
	• Measure refractive index, molar refraction and unknown concentration of various solvents.
	• Determine the molecular weight of a given polymer by turbidimetry.
	• Investigate the reaction rate.
CH 358: Inorganic Chemistry Practical	• estimate ores and alloy by gravimetric and volumetric method.
	• Separate and analyze binary mixtures by qualitative method
	• Prepare and determine percent purity of various inorganic complexes.
	• Perform chromatographic technique (paper chromatography).
	• Estimate Lead, Iron by gravimetric method.
	• Estimate Titanium and Iron by Spectrophotometric method.
CH 359: Organic Chemistry Practical	• Separate and analyze binary water insoluble mixture
	• Separate and analyze binary water soluble mixture
	• Estimate - acetamide, glucose by volumetric method
	• Estimate basicity of various acids.
	• Prepare various organic compounds.
	• Understand Thin Layer Chromatographic techniques and physical constant.

Semester- VI	
CH-361: Physical Chemistry.	• Understand the types of spectra, Rotational, Vibration and Electronic energy levels.
	• difference between order and Molecularity
	• Understand the first, second and third order reaction.
	• Understand the concept anisotropic, isotropic, etch figure, polymorphism,
	• Learn concept Photoelectric effect, Compton Effect and Heisenberg‟s uncertainty principals.
	• Understand the concept of X- ray analysis.
CH-362: Inorganic Chemistry	• understand the electronic structure, Extraction uses, oxidation states biological role of Cu.
	• know about the all basic theory of Acid and bases.
	• understand the concept of Hard and Soft acid bases concept theories, application and limitations.
	• know the different types and theories of Corrosion and how to protect Metal from corrosion.
CH-363: Organic Chemistry	• Understands common terms in spectroscopy.
	• Learn Physical methods of structure determination which includes IR, UV and NMR.
	• Solve the problems based on IR, UV and NMR.
	• understand retro synthesis.
	• predict synthons and reagents.
	• Solve the problems based on retro synthesis.
CH-364 Analytical Chemistry	• perform the analysis of samples using instrumental methods
	• understand the concepts of spectrometry, know the principles of instruments and their applications
	• understand principle, working and applications of Flame and Plasma Emission Spectrometry.
	• understand principle, Instrumentation and application of Atomic Absorption Spectrophotometry
	• understand principle, Instrumentation and applications of Turbidimetry and Nephelometry.
	• understand principle, Instrumentation and applications of thermogravimetric methods like TGA, DTA and DSC.
CH-365: Industrial Chemistry	• Understand the process of manufacturing of petrol and gasoline.
	• Understand the process of manufacturing of methanol.
	• Understand the process of manufacturing of soap.
	• Understand the process of manufacturing of detergents.
	• Understand classification of dyes and paints.
	• Understand properties of drugs.
CH 366: Polymer Chemistry	• Understand the basic concepts of polymerization.
	• Understand the different methods of polymerization.
	• Understand various techniques of polymerization.
	• Understand the preparation, properties and applications of PE, PVC, Polystyrene, polyacrilonytrile,

	• Understand the concept Glass transition temperature
CH-367: Physical Chemistry Practical	• Prepare molar and normal solutions of various concentrations.
	• determine concentration of unknown solutions by Spectrophotometric method.
	• Measure the pH, pKa and Ka of various acids by potentiometry.
	• Measure refractive index, molar refraction and unknown concentration of various solvents.
	• Determine the molecular weight of a given polymer by turbidimetry.
	• Investigate the reaction rate.
CH 368: Inorganic Chemistry Practical	• estimate ores and alloy by gravimetric and volumetric method.
	• Separate and analyze binary mixtures by qualitative method
	• Prepare and determine percent purity of various inorganic complexes.
	• Perform chromatographic technique (paper chromatography).
	• Estimate Lead, Iron by gravimetric method.
	• Estimate Titanium and Iron by Spectrophotometric method.
CH 369: Organic Chemistry Practical	• Separate and analyze binary water insoluble mixture
	• Separate and analyze binary water soluble mixture
	• Estimate - acetamide, glucose by volumetric method
	• Estimate basicity of various acids.
	• Prepare various organic compounds.
	• Understand Thin Layer Chromatographic techniques and physical constant.

MSc (Organic Chemistry Courses)

Course	Outcomes (Students will be able to)
Semester- I	
CH-110: Physical Chemistry - I	• Understand the terms eigen function, eigen value, operator and postulates of Quantum mechanics.
	• Understand mechanics of particle in one, two and three dimensional box.
	• Learn parent –daughter relationship, application of radioactivity, NAA, IDA. Effect of radiation and units of radiation.
	• Learn the Fricke and cerric sulphate dosimeter.
	• Understand the terms ionic strength, activity coefficient .DHO equation.
	• Understand the adsorption of gases by solid types of isotherms.
CH-130: Inorganic chemistry Paper - I	• Learn molecular orbitals and its orientation.
	• Understand about geometry and shape of the molecule
	• Learn and find out bond order and dipole moments of the inorganic molecule.
	• Learn 18 electron rule and application.
	• Determine the point group of inorganic molecules.
	• Understand preparation and properties of transition metal carbonyls.
	• Understand concept of symmetry elements in molecules.
CH-150: Basic Organic Chemistry	• Understand stereo chemical principles, enantiomeric relationship R and S ,E and Z nomenclature in C,N,S,P containing compound.
	• Understand SN1, SN2 and SNi mechanism and stereochemistry.
	• Understand NGP by pi and sigma bonds, classical and non -classical carbocations .
	• Understand alkylation and acylation reaction
	• Compare the differ between types of addition, elimination and substitution reaction.
	• Learn and solve problem type of elimination
Semester- II	
CH-210: Physical Chemistry - II	• Understand the thermodynamic description of mixtures state function, exact, inexact differential.
	• Understand the colligative properties of solutions, depression in f.p., elevation in b.p, osmotic pressure.
	• Understand the statistical thermodynamics and various partition functions.
	• Understand the consecutive elementary reactions, rate determining steps, steady state approximation, pre-equilibria, Michaelis-Menten mechanism, Lindemann- Hinshelwood mechanism, chain reactions.
CH-230: Inorganic chemistry Paper - II	• Learn mechanism in transition metal complexes.
	• Learn radius ratio rule of coordination no 3,4,
	• Understand the Born-Haber cycle to calculate lattice energy.
	• Understand about classification and use of catalyst.
	• Understand about structure of atom, Hunds rule, Term symbol, calculation of microstates, orbital selection rule.
	• Know metal complexes involved in biological systems. Vitamin-B12, Chlorophyll, Hemoglobin.

CH-250 Name Reactions, Synthetic Organic Chemistry & Spectroscopy	• Learn various name reaction with example.
	• Use synthetic reagents of oxidation and reduction for solving the example.
	• Understand mechanism of rearrangements reaction .
	• Learn factors affecting on UV absorption spectra.
	• Interpret IR spectra on basic values IR frequencies
	• Solve problems of UV, IR and NMR.
CH-290: General Chemistry	• Solve the problems on Chemometrics Mean and Standard deviation.
	• Learn theory of electrogravimetric analysis, Electrolytic separation and determination of metals.
	• Know Instrumentation, choice of Mobile Phase, Solvent Treatment systems, Pumping systems, Sample injection systems, Columns for High Performance Liquid Chromatography.
	• Learn principle, theory of Glass Membrane Potential, The Alkaline and Acid Error, Standard Buffers, Accuracy of pH , Measurements with the pH-meter, types Ion-selective Electrodes.
	• Learn Voltammetric Electrodes, Detectors, Amperometric Sensors, Amperometric Titrations.
	• Understand Phosphorescence, Fluorescence and Photo luminescent phenomena used for determination of mixtures.
CH-P-1: Physical Chemistry Practical	• Prepare molar and normal solutions of various concentrations.
	• Determine concentration of unknown solutions and degree of hydrolysis and hydrolysis constant by Spectrophotometry.
	• Determine stability constant of a complex ion and standard free energy change G0 and equilibrium constant by potentiometry.
	• Investigate the rate constant for depolymerization , energy of activation and order of the reaction
	• Calculate Hammett constant and amount of aspirin in the given tablet by pH measurement.
	• Determine specific rotation and percentage of two optically active substances by polarimetrically.
CH-I-1: Inorganic Chemistry Practical	• Perform gravimetric and volumetric analysis ores.
	• Analyse binary mixtures by gravimetric and volumetric method.
	• Prepare various inorganic complexes and determination of its Percent purity.
	• Analyse iron from given drug sample and calcium in milk sample.
	• Perform paper chromatographic technique.
	• Estimate phosphate from waste water by spectrophotometry.
CH-O-1: Organic Chemistry Practical	• Know uses of chemistry softwares like ISI draw, Chem Draw, Chem Sketch.
	• Draw the different structure of organic compound.
	• Perform Thin layer chromatography technique for completion of reaction.
	• Perform single and two stage preparation.
	• Apply knowledge of Green principle for organic synthesis
	• Make use of soxhlet extractor and steam distillation assembly for Purification of organic compound.
Semester- III	
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.
	• 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**	a) 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.
		b) 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 career success.
	303Business and Tax Laws	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.
	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 variouscomponents of corporate financial transactions.
		To provide working knowledge of accounting principles and procedures for recording oftransactions related to corporate entities.
		To provide working knowledge for preparing the corporate accounts and statements inaccordance with the statutory 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 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
	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 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
		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	**Income Tax**	know the various provisions relating to Income and Incomes tax computation
		understand the basic concepts of the Income Tax Act 1961 and get the elementary knowledge of scheme of taxation in India
		compute Income and Tax of an Individual assesse under the Act
	4. Human Resource Management	To introduce the concept, principles and practices of H.R.M. to the students.

		To familiarize students with concepts of human resource planning, Job Analysis, Recruitment and selection procedures.
		To introduce the concept Training and Management Development of H.R.M. to the students.
		To provide recent trends in Human Resource Management.
		To develop the total personality of students as future Human Resource of India.
		To study the various dimensions of Human Resource Management.
	3. Soft Skills Development	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
	6a: Advanced Accounting–I	Toimpartthestudents,knowledgeaboutaccountingtreatmentoffunctionalaspects ofCorporate and Non-corporate undertakings
		ToappraisethestudentsaboutneedandimportanceofAccountingStandardsconcerningt heFunctional aspects accounting
		To appraise the students about the application of accounting knowledge in preparation of financial Statements of Farm Activities, and Corporate Sectorunits.
	7 a:AdvancedAccounting–II	Toimpartthestudents,knowledgeaboutaccountingtreatmentofcorporateundertaki ngsrestructuring.
		Toapprisethestudentsabouttheapplicationofaccountingknowledgeinprepara tionoffinancialstatementsofBankAccounts.
		To appraise the students about application of the AS concerning the aspects in accounting.
		Toappraisethestudentsabouttheapplicationofaccountingknowledgeinreadi ngandinterpretingthefinancial statementsofcorporateentities.
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	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.
	301 Management Accounting	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
		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 of Computers.
		Understand What is Computer and Basic concepts of computer.
		Aware about various types of Computers, types of input and output devices.
		• Preparation of Algorithm and Flowchart of Program.
		• Learn computer networks, its types and basics of Internet.
		• Understand computer viruses and its types.
	CS 102 C Programming Language - I	• Develop their programming skills.
		• Be familiar with programming environment with C Program structure.
		• Declaration of variables and constants.
		• Understand operators, expressions and preprocessors.
		• Understand arrays , it's declaration and uses.
	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 and Testing.
		• Understand how to design website with different website development models.
		• Know the different page types on websites and it's navigations.
		• Designing website using HTML language.
		• Design advanced website using CSS.
	CS 202 C Programming Language - II	• Design programs using Functions, Pointers , Structures and Unions in C language.
		• Write a program using File Handling.
		• Writing programs for drawing different graphical shapes.

	CS-203 LAB Course on Internet Computing and C Programming	• On completion of the course, students are able to develop programs using C to meet real world needs and able to develop their own websites. This course provides platform to enhance student‟s basic skills required for advanced programming.
SYBSc	COMP 211 : Data Structure-I	• Know what is data structure and basic algorithmic notations.
		• Analyse the time and space requirement of any algorithm.
		• Understand different linear data structures for conversion of mathematical expressions and polynomial representations.
		• Know the file structures.
	COMP 212 : OOAD & Introduction to C++	• Be familiar with Object Oriented Programming Environment.
		• Differentiate between Structure oriented programming and object oriented programming.
		• Understand different object modelling techniques and analysis like Generalization , Aggregation and Metadata.
		• Write Reusable , Extensible and Robust programs in C++.
	CS SEC-I (Skill Enhancement Course-I) Software & Hardware Installation Skills	To understand Software & Hardware Installation Skills.
	COMP 213: Practical Course	• On completion of the course, students are able to develop programs using C++ based on object oriented concepts and write the ROBUST, EXTENSIBLE and EFFICIENT programs.
	COMP 221 : Data Structure – II	• Know different non-linear data structures that can be used to represent hierarchical relationship between objects.
		• Traverse and represent the graphs in computer.
		• Understand the different approaches of sorting and searching elements in the arrays.
		• Understand different techniques of designing the algorithms.
	COMP 222 : Programming in C++	• Explore polymorphism using Function and Operator Overloading.
		• Write programs for handling runtime errors using exception.
		• Understand the concepts of pointers in C++.
		• Understand the different aspects of hierarchy of classes and their extensibility.
		• Write generic programs using templates and STL.

	CS SEC-II (Skill Enhancement Course-II) Network Security	To understand objectives of Network Security.
	COMP 223 : Practical Course	• On completion of the course, students are able to develop programs using C++ based on object oriented concepts and write the ROBUST, EXTENSIBLE and EFFICIENT programs.
TYBSc	CS-311 System Programming	• Get aware about system softwares and their tools like Editors and Debug Monitors.
		• Get familiar with language processing activities.
		• Understand detail working of Assembler , Macro and Macro Preprocessor , Compiler and linker & Loader.
	CS-312 Database Management System	• Get aware of Describing & storing data.
		• Know about E-R Model by overview of database design..
		• Get familiar with Conversion of ER to Relational model.
		• Know about functional dependency and Data Normalisation.
		• Understand Database Implementations.
		• Make use of Concurrency control, Backup & recovery for large or huge of databases.
		• Get aware about handling huge databases.
	CS-313 Software Engineering	• Get aware of evaluation of software and Software Development Life Cycle (SDLC).
		• Know about Software Development Model.
		• Get knowledge of Requirement Analysis and Specification in software engineering .
		• Learn use of Fact finding Techniques , Types of Requirement Modeling and Data Modeling Concepts.
		• Get knowledge of Design Concepts in software engineering.
		• Know about Cohesion & Coupling , Decision Table & Decision Tree, Data flow Diagram
		• Know about Software Coding & Testing.
		• Get aware about Elements of Software Quality Assurance.
	CS-314 Computer Aided Graphics	• differentiate between interactive and non interactive graphics.
		• explore different line and circle drawing algorithms.
		• perform 2D and 3D transformation on different images.

		• know about detail working of image clipping and windowing.
		• understand raster graphics and hidden surface elimination.
	CS-315 Programming in VB.NET	• get aware about .Net platform.
		• understand looping structure, control flow statements and exception handling in VB.NET
		• understand object oriented programming in VB.NET
		• program using ADO.NET
	Elective-A CS-316 A) Programming in C#	• By using c# code and ASP.Net create dynamic web pages.
		• Using MS Visual Studio.NET IDE and Create Console Applications.
		• Know about Basic Principal of OOP, Defining Class and using functions.
		• Able to use constructor and destructor.
		• Use Polymorphism ,Method Overriding ,Method hiding
	Elective -B UG-CS-316 B) JAVA Programming-I	• Get knowledge JDK Environment.
		• Explore polymorphism using Function and Operator Overloading ,overriding .
		• Understand the different aspects of hierarchy of classes and their extensibility .
		• Understand the concepts of streams and files .
		• Write programs for handling runtime errors using exception.
	CS-321 Operating System	• know about functions and services of operating system.
		• aware about different CPU scheduling algorithms
		• get familiar with different memory management techniques.
		• understand different disk and drum scheduling algorithms as well as deadlock concepts.
		• get introductory knowledge about android operating system.
	CS-322 MS SQL Server	• understand features and data types in SQL server.
		• create and manipulate databases for various applications.
		• use procedures and trigger for performing complex operation on databases.
		• handle errors using exception handling concepts.

	CS-323 Internet Programming using PHP	• understand how PHP works with lexical structure of it.
		• program for different applications using arrays, functions and strings.
		• aware about different web techniques used in PHP.
		• integrate PHP with MYSQL.
	CS-324 Theoretical Computer Science	• Understand what is Push down Automata and its applications.
		• understand concepts of Context free grammar and normalization of CFG.
		• convert regular expression to Finite Automata.
		• Design Turing Machines for various applications like enumerator, function computer and universal turing machine.
	CS-325 Computer Network	• understand applications of network, network structures and protocol hierarchy
		• aware about details of physical, datalink, network and transport layer of TCP/IP network model.
		• understand about different aspects of network security like firewalls, IP security and VPNs.
		• aware about attacks and Confidentiality used in crypotgraphy.
	Elective - A CS-326 A) Web Programming using ASP.NET	• Using features of ASP.Net create ASP.Net Compilation Model, Code Behind Model Execution Stages.
		• Know about ASP.NET Controls , ASP.Net Intrinsic Objects
		• Use page layout, styles and text balance, site map, Master pages and content Pages, Navigation controls: Tree view, site map path(bread crumb), Menu navigation.
		• By using ASP.Net create dynamic web pages
	Elective - B CS-326 B) JAVA Programming-II	• program using graphical user interface with Swing classes.
		• handle different kinds of events generated while handling windows.
		• create programs using menus and dialog boxes.
		• program for websites using applets.
		• understand advanced java concepts like JDBC and servlets.

	CS-Lab-301 Lab on System Programming	• On completion of the course, students are able to develop system programs to provide basic applications for computing like line editor, interrupt handler, SMAC0 and lexical analyser.
	CS-Lab-302 Lab on Programming in VB.NET, Computer Aided Gra	• On completion of the course, students are able to develop different programs for demonstrating different Computer graphics algorithms like circle, line drawing and clipping and filling as well as students can create dynamic web pages using VB.NET.
	CS-Lab-304 Lab on MS SQL Server	• On completion of the course, students are able to develop database management system using features and services provided by MS SQL Server.
	CS-Lab-305 Lab on Internet Programming using PHP	• On completion of the course, students are able to develop interactive static as well as dynamic websites.
	Elective -A CS-Lab-303 A) Lab on Programming in C# and CS-Lab-	• On completion of the course, students are able to develop programs using C# based on object oriented concepts and write the ROBUST, EXTENSIBLE and EFFICIENT programs by using c# code and ASP.Net create dynamic web pages.
	Elective -B CS-Lab-303 B) Lab on JAVA Programming –I and CS-L	• On completion of the course, students are able to develop efficient programs which provides graphical user interface for easy handling of computers using JAVA.
MSc-I	CS-101 Advanced C++ Programming	• Understand advanced concepts for handling runtime errors using stack unwinding, uncaught exception and automatic cleanup.
		• Study the Runtime Type Information of the member variables, functions and the multiple inheritance that are used in the program.
		• Study advanced concepts of C++ by resolving ambiguities and duplicate sub object in virtual base classes.
		• Understand applications of C++ like Smart Pointer , Generic Pointer , Object Validation and Reference Counting.
		• Understand detail concepts of STL.

	CS-102 Automata Theory and Computability	• Understand what is Push down Automata and its applications.
		• Design Turing Machines for various applications like emunerator, function computer and universal turing machine.
		• Study Post correspondence problem, decidability of membership, emptiness and equivalence problems of natural languages.
		• Get familiar with Computability and complexity measures.
		• Understand what is DNA and Membrane Computing.
	CS-103 Advanced Operating System	• Study files subsystem for UNIX operating system.
		• Understand detail working of UNIX operating system.
		• Understand process and memory management techniques.
	CS-104 Digital Image Processing	• Understand the application of digital image processing.
		• Explore knowledge about image processing fundamentals.
		• Get aware about image sampling and quantization and operation on images
		• Understand histogram processing and various image filtering algorithms.
		• Know about various noise models and transformation techniques.
		• Be aware of various morphological techniques and segmentation schemes.
	CS-105- LAB - I Lab on Advanced OS and Digital Image Processing	• Get hands on various linux commands and shell script for different application.
		• Familiar with MATLAB environment.
		• Explore various algorithms for digital image processing using MATLAB.
	CS -106-LAB - II Lab on Advanced C++ Programming	• On completion of the course, students are able to develop ROBUST, EXTENSIBLE and EFFICIENT programs using advanced concepts of STL in C++.
	CS-201 Advanced DBMS	• Explore ideas about centralized and client server architecture of DBMS.
		• Differentiate and handle parallel and distributed databases.
		• Realize object oriented databases and XML databases for Dynamic website development.
		• Be familiar with mobile and multimedia databases.

	CS-202 Machine Intelligence	• Understand artificial intelligence and AI problem solving techniques.
		• Explore logic for solving various AI problems.
		• grasp the techniques of knowledge representation in machine.
		• Comprehend advanced machine learning techniques such as fuzzy logic and genetic algorithms.
	CS-203 Compiler Construction	• Know role of compilers in program execution.
		• Understand detail program execution using lexical and syntax analysis
		• Be aware of code generation and optimization.
	CS-204 Design and Analysis of Algorithms	• Design efficient algorithms using various algorithm designing techniques.
		• Comprehend dynamic programming using control abstraction and longest common subsequence.
		• Classifying any problem as NP complete and NP hard
	CS-205- LAB - III Lab on DAA and MI	• On completion of the course, students are able to build the program that can solve the problems which requires intelligence to solve them. They can build programs which can generate output in less time and execute in less space.
	CS -206-LAB - IV Lab on Advanced DBMS	• On completion of the course, students are able to build and maintain the databases handling real life applications and daily needs.
MSc-II	CS-301 Software Engineering	• Know the requirements of developing software.
		• Be aware of various models required for software development.
		• Test the developed software for its functionality and performance.
		• Understand software quality and quality measures.
		• Grasp the software configuration management and project planning.
	CS-302 Optimization of Algorithm	• Understanding classification and limitation of quantitative techniques.
		• Take hold of linear programming problem solving techniques.
		• Solve various kinds of transportation problems using different techniques.
		• Explore concepts in game theory
		• Be aware about the network models, sequencing models and simulaon models.

	CS-303 Advanced Java Programming	• Design programs using Remote method invocations (RM.
		• Explore programming techniques of Java beans and swing.
		• Be aware about Java Enterprise applications.
		• Know about java servlets and java struts.
	CS-304 Windows, WCF and WPF Programming	• Familiar with windows environment and child window controls.
		• Understand windows communication foundation using WCF contracts, clients and services security.
		• Understand windows presentation foundation, WPF and .Net programming.
	CS-305-LAB – V Lab on Windows, WCF and WPF Programming	• On completion of the course, students are able to develop program having graphical user interface for various applications..
	CS -306-LAB –VILab on Advanced Java 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 linguistic background
		• Be familiar with applications and research background in NLP.
		• Grasp mathematical foundation related to NLP like probability, bays theorem and machine learning.
		• Know about linguistics essentials and grammar as part of speech and parsing and differentiating them.
		• Aware about word morphology and N-Gram Models.
	CS-402 Advanced Network Programming	• Understand network fundamentals with TCP/IP architecture.
		• Aware with client server programming and its application using socket interface.
		• Understand IGMP ICMP and IP datagrams
		• Understating the mobile and advoc network programming.
	CS-403 Data Warehousing and Data Mining	• Understand data warehousing for business analysis using OLAP, OLTP, MOLAP and ROLAP.
		• Explore the concepts of data mining and data preprocessing.
		• Understand concept of association rule mining.
		• Grasp classification and prediction and analysie different issues related to them.

		• Identify different cluster analysis techniques.
		• 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 programming and Data Mining	• On completion of the course, students are able to develop client server programs for various services like TCP, UDP, Telnet, 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 world data.
		• Familiar about real time IT industry enviorment.
		• Expeirnance about applying the knowledge they got uptil now.
		• Build a whole real time working system which will satisfy all custmor‟s needs.

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
		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 company 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	• Students will be able to understand price determination of factors
		Students will be able to understand various theories of factors
		Students will be able to understand concept of profit & Interest
		Students will be able to understand market equilibrium of firm in monopolistic market.
	ECO 233- 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
	ECO 243- 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
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

		• Students will be able to understand public debt& deficit finance
	ECO-352(A)- Public Finance and Policies-I	• Students will be able to understand concept of public fiancé
		• Students will be able to understand concept of public revenue
		• Students will be able to understand incidence & approaches of taxation
		• Students will be able to understand government intervention
	ECO-362(A) - Public Finance and Policies-II	• Students will be able to understand concept of public expenditure
		• Students will be able to understand concept of public debt
		• Students will be able to understand concept of fiscal policy
		• Students will be able to understand concept of budget & deficit finance
	ECO-353(A) - International Trade and Practices-I	• Students will be able to understand international trade theories
		• Students will be able to understand gains from international trade & trade policy
		• Students will be able to understand concept of BOP & BPT
		• Students will be able to understand concept of exchange rates
	ECo-362(B) - Economics of Indian Agriculture-II	• Students will be able to understand international capital movements & MNCs
		Students will be able to understand international instructions & regional economic • cooperation
		• Students will be able to understand concept of devaluation & convertibility of rupees
		• Students will be able to understand Euro currency market
MA-I	ECO-111 - ADVANCEMICROECONOMICTHEORY- I	Students will be able to understand ordinal utility analysis of consumer demand
		Students will be able to understand modern utility analysis
		Students will be able to understand the Firm & its technology
		• Students will be able to understand theory of price

	ECO-121 - ADVANCEMICROECONOMICTHEORY -II	• Students will be able to understand the theory of oligopoly & duopoly
		Students will be able to understand the new theories of oligopoly market
		Students will be able to understand theory of distribution
		• Students will be able to understand general equilibrium & economic efficiency & welfare
	ECO-112 - MODERN PUBLIC FINANCE - I	• Students will be able to understand market vs Government
		Students will be able to understand public goods, monopoly, externalities & Asymmetric information
		Students will be able to understand macroeconomic considerations in public finance
		• Students will be able to understand government & rent seeking
	ECO-122- MODERN PUBLIC FINANCE- II	Students will be able to understand fiscal federalism in India
		Students will be able to understand taxation & public debt of India
		Students will be able to understand public expenditure & subsidies in India
		Students will be able to understand fiscal administration & public governance in India
	ECO-113 - STATASTICS FOR ECONOMICS - I	• Able to understand meaning, scope & importance of statistics
		• Able to understand methods of correlation

		• Able to understand measures and types of price index
	ECO-123 - RESEARCH METHODOLOGYFOR ECONOMICS	• 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
	ECO-114 (B) - AGRICULTURAL ECONOMICS -I	• Students will be able to understand economics of agriculture
		• Students will be able to understand Indian agriculture sector
		• Students will be able to understand agricultural prices, marketing & subsidies in India
		• Students will be able to understand agriculture finance, insurance& capital formation
	ECO-124 (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
		• 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 monetary policy
		Students will be able to understand nature classical & Keynesian theories of employment
		• Students will be able to understand measures of money supply.
		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-LM model
		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 economic development
		• Students will be able to understand concept of poverty & development
		• Students will be able to understand population & human development

	Eco-242 - Model's of Economic Growth - II	• Students will be able to understand the economic growth & technological changes
		• Students will be able to understand some growth models
		• Students will be able to understand the Neo- Classical & Cambridge models of growts
		• Students will be able to understand issues & techniques of economic growth
	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 in India
		Students will be able to understand cooperative and rural banking in India
		• Students will be able to understand working & operation of RBI
	Eco-244 - Modern banking & Financial Markets in India - II	• Students will be able to understand the Indian money market
		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 2. To inculcate the human and moral values amongst the students. 3. To develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. 4. To develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. 5.To acquaint the students with formal and informal style in using English	1.The students will understand the written text 2. The students will inculcate the human and moral values amongst the students. 3. The students will develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. 4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. 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 treasure of English literature 2. The Course introduces two basic forms of literature- short story and poem which are very near and dear to every human heart. 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. 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. 2. The course will develop the liking of reading in the students. 3. The course will inspire students to develop their creative ability. 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 Medical Representatives Hotel Management BPOS, Translators Tourists Guide, Media Radio, Television

			Competitive Examination Administrative Services Industries, Call Centers Computer Services Business Communication Journalism Railway Service Sector
	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 2. To acquaint the students with the use of English language through different means 3. To acquaint the students with the creative use of English language	1.the students will know writing and reading skill 2. the students will acquaint the use of English language through different means 3. the students acquaint the creative use of English language
S.Y.B.A. (CBCS) SEM.PATTERN (with effect from 2019-20)	Compulsory English	To enable the students to understand the written text To inculcate the human and moral values amongst the students. To develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. To develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. To acquaint the students with formal and informal style in using English	1.The students enable to understand the written text 2. The students will inculcate the human and moral values amongst the students. 3. The students will develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. 4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. 5. The students will acquaint with formal and informal style in using English
	Special Paper-I: 16th and 17th Century English Literature 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. 2. To make the student aware of the literary history, salient features and cultural background of the period. 3. To help the students to grasp the content and critical appreciation of the prescribed texts. 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. 2. The students will make aware of the literary history, salient features and cultural background of the period. 3. The students will help to grasp the content and critical appreciation of the prescribed texts. 4. The students will inculcate amongst a liking for the Elizabethan and post-Shakespearean literature.
	Special Paper-II: 18th and	1. To impart basic ideas about the 18th and 19th Century	1. The students will impart basic ideas about the

	19th Century English Literature DSE 2A and B (equivalent to Special Paper-II)	English Literature with special reference to Poetry and Novel. 2. To make the students aware of the literary history, salient features and cultural background of the Romantic and Victorian age. 3. To help the students to grasp the content and critical appreciation of the prescribed Texts. 4. To inculcate amongst students a liking for the Romantic and Victorian literature.	18th and 19th Century English Literature with special reference to Poetry and Novel. 2. The students will make aware of the literary history, salient features and cultural background of the Romantic and Victorian age. 3. The students help to grasp the content and critical appreciation of the prescribed Texts. 4. The students will inculcate a liking for the Romantic and Victorian literature.
	English General Paper-II: The Study of Novel & Drama DSC 1 C (equivalent to Sp. English -General Paper II)	1. To develop the interest of students in reading/understanding novel and drama. 2. To acquaint students with Novel and Drama as genres of literature. 3. To develop students' competence to study, understand, analyze and Interpret novel and drama. 4. To introduce students with the key terms useful in the study of novel and drama. 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. 2. The students will orient to different types of English novel & drama 3. The students will enable to trace the development of the English novel & drama 4. The students will develop competence to systematically study and analyze a novel & drama 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 2. To develop scientific attitude of understanding their subject 3. To put on record their own observations and hone their skill of explanation 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. 2. The students will become conversant with different types of English novel & drama 3. The students will enable to mark out the development of the English novel & drama 4. The students will develop ability to systematically study and scrutinize a novel & drama 5. The students will introduce to the recent trends in novel& drama form.
	Skill Enhancement Course (SEC) 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. 2. To introduce students with the common question types asked in competitive examinations concerning English-grammar, vocabulary, comprehension, and other significant topics. 3. To encourage students to appear and prepare for the competitive exams.	

		4. To help the students to overcome the fear about English as a compulsory subject in various competitive exams.	
	SYBA English Sem. IV DSC 3 D Minor Study Project	1. To motivate students for research 2. To inspire them to participate research oriented activities like Avishkar, Indradhanushy, Anweshan etc. 3. To orient them for grasping the concept and features of research 4. To inculcate in them skills like analysis, interpret and visualize	
S.Y.B.Sc.		1. To introduce the new techniques of technical communication 2. To train the students to use English for specific purpose and situation in real life 3. To enable the students to face the world of competition and challenges of the changing world 4. To equip the students with enough English to enable them to enter the usual professions open to them 5. To inculcate the basic human values amongst the students 6. To enable the students for oral and written communication in English 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 2. The students will inculcate the human and moral values amongst the students. 3. The students will develop the communicative competence of students with special reference to interview, presentation skills. 4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. 5. The students will acquaint with formal and informal style in using English
T.Y.B.A.	Compulsory English	1.To enable the students to understand the written text 2. To inculcate the human and moral values amongst the students. To develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. 3. To develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. 4. To acquaint the students with formal and informal style in using English	1.The students enable to understand the written text 2. The students will inculcate the human and moral values amongst the students. 3. The students will develop the communicative competence of students with special reference to congratulation, compliments, thanks, expressing an apology and making inquiries. 4. The students will develop the writing skills of students with special reference to reporting, notice, agenda, minutes and letter writing. The students will acquaint with formal and informal style in using English

	ENGLISH SPECIAL PAPER-III : Indian Writing in English and American Literature	1.To acquaint the students with the growth of Indian drama and novel in English during the 20th century. 2. To enable the students to evaluate, analyze, appreciate and criticize drama and novel prescribed. 3. To acquaint the students with the social, political and cultural background and literary movements of the century. 4. To acquaint the students with the developments in American poetry and novel.	1 the students will acquaint with the growth of Indian drama and novel in English during the 20th century. 2. The students will enable to evaluate, analyze, appreciate and criticize drama and novel prescribed. 3. The students will acquaint with the social, political and cultural background and literary movements of the century. 4. The students will acquaint with the developments in American poetry and novel.
	ENGLISH SPECIAL PAPER-IV The Study of English Language	1) To introduce the students to the properties and functions of language. 2) To inculcate phonological competence among students. 3) To acquaint the students with English grammatical forms and functions. 4) To acquaint the students with morphological concepts and processes. 5) To introduce the students to the basic concepts in syntactic and semantic levels of language.	1) The students will introduce to the properties and functions of language. 2) The students will inculcate phonological competence among students. 3) The students will acquaint with English grammatical forms and functions. 4) The students will acquaint with morphological concepts and processes. 5) The students will introduce to the basic concepts in syntactic and semantic levels of language.
	English General Paper - III (G-III) The Study of Drama	1. To acquaint the students with origin of drama and dramatic art. 2. To introduce the students to the aspects and genres of drama. 3. To enable the students to trace the development of English drama. 4. To inculcate amongst the students the competence to study drama systematically. 5. To acquaint the students with representative English dramatists.	1. The students will acquaint with origin of drama and dramatic art. 2. The students will introduce to the aspects and genres of drama. 3. The students will enable to trace the development of English drama. 4. The students will inculcate amongst the students the competence to study drama systematically. 5. The students will acquaint with representative English dramatists.
M.A. PART- I	CORE PAPER ENG 111 and ENG 121 AN INTRODUCTION TO LINGUISTICS	1. To acquaint the students with the nature of human language. 2. To introduce the students to the developments in the field of linguistics. 3. To familiarize the students with the recent trends in linguistics. 4. To make the students aware of the relation of language to	1) The students will introduce to a wide range of critical methods, literary theories and concepts. 2) The students will enable to use the various critical approaches and advanced literary theories. 3) The students will familiarize with the trends and cross-disciplinary nature of literary theories. 4) The students will enable to use various critical

		brain, society, machine and law. 5. To develop amongst the students the stylistic competence for analyzing literary texts.	tools in the analysis of literary and cultural texts.
	CORE PAPER ENG: 112 & ENG: 122 ENGLISH POETRY	1. To acquaint the students with the most significant English Poets through the study of the representative poems 2. To enable the students to understand the different trends in English poetry 3. To acquaint the students with different movements in English poetry 4. To train the students in the close reading of the poems prescribed 5. To enable the students to compare and contrast the poems prescribed 6. To enable the students to understand different thematic patterns, poetic structures, poetic devices and stylistic peculiarities. 7. To develop among the students the ability to interpret, analyze and evaluate English poems in the context of literary history and theory of different movements of poetry in English	1. The students will be acquainted with the growth and development of English poetry 2. The students will be acquaintd with the contribution of the poets to the Genre. 3. The students will enable to understand the different aspects of poetry in different social and cultural contexts. 4. The students will understand the human values, psyche and issues raised in the representative poems 5. The students will be familiarized with verities of English poems through the reading of the prescribed poems
	CORE PAPER ENG: 113 & ENG: 123 ENGLISH DRAMA	1. To introduce the students to a wide range of theatrical practices around the world. 2. To introduce the students to various genres of drama. 3. To enable the learners to understand the elements of drama and theatre. 4. To enable the students to get a historical perspective of English Drama. 5. To enable the students to compare and contrast dramatic works illustrative of different Periods of literary history. 6. To enable the students to learn and develop English language proficiency, both written and spoken.	1) The students will acquaint with the term Drama 2) The students will understand the difference genres of drama. 3) The students will understand the different element of drama and theatre. 4) The student will understand the background of the drama. 5) The language and analytical knowledge of the students will be developed..
	OPTIONAL COURSE ENG: 114 (A) & ENG: 124 (A) INDIAN WRITING IN ENGLISH And American LITERATURE	1. To acquaint the students with selected masterpieces in Indian Writing in English. 2. To enable the students to read and appreciate the works of Indian authors writing in English. 3. To acquaint the students with the development of different	1. The students will acquaint with selected masterpieces in Indian and American Literature. 2. The students will acquaint with the development of different genres in Indian and American 3. The students will make aware about social, political and cultural issues reflected in

		genres in Indian Writing in English. 4. To make the students aware of social, political and cultural issues reflected in Indian Writing in English.	Indian and American Literature. 4. The students will be introduced with the trends and tendencies in Indian and American Literature.
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. 2) To enable them to use the various critical approaches and advanced literary theories. 3) To familiarize the learners with the trends and cross-disciplinary nature of literary theories. 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. 2) The students will enable them to use the various critical approaches and advanced literary theories. 3) The students will be familiarized with the trends and cross-disciplinary nature of literary theories. 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. 2. To acquaint the students with the contribution of the novelists to the Genre. 3. To enable the students to understand the different aspects of novel in different social and cultural contexts. 4. To make the students to understand the human values, psyche and issues raised in the representative novels. 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. 2. The students will be acquainted with the contribution of the novelists to the Genre. 3. The students will be enabled to understand the different aspects of novel in different social and cultural contexts. 4. the students will understand the human values, psyche and issues raised in the representative novels. 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’ 2) To introduce the students with the basic elements of research in English language and English literature. 3) To make the students familiar with difference in the research of English language and literature. 4) To acquaint the students with nature, aspects, types and areas of research in English language and literature. 5) To acquaint the students with research questions, methods and framing of outlines.	1) The students will be acquainted with the term ‘research’ 2) the students with the will be introduced a basic elements of research in English language and English literature. 3) the students will be familiar with difference in the research of English language and literature. 4) The students will be acquainted with nature, aspects, types and areas of research in English language and literature.

			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. 2. To acquaint the students with the development of different genres in American Literature. 3. To make the students aware about social, political and cultural issues reflected in American Literature. 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. 2. The students will be acquainted with the development of different genres in American Literature. 3. the students will be aware about social, political and cultural issues reflected in American Literature. 4. The students will be introduced with the trends and tendencies in American Literature.

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 the Earth
		• Know the internal structure of the earth know the importance of longitudes & latitudes International Date line and Standard time
		• Understand interior structure of the earth
		• Understand Theory regarding of Origin of Continents and oceans
		• Study the formation of Rocks Understand the work of internal and external forces and their associated landforms.
		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 of Atmosphere
		• Understand the composition of atmosphere
		• Know Measurement of Atmospheric Pressure and formation of Pressure Belts
		• Understand the types of winds
		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
	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.
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 the Earth
		• Know the internal structure of the earth know the importance of longitudes & latitudes International Date line and Standard time
		• Understand interior structure of the earth
		• Understand Theory regarding of Origin of Continents and oceans
		• Study the formation of Rocks Understand the work of internal and external forces and their associated landforms.
		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 of Atmosphere
		• Understand the composition of atmosphere
		• Know Measurement of Atmospheric Pressure and formation of Pressure Belts
		• Understand the types of winds
		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 man kinds.
		• Understand the modes of life of aximo, pigmy, gonad ,Bhil And nagas.
		• Importance of Right to Information Acts.
	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.
		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 of GIS
		• Study GIS Data models.
		• Introduce GPS and Its Functions.
		• Make use GIS & GPS software.
TYBA	G3 Population Geography	• Understand the history of population

		• Understand the types of data
		• Study of distribution and density of population.
		• Get knowledge of population theories.
		• Investigate Current Issues and Problems in India
		To understand the recent problems of population in the world as well as nation.
	G3 Political Geography	• Understand the history of Political Geography.
		• Get knowledge about Evolution of states & nations.
		• Get knowledge of Geopolitical theories.
		• Investigate Problems and disputes in India
	S – 3 : GEOGRAPHICAL THOUGHTS	• To introduce students to the philosophical and methodology foundations of the subject and its place in the world of knowledge.
		• To know the brief ideas about geography in the ancient period of Greek, Roman, Arab & Indian.
		• To understand the modern geography contributed by different geographers.
		• To understand how a modern geographical concepts & ideas achieved in geography.
	S3 – GEOGRAPHY OF RESOURCES	• To acquaint with the fundamental concept of resources.
		• To aware students the about problems and utilization of resources.
		• To understand about conservation of resources for sustainable development of our nation.
		• To acquire the knowledge of importance and conservation of resources.
	S4 Practical: Interpretation of Toposheet, weather reports, Cartograp	• Introduce the student of top sheet, weather map.
		• Understand the mechanism function of topographical maps.
		• Understand interpretation if weather images.
		• Get knowledge about Geo Statistical Methods.
	S4 – PRACTICAL GEOGRAPHY – GEO-STATISTICAL METHODS	To learn concepts and tools for working with data.
		• To impart the ability to perform data management and analysis.
		• To acquire skill of statistical reasoning and inferential methods.,
		• To learn the ability to describe interpret and exploratory analysis of data by graphical and other means.
M.A/M.Sc-1st Y	Gg. 101: Principles of Economic Geography	• Students Understand about the Nature and Scope of Economic Geography, approaches and recent trends of economics in the field of geography
		• Understand about the basic Economic Processes- Production, Exchange, Consumption and its applications
		• Understand the fundamental theories in subject.
		• Review, understand and apply the modes of economics development by various models
		• Compare the economic environment and economic development in the world
		• Understand the economies scale, transportation and communication and nature and role of international trade.

	Gg. 102: Principles of Population and Settlement	• Understand the Nature and Scope of Population Geography and their evolution, significance and approaches for the study.
		• Understand the Sources of Population Data and History of World Population and some factors responsible for world population and data sources for study.
		• To understand the fundamental Concepts Related to Population such as density, over, optimum & under population, fertility, mortality and population for future perspectives.
		• To review and understand the subject matter with the help of Theories of Population
		• Fundamental/Basic Statistical Analysis using Statistical Software MS-Excel
		• Understand the Population Movement, Migration and some causes, consequences and its effects.
		• Understand the Nature and Scope of Settlement Geography Characteristics of Rural and Urban Settlements according to Indian Census and nature, scope, evolution and study methods.
		• Understand the settlement types, pattern and nature and process of urban settlement and some basic concept related to settlement geography.
	Gg. 103: Principles of Climatology	• Understand the introduction to Climatology considering weather & climate, role of climate in human life, aims, nature, scope, and some other sub division of the course.
		• Understand the Atmosphere and their process and function, origin, composition, structure of Atmosphere.
		• To examining the Insolation and Heat Budget and its factors effects and their relations to other some elements.
		• Understand the concept of temperature and factors, horizontal, vertical and invasion of temperature
		• Identify the Atmospheric pressure and winds humidity and concept of precipitation and its types.
		• To compare the Airmasses and Fronts, atmospheric destructions and its relation of local to global
		• Understand the climatic classification based of nature and variability in climatic variations by Koppen.s and Thornwaites climatologist.
	Gg. 104: Principles of Geomorphology	• Understand the nature, scope and significance of geomorphology and fundamental concepts in subject.
		• To examining the Origin and Evolution of the earth primary relief features by different theories in subject.
		• Understand about Exogenous Processes considering weathering and mass wasting and nature and types of the slope.
		• Evaluate the fundamental Model of Davisian Cylcle of Erosion to learn the function of fiver and its landforms development process.
		• Understand formation, process and development of Fluvial and Karst Landforms
		• To recognize and understand the formation, process and development of Glacial and Aeolian Landforms in geomorphology.
	Gg. 105: Practical of Computerize Data Analysis Techniques in Hum	• Students understand the Microsoft Excel, work sheet and learn the basic about the preparation of graphs, maps, in software for Presentation Techniques
		• To evaluate and investigation the population date in Microsoft excel software.
		• Applied and understand the data analysis techniques for rural and urban settlement and prepare the adequate maps, various graphs.
		• Evaluate the Data Analysis Techniques in Agricultural Geography and Climatology
		• Understand the various basics statistical Techniques for analysis the geographical data.
		• Organize the field work and collect the authentic and appropriate data about selected village and analysed that data help with Microsoft Excel, work sheet and prepare slide and the village report for presentation.
	Gg. 201: Geographical Thoughts	• Students understand the pre history of geographical Ideas in different duration form Greeks, roman``s, Arab and impact of explorations & discoveries.
		• Understand the modern geographical thoughts and contribution of eminent geographers.
		• To learn about the beginning of modern geography, fundamental concepts and models in geography.
		• Examining the sciences of geography and Geography in the Second Half of the 20th Century and its trends in geographical thoughts

		• Compare between the fundamental concepts in geography these are General Geography v/s Regional Geography, Physical Geography v/s Human Geography, and Determinism Geography v/s Possibilist.
		• To understand the present status and application of modern techniques and its uses in climatology, geomorphology, economics geography, and population geography.
	Gg. 202: Social and Cultural Geography	• Understand the nature, scope, and concept, relationship between culture and social environment, and right of information act.
		• To examining the cultural complex and traits of culture and its concepts.
		• Evolution to civilization and various cultural development and cultural system according to religion, language and geography, and global cultural changes.
		• To study the origin and growth of culture and agriculture and its basic concepts.
		• Understand the concept of space and social process and present status.
	Gg. 203: (B) Geoinformatics-I	• Understand the modern techniques in geography under this course such as remote sensing and aerial photography.
		• Examining the history, basic theories of EMR, and other concepts.
		• Understand and get the knowledge about fundamental concept, types of aerial photography, characteristics of aerial photographs and aerial camera.
		• Review on development of Indian remote sensing and functions of IRS.
		• To understand the types of remote sensing, and types of platforms in remote sensing.
		• To get an knowledge about satellite sensor and types of sensors, and their functions and characteristics
		• Understand the data product, types of data product and its applications and uses in remote sensing.
	Gg 204: Geo-Statistical Methods	• Understand the introduction of geo-sciences system and statistical techniques and characteristics of data.
		• To examining to probability assessment and their calculation procedures and applications and uses in different field of geography.
		• Understand the concept of sampling and designing and conducting a sample survey for data collation and data analysis.
		• Evaluate, calculate and understand the parametric statistics in geo-science system small sized sample and Non Parametric Statistics in geo-science system of various test and techniques.
		• To understand the regression analysis in geo sciences system and calculation, application in various field of geography.
	Gg. 205: Cartographic Techniques with the Help of GIS &	• Excursion Report
		• Understand the introductory part of GIS software, its tool, functions, data import, scale factors, and basics of digitization
		• Use this software for prepare the various types of maps in geography with the help of cartographic Techniques of GIS software.
		• Applied this software and cartographic techniques for analysis and study in rural settlement geography and urban settlement for planning and development.
		• Understand the cartographic techniques and its tolls, functions, applied in agriculture geography and physical geography for assessment and visualization purpose.
		• Help with these techniques, tool, methods, procedures; analysis potential and cartographic technique etc. prepare the project report considering all types of data related to geography of any selected study area or village.
M.A/M.Sc -2nd	Gg. 301 (A) : Rigional Geography of U.S.A	• Understand the location, geostrategic importance, characteristics of size of USA
		• To examine the physiographic features of USA
		• To understand climatic variations, types of soil and vegetation and their problems.
		• To extract and understand the natural resources, energy and mineral resources
		• Understand to agricultural activities, patterns, regions, problems and prospect, and some important issues related to USA.

	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 study methods.
		• Understand the types, functions and component of ecosystem and biodiversity, its types, conservation methods, and preservation of ecosystem.
		• 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 and conservation.
		• Study the environmental planning and management for future and also understand the climatic changes and its effect on environment and human being.
	Gg. 303: Geographical Information System	• Understand the all fundamental concept of GIS, potential of GIS, concept of space & time, objectives of GIS, elements of GIS, GIS tasks, history of GIS and GIS applications in different field.
		• To examine and understand the spatial and non spatial data models and all its functions components and applications in geography.
		• Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analysed in GIS environment.
		• Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes in geography.
		• GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning.
	Gg 304: Watershed Management & Planning	• Understand the fundamentals concepts related to watershed, significances of watershed development, demarcation of watershed, types of watershed according to area and shape
		• Study about the physical parameters of watershed, channel geometry and basin morphology.
		• Understand the hydrological parameters, rainfall, aerial precipitation, evaporation and transpiration, infiltration, run off and drainage.
		• 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 applic ations, 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 in software.
		• To understand and prepare the topology of point, line and polygon and understand non spatial data analysis.
		• To prepare the different kinds of map using GIS software and also create the profile of relief representation.
		• To understand the GPS and its functions, work, types and components for filed survey and make project report using both GPS and GIS software.
	Gg. 401: (B) INDUSTRIAL GEOGRAPHY	• Understand study about the industrial geography, its nature, scope, and different study methods.
		• To study the locations of industry and their activities primary and secondary and its factors responsible for same.
		• To review on world distribution of some industries and selected countries.
		• To understand the global nature of industrialization and related problems, methods of measuring the spatial distribution of manufacturing.
		• Understand the environmental degradation, industrial hazards and occupational health, manufacturing industry, role and factors affecting on the same.
	Gg. 402 (B): Geography of Trade & Transportation	• Understand the concept, development and significance of trade, its types, role of tread in the world etc.

		• To understand the trading blocks and trading pacts and international trade, its history, factors influencing, and India``s foreign trade.
		• To study the transport and its basics, physical, economical, social and cultural and modes of transportation, land ways, water ways, and airways and all its functions.
		• Examining the transportation network, measurement of accessibility, its hierarchies, hinterlands, models of network changes, gravity models and transport network and economic development.
		• Understand the problems and urban transport with growth of urban transportation in developing courtiers
	Gg. 403: (A) Research Methodology	• Examining the introduction of research, motivation in research, types of research, significance of research, research process and criteria of good research.
		• To understand the research problems, selecting research problems, literature review 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, characteristics of sampling design.
		• Study about type``s data and methods of data collection and study the processing and analysis of data using different statistical methods.
		• Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.
	Gg. 404 (C): Agricultural Geography	• Examining the introduction to agriculture, nature, scope, significance and development of agriculture geography, approaches to study.
		• Understand the fundamental concept, land use, crops, agricultural production and envelopment and study the determinants of agricultural activities, physical determinants, and socio-economic determinants.
		• To understand the agricultural system its meaning and concept, whittlesey``s classification of agricultural system, types of agricultural, study of the following types of agricultural in respect of area, salient features and their problems.
		• Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories.
		• Understand the agricultural statistics & land use survey techniques and agrarian revolution, meaning &merit and demerit of green revolution and white revolution.
	Gg. 404 (C): Agricultural Geography	• Understand the topographical maps, its introduction, types, index, grid reference, and interpretation of topographical maps
		• Study the satellite imageries- introduction, calculation of geographical area, interpretation of satellite imageries.
		• Understand the aerial photographs- introduction, definition, types, geometry of aerial photographs, methods, measurement of geographical area, elements of photo interpretation using stereoscope.
		• Study and understand the techniques of surveying, using dumpy level and theodolite instrument for practical and field work, research, and measurement and management of 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 of students.
		• develop interest in literature, fiction and poetry.
		• use their vocabulary for developing moral and social sense in life.
		• make special use of language for their expression..
FYBA	HIN 111 General Hindi	• Develop the comprehensive ability.
		• Inculcate moral and human values within themselves.
		• Understand the basic forms of fiction and poetry.
SYBA	HIN 231 S.Y.B.A GENERAL 2 :- Short Story	• develop literary tendencies.
		• understand the types of Hindi Short story writing.
	HIN 232 S.Y.B.A SPLCIAL I :- Kavyashatra	• know Indian Poetry structure in ancient and modern era.
		• know the importance of criticism.
		• increase vision regarding literary value.
		• know the concept and process of literature.
	HIN 233 S.Y.B.A SPLCIAL II :- Upnyas and Natak	• understand novel forms and their types
		• know the concept and process of dramatics
TYBA	HIN 351 T.Y.B.A GENERAL 3 :- One Act Play, Essay and Hindi Grammar	• introduce to the minor genres such as One Act Play, Essay and Hindi Prose
		• study Grammar which acquainted them to the correct usage language.
		• use literature to develop their social and moral sense in life.
	HIN 352 T.Y.B.A SPACIAL 3 :- Hindi Sahitya ka Etihas	• introduce to the minor genres such as One Act Play, Essay and Hindi Prose
		• study Grammar which acquainted them to the correct usage language.
		• use literature to develop their social and moral sense in life.
	HIN 353 T.Y.B.A SPACIAL 4 :- Bhasha vigyan Evam Hindi Bhasha Aandolan ka Etihas	• Inculcation of phonological competence among students.
		• study the various Dialects of Hindi.
		• get acquainted with Hindi grammatical forms and functions.
		• get acquainted with morphological concepts and processes.
		• get acquainted with the basic concepts in syntactic and semantic levels of Hindi language.
MA-I	HIN 1110 : General level – Katha Sahitya	• get information about the Novel and Story Literature.

		• get information about Hindi Literature Forms.
		• understand Socio-Cultural & Political Impact on Hindi Literature.
	HIN 1120 : Special level : Aadikalin avam Madhyayugin kavya	• get information about Sant poet & their Literature.
		• get information about Hindi"s Historical Literature Forms.
		• get information Well Known poet Vidyapati & Sant Tulasidaas
	HIN 1130 : Special level : Bhartiya kavyashastra ke siddhant avam a	• know Indian Poetry structure in ancient era
		• know the importance of criticism.
		• increase vision regarding literary value.
		• know the concept and process of literature.
	HIN 1140 : Special level : Aatmkatha	• get information Well Known female writer in Hindi
		• know the literary contribution of female writer
		• know the gender equality among the literature.
		• know the importance of feminism.
		• know the characteristics of feminine literature.
	HIN 1210 : General level : kathetar gadya sahitya	• get introduction of Hindi writer.
		• get information about the autobiography, essay and drama Literature.
		• get information about Hindi Literature Forms.
		• understand Socio-Cultural & Political Impact on Hindi Literature.
	HIN 1220: Spl. – Ritikalin kavya	• know the Medieval Hindi literature
		• get information about Hindi"s Historical Literature Forms.
		• get information Well Known poet Bihari, Ghananand & Bhushan
	HIN 1230 : Spl. Level – Paschatya kavyshastra evam Vaad	• know western Poetry structure in ancient and modern era
		• know the importance of criticism.
		• increase vision regarding literary value.
		• know the concept and process of literature.
	HIN 1240 : Spl. Optional : Dalit Vimarsh	• get introduction of Dalit agitation (India & World)
		• know the history of the Dalit movement in India
		• study of literature in Dalit approach.
	HI 2310 : General level : poetry	• get acquainted with the language, poetic style, diction of the age to which it belongs.
		• learn values through literary works.
	HI 2320 : Spl. level : Bhasha vigyan	• know the importance of language in human life.

		• know the various methods to the the study of language.
		• understand the communication process and method
	HI 2330 : Spl. level : Hindi sahitya ka Etihas	• Study the historical Development of Hindi Literature.
		• know the brief literature in same perio
		• know the various literary form in same period.
	HI 2340 : Spl. level optional : Loksahitya	• know the concept of folk-literature.
		• know the tradition of folk literature in India
		• know the co-relation between folk literature and other branches.
		• know the new trends study of folk literature in new era.
	HI 2410 : General level : poetic Drama, New Poetry and Gazal	• know the new trends study of poetic Drama, New Poetry and Gazal literature in new era.
		• get acquainted with the poetic style, diction of the age to which it belongs.
		• learn values through literary works.
	HI 2420 : Spl. level – Hindi Bhasha	• know the importance of language in human life.
		• know the various methods to the study of Hindi language.
		• understand the communication process and method.
		• know the importance of Devnagari Script
	HI 2430 : Spl. level – Hindi Sahitya ka aadhunik Etihas	• study the socio-cultural & political Background of from 1900 to 2000 periods.
		• know the brief literature in same period.
		• know the various literary form in same period.
		•
	HI 2440 : Spl. level optional- Prayojanmoolak Hindi	• understand the communication process and method
		• introduce the media writing
		• introduce the Devnagari script various aspect.

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.
SYBA Sem.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 Shivaji Maharaj 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 • 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 Shivaji Maharaj 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 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.
	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 Shivaji Maharaj 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 Indian society

		• Understand the History of Satvahanas, Shungas, Kushans, and Hunas.
		• Know about the Sangam age, the Cholas, Pallavas and Chalukyas.
TYBA Sem.V	HIS 351 -G3- History of Modern World (1789-1900)	• Learn about the causes and aftermaths of the French revolution.
		• Understand the factors responsible for the end of monarchy in France.
		• Understand the rise of Nepolean and how Meternic dominated the European politics.
		• Describe how feudalism came to end In Europe.
		• Describe the historical process which leads to rise of nationalism in Europe.
		• Understandhow industrial revolution encouraged to colonial expansion.
	HIS 352(B)- S3 - Expansion of the Maratha Power (1707-1761)	• Understand the importance of the Maratha history in 18th century.
		• Asses the circumstances under which rise of the Peshwas took place.
		• Understand the political scenario of the Maratha power in the early 18th century
		• Understand the policies adopted by early Peshwas.
	HIS 353 - S4 - History of Sultanate (1206-1526)	• Understand early difficulties of Sultans in India
		• Grasp territorial expansion of Sultanat Period.
		• Understand the administrative setup of Sultanat from central to local level.
		• Know the system of trade & commerce during the period of Sultant .
		• Understand the nature of village community & the relationship between the different sections of society.
		• Understand the aspects of fiscals & monetary system under the Sultanat.
		• Grasp the attitude of emperors towards religion under the regime of Sultanat.
TYBA Sem.VI	HIS 361 - G3 - History of Modern World (1901-1945)	• Understand the importance of world peace right after the world war Ist.
		• Evaluate the Russian revolution and the first experiment of the communist government.
		• Understand the fascism and the rise of dictatorship in Europe.
		• Explain the aftermaths of the World War II on the world politics.
		• Understand how Russia and America emerged as superpowers on the verge of cold war.
	HIS 362(B) -S3- Expansion and fall of the Maratha Power (1761-18	• Explain the circumstances of the Maratha power after the battle of Panipat.
		• Knowthe reasons of political disintegration of the Marathas.
		• Understandthe nature of Aglo-Maratha relations.
		• Understandthe central and provincial administration of Marathas under the Peshwas.
	HIS 363 -S4- History of Mughal (1526-1707)	• Understand the political situation of India on the eve of Babar's invasion.
		• Grasp territorial expansion of Mughal empire
		• Understand the emergence & consolidation of Sher Shah.

		• Grasp the Mughal concept at divine theory of kingship & state
		• Understand the administrative set up of Mughals.
		• Comprehend the basic features of Mansabdari& change in it during 17th century.
		• Know the system of trade & commerce during the period of Mughals.
		• Understand the nature of village community.
		• Grasp the some aspects of fiscals & monetary system of Mughals.

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	DSC (S2) Mar 233 Shitya Vichar (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 Shitya Vichar (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 Jyotirao Phule and his personal ideological connection
		To get information about the writings of Mahatma Jyotirao Phule
		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
		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
TYBA SEM -V	Mar G3 WadMay type Drama	owing only the nature of the play
		Components of the play Understanding the elements of storytelling, personification, struggle, dialogue and language style etc.
		Introducing the mythological, historical, social, rural, dalit and feminist types of drama prevalent in the history of Marathi drama.

TYBA SEM -VI	Mar G3 WadMay Type Fine Prose	To know the nature of tomorrow by raising fine prose
		To know the nature of tomorrow by raising fine prose
		Understanding the format of Sahitya Akademi Award
TYBA SEM -V	Mar –S3 History of Modern Marathi literature 1920-1960	To introduce the cultural elements of the period from 1920 to 1960
		To introduce the cultural elements of the -period from 1920 to 1960
		Introducing the various streams of Vadmayin from 1920 to 1960
TYBA SEM -VI	ar -S4 An Introduction to poetry and drama from 1920 to 1960	Introducing the various streams of Vadmayin from 1920 to 1960
		Introduce the leading writers of the 1920s and 1960s in the genres of fiction, drama and poetry and their literary works.
TYBA SEM -V	Bhasha- Vidyan	Understanding the nature of language and its function in human life
		Explain the structure and function of tone formation process
		Understand the concept of self and the concept of form
TYBA SEM -VI	Bhasha- Vidyan	Understanding their nature of syntax and semantics
		To introduce some important elements of traditional Marathi grammar
F.Y.B.SC SEM I/II	Study of story and communication skills	Notice the characteristics of the stories in the Mandeshi Manasan 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	MAR 111: Madhyayugin Marathi Vangmayacha Itihas (Prarambh to	• get Information about the history of Medieval Marathi Literature.
		• get Information about Medieval Marathi Literature Forms.
		• study Social Change effect on Medieval Marathi Literature.
		• understand Socio-Cultural & Political Impact on Medieval Marathi Literature.
	MAR 121: Madhyayugin Marathi Vangmayacha Itihas (1650 to 181	• get Information about Sant, Pandit & Sahir Medieval Marathi Literature.
		• get Information about Medieval Marathi Literature Forms.
		• get Information Well Known poet Sant Tukaram & Ramdas .
	MAR 112: Samiksha	• know the importance of criticism.
		• increase vision regarding literary value.
		• know the concept and process of literature.
	MAR 122: SANSHODHAN PRAKRIYA	• develop of critical approach about Art & literature.
		• know the research methodology & process.
		• know the importance of research.
	MAR 113: sahityik:Annabhau sathe	• know the literary contribution of the writer.
		• know the life value among the literature.
		• get Indroduction of writer.
	MAR 123: Lokshahir: Annabhau sathe	• know the folksong of annabhau
		• study life and literary value of Annabhau``s Povada And Lavani
		• Study of Annabhau``s folk- Drama
	MAR 114/A: Strivadi Sahitya	• introduce new trends in Marathi literature.
		• know the importance of feminism.
		• know the characteristics of feminine literature.
	MAR 124/A: Strivadi Sahitya	• get Introduction of feminine agitation (India & World)
		• know the history of the feminine movement in Maharashtra.
		• study of literature in feministic approach.
MA-II	MAR 231 Aadhunik Marathi Vangamayacha Itihas (1945-90)	• study the socio-cultural & political Background of 1945 to 1960 periods.
		• know the brief literature in same period.

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. • apply Cayley-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.
T.Y.B.Sc.:	1. MTH – 351 : Topics in Metric Spaces	**Upon successful completion of this course the student will be able to:**
		• To understand continuous functions on metric spaces.
		• To understand connected metric spaces.
		• To understand complete metric spaces.
		• To understand compact metric spaces.
	2. MTH – 352 : Integral Calculus	**Upon successful completion of this course the student will be able to:**
		• To learn differentiability and integrability.
		• To understand the mean value theorem of integralcalculus.
		• To understand how to solve improperintegrals.
		• To understand the importance of Legendrepolynomials.
	3. MTH – 353 :Modern Algebra:	**Upon successful completion of this course the student will be able to:**
		• understand the normal subgroups
		• know the quotient group
		• understand the permutations
		• learn the quotient rings
		• learn the isomorphism of rings
	4. MTH – 354 : Lattice theory:	**Upon successful completion of this course the student will be able to:**
		• understand posets and chains.

		• understand lattices.
		• understand various types of lattices.
		• learn ideals and homomorphism.
	5. MTH-355(B): Elementary Number Theory	**Upon successful completion of this course the student will be able to:**
		• understand prime numbers
		• learn theory of congruences.
		• know about perfect numbers and Fermat"stheorem.
		• Understand Fibanocci numbers.
	6. MTH- 356 (B) Integral transforms	**Upon successful completion of this course the student will be able to:**
		• understand fourier transform and inverse fourier transform
		• know the finite fourier sine and cosine transform
		• understand the inverse fourier sine and cosine transform
		• know the Z-transform
		• know the inverse z-transform
	7. MTH -361 : Measure and Integrations Theory	**Upon successful completion of this course the student will be able to:**
		• learn measurable sets.
		• learn measurable functions.
		• understand Lebesgue integrals.
		• learn Fatou's lemma.
	8. MTH-362: Methods of Real Analysis:	**Upon successful completion of this course the student will be able to:**
		• Know sequence
		• Know the series
		• Understand the Fourier series.
	9. MTH-363: Linear Algebra:	**Upon successful completion of this course the student will be able to:**
		• learn vector spaces.
		• understand theorems on basis and dimension.
		• know about eigen values and eigen vectors.
		• learn linear transformations.
	10. MTH-364 : Ordinary and Partial differential Equations	**Upon successful completion of this course the student will be able to:**
		• understand the importance of ordinary and partial differentialequations.
		• learn about exact differential equations and various types.
		• learn about second order linear differential equations.
		• study series method of solution.
		• study about linear partial differential equations.
	11. MTH-365(A): Optimization Techniques	**Upon successful completion of this course the student will be able to:**
		• understand the LPP
		• know the TP
		• know the AP
		• know the game theory
	12. MTH-366(A): Applied Numerical Methods	**Upon successful completion of this course the student will be able to:**
		• solve a system of linearequations.
		• learn numerical differentiation and integration.
		• learn about interpolation polynomials.
		• apply numerical methods for differential equations.
MSc-I	1. MT-101: Advanced Real Analysis	**Upon successful completion of this course the student will be able to:**
		• To learn measurable sets
		• To learn aboutintegrable functins.
		• To know about differentiation of functions.
		• To understand monotone functions.
	2. MT -102 Topology:	**Upon successful completion of this course the student will be able to:**
		• learn about topological spaces.
		• learn about connectedness.
		• understand compact tspaces.
		• understand countability and separation axioms.

	3. MT-103 Abstract Algebra:	**Upon successful completion of this course the student will be able to:**
		• learn about subgroups.
		• learn about factorisation.
		• understand Noetherian Rings.
		• understand Hilbert basis theorem.
	4. MT-104: Ordinary and Partial Differential Equations	**Upon successful completion of this course the student will be able to:**
		• learn about second order differential equations.
		• learn about linear partial differential equations of order one.
		• understand non-linear partial differential equations of order one
		• under partial differential equations with constant coefficients
	5. MT-105: Theory of Fuzzy sets:	**Upon successful completion of this course the student will be able to:**
		• know the fuzzy set
		• understand the operation on fuzzy sets
		• know the fuzzy number
		• understand the fuzzy relations
	6. MT201: General Measure theory:	**Upon successful completion of this course the student will be able to:**
		• learn measurable spaces.
		• learn measurable functions.
		• understand lp spaces and integration.
		• learn measure and differentiation
	7. MT202: Complex analysis:	**Upon successful completion of this course the student will be able to:**
		• learn about power series.
		• learn the importance of Riemann-Stieltjes Integration
		• gain knowledge of singularities and residues.
		• apply the knowledge of residues in complex integration.
	8. MT203: Linear Algebra:	**Upon successful completion of this course the student will be able to:**
		• learn about modules.
		• learn about Canonical forms.
		• Understand rings.
		• understand primary decomposition of modules.
	9. MT204: Mathematical Methods:	**Upon successful completion of this course the student will be able to:**
		• learn about boundary value and initial value problems.
		• learn about orthogonality and Fourier series.
		• learn about method of separation of variables.
		• study Bessel functions.
	10. MT205: Number Theory:	**Upon successful completion of this course the student will be able to:**
		• learn about arithmetic functions.
		• learn about congruences.
		• study quadratic residues.
		• understand primitive roots.
MSc-II	11. MT-301: Topics in Functional Analysis	**Upon successful completion of this course the student will be able to:**
		• learn about normed linear spaces.
		• learn about inner product spaces.
		• learn about Banach spaces.
		• learn about Hilbert spaces.
	12. MT -302 : Statistical Techniques:	**Upon successful completion of this course the student will be able to:**
		• learn about mathematical probability.
		• study theoretical distributions.
		• study correlation theory.
		• study Regression theory.
		• learn about sampling and various statistical tests.
	13. MT -303 : Topics in Field theory	**Upon successful completion of this course the student will be able to:**
		• study algebraic extension and splitting fields.
		• To study about algebraic closure.

		• To study perfect fields of infinite fields.
		• To learn about Galois extensions.
		• To study Fundamental theorem of Galois Theory.
	14. MT 304: Fluid Dynamics	**Upon successful completion of this course the student will be able to:**
		• learn about properties of fluids.
		• learn about conservation of mass.
		• learn about equations of motion.
		• study about 2-dimensional motion.
		• study luminary flow.
	15 MT-307: Elements of Graph Theory	**Upon successful completion of this course the student will be able to:**
		• understand the concept of graphs
		• know the trees and connectivity
		• understand the Eulerian and Hamiltonian graphs
		• know the concept of coloring of graphs
	16. MT -401 Advanced Mathematical Methods :	**Upon successful completion of this course the student will be able to:**
		• learn about integral equations
		• learn about Fourier transforms.
		• study calculus of variations.
		• study Z-transforms.
	17. MT -402 : Operations Research :	**Upon successful completion of this course the student will be able to:**
		• learn about PERT AND CPM.
		• learn about Decision theory.
		• study Queuing theory.
		• study Replacement theory.
		• study inventory management.
	18. MT -403 : Commutative Algebra:	**Upon successful completion of this course the student will be able to:**
		• learn about various types of modules.
		• know about Noetherian and Artinian modules.
		• understand integral extensions.
		• study valuation rings.
		• understand Dedekind domain.
	19. MT-404: Advanced Numerical Methods:	**Upon successful completion of this course the student will be able to:**
		• learn about solving system of equations.
		• learn about numerical differentiation and integration.
		• understand numerical solution of initial value problems.
		• understand numerical solution of boundary value problems.
	20. MT-407: Linear Integral Equations	**Upon successful completion of this course the student will be able to:**
		• Know the linear integral equation
		• Know the Fredholm integral equation
		• Know the volterra integral equation

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.

	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. • 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 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.

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

	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

		• 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, andf ungi
		• 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"

	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

	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. • Empower the students to acquire engineering skills and practical knowledge which will help them in everyday life. • Understanding of the course will create scientific temperament.
	PHY-102: Dynamics and Elasticity	• Kinematics and dynamics of rigid body in detail. • Study the elastic behavior and working of torsional pendulum • 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. • To study the elastic behavior of materials • 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. • 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. • Understand the basic idea about types of magnetization.
	PHY-203: Lab-II	• Thermal conductivity of a bad conductor by Lee's method. • To study the variation of thermo e. m. f. across two junctions of a thermocouple with temperature. • To determine the Refractive Index of the Material of a given Prism using Sodium Light. • Study of spectrometer and determination of angle of prism. • 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. • Understand basic concept of thermodynamics and to distinguish between work done due to Adiabatic and isothermal changes. • To state laws of thermodynamics and concept of internal energy. • To understand Carnot's ideal heats engine, Carnot cycle and its efficiency, Carnot's theorem, Otto and Diesel engines with their efficiencies. • 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. • To distinguish between P-N diode, Zener diode, LED, solar cell and Photodiode. • To understand half wave, full wave and bridge rectifiers. • To demonstrate voltage regulation using Zener diode. • To understand basic construction and operation of bipolar transistors (NPN and PNP) • Know about various number systems and their applications. • To understand the Boolean algebra and simplification of logic circuits.
	PHY-303: Lab III	• To test thermal conductivity of a bad conductor. • To study the variation of thermo e.m.f across two junctions of a thermocouple with temperature. • To determine the Refractive Index of the Material of a given Prism using Sodium Light. • Study of spectrometer and determination of angle of prism. • Study of I-V characteristics of solar cell. • Experimental verification of logic gates.
	PHY-304: Skill Enhancement course I	• Make interpretation about the renewable energy sources. • Understand the types of energy, energy storage and energy conversion systems. • Understand availability of solar radiation, solar geometry, instrument used for measuring solar radiation • 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. • To understand composition of two S.H.M.s of equal frequencies along same line of vibration, at right angles. • To demonstrate Resonance and its types- Mechanical resonance, Acoustic resonance, Electrical resonance and Optical resonance. • To understand the concept of sound and to classify sound frequencies.

		• To understand Doppler effect in sound and light and its application.
	PHY-402: Optics and Lasers	• Understand the basics of solving problems of geometrical optics. • Gain knowledge on various theories of light. • Understand the natural behaviour of aberration in lens • Understand the basic principle of laser and characteristics. • 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. • To analyse frequency response of LCR circuit.
	PHY-404:Electrical circuits and network skills	• To understand basic knowledge in the analysis of electric network. • Apply knowledge to design of electrical circuits.
T.Y.B.Sc.	**PHY-351: Mathematical Physics**	• Understand differential equations. • Apply special function to solve integral.
	PHY-352: Classical Mechanics	• Learn the basics of potentials and fields, central forces and Kepler's laws. • Familiarise with Lagrangian and Hamiltonian formulations of classical mechanics.
	PHY-353: Atomic and Molecular Physics	• Will have an understanding of quantum behavior of atoms in external electric and magnetic fields.
	PHY-354(A): Electronics-II	• Helps to provide knowledge of various electronic circuits and applications. • Learn about principles and applications of Field effect transistor, Unijunction transistor and Silicon controlled rectifier. • Learn about Operational amplifier characteristics, parameters and applications.
	PHY-355: Solid State Physics	• Have a clear understanding of crystal structures and X-ray diffraction. • The students will be able to formulate basic models for electrons and lattice vibrations for describing the physics of crystalline materials. • To understand specific heats of solids.
	PHY-356(D): Microprocessor-I	• Imparts knowledge of microprocessor and interfacing devices. • Provides knowledge of architecture and applications of microprocessor.
	PHY-361: Classical Electrodynamics	• To realize the importance of application of Biot Savarts law and Amperes law. • To explain and solve advanced problems using Maxwell's equations.
	PHY-362: Quantum Mechanics	• Have grasped the idea of wave mechanics and gained the concept of eigen values, eigen functions an d learn the basic postulates of quantum mechanics. • To find solutions to Schrodinger's equations for many systems such as particle in a box, hydrogen atom etc.
	PHY-363: Nuclear Physics	• Helps students to explore the interior of nucleus and interaction between nucleons. • Understanding the structure of nuclei through nuclear models. • Understanding nuclear reaction dynamics and its mechanism. • Have a deep knowledge about Radioactivity, Nuclear fission and Nuclear fusion
	PHY-364: Statistical Mechanics and thermodynamics	• Realize the importance of thermodynamic functions and applications of Maxwell's relations.
	PHY-365: Elements of Material Science	• Understand the basic concepts and properties of material. • An idea about all types of crystal defects and dislocations. • An idea of plastic deformation and fracture of material from engineering point of view.
	PHY-366(D): Microprocessor-II	• Learn assembly language programming and arithmetic. • Learn interfacing with peripheral I/O devices.
	PHY-357 and PHY-367: Practical Course- I and III	• Perform the procedure as laboratory standards.
	PHY-358 and PHY-368: Practical Course- II and IV	• The students should gain knowledge of different experimental techniques involved in electronics.
	PHY-359 and PHY-369: Project work- I and II	• Understand the basic ideas about the project. • Understand the working procedure of the project.
M.Sc. Part I	**PHY-101: Mathematical methods for physics**	• Learn about special types of matrices that are relevant in physics. • Learn the fundamentals and applications of Fourier series, Fourier and Laplace transforms, their inverse transforms etc.
	PHY-102: Classical Mechanics	• Theory of small oscillations in detail. • Solve the mechanics problems using Lagrangian formalism.
	PHY-103: Quantum Mechanics	• Theory of angular momentum and spin matrices, orbital angular momentum etc.

		• Study the concept of basis and operators and bra and ket notation.
	PHY-104: Solid State Physics	• Introducing the basic concept via structural properties of materials. • Rigorous study of various theoretical treatments of superconductivity, including BCS theory. • Know basic ideas of dimagnetism, paramagnetism and ferromagnetism.
	PHY-201: Statistical Mechanics	• To learn the fundamental differences between classical and quantum statistics. • Familiarise in depth about statistical distribution and have basic ideas about Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics and their applications. • Impart the knowledge about the phase transitions.
	PHY-202: Classical Electrodynamics	• Study in depth about polarization, bound charges and boundary condition. • Understand the relevance of displacement current in the context of electromagnetic wave propagation.
	PHY-203: Material Science	• Information about phase diagrams and general diffusion theory in detail. • Impart the knowledge about the properties of materials.
	PHY-204(B): Electronic Instrumentation	• Understand the basics of Cathode ray oscilloscope and signal generator. • Identify the various parameters that are measurable in instrumentation.
	PHY-105 and PHY-205: Basics Physics Lab. I and II	• Design, build and testing of electronic circuits with opamp's, discrete electronic components and IC chips. • The students should be able to apply the concepts of electronics.
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. • To learn about destructive and non destructive techniques. • 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. • Understand the working of nuclear detectors and counters and familiar with nuclear particles and different particle accelerators. • 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. • 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. • Gets an idea about basic principle of wind energy conversion and basic components of wind energy conversion system. • 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. • 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,internal brances of administration,structure of govt etc.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.
TYBA SEM V	POL-351-b-Thoughts of Dr.B.R.Ambedkar	paper is attempts to discuss the main concepts and philosophy of Dr.Ambedkar. Work and ideology of Dr.Ambedkar is essential for elimination of poverty, caste, untouchabilty, varna, discrimination in society.His contribution to entire society is highly appreciated by world. And therefore students should lern philosophy of constitution, equality,womens liberty, democracy, thought of religion is essential for development and betterment of human life . It is also useful to enhance ability for thinking different way with human kind and values.
SEM VI	POL-361-b- Thoughts of POL-361-b- Thoughts of	• This paper is attempts to discuss the main concepts and philosophy of Dr.Ambedkar.Work and ideology of Dr.Ambedkar is essential for elimination of poverty, caste, untouchabilty, varna, discrimination in society. His contribution to entire society is highly appreciated by world. And therefore students should learn philosophy of constitution, equality, womens liberty,democracy,thought of religion is essential for development and betterment of human life . It is also useful to enhance ability for thinking different way with human kind and values.

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.
TYBA SEMV	PSY-351-(G-3) Modern Applied Psychology	Facilitate the learning of traditional emerging fields of psychology.
		Understand the relationship between theoretical and practical psychological principals.
		Impart knowledge of the Applied Psychology.
		Understand the Clinical Applications.
SEM VI	PSY-361A - (G-3) Applied Psychology and Human Life	Prepare the students to function effectively and confidently in wide range of society.
		Understand the application in controlling criminal behavior-Social awareness and Social Responsibility.
		Application in professional life- sales and negotiations and responding through proper gesture and knowledge.

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.
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
	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.
TYBSc	**ZOO-351: Non-chordate III**	• understand the Mendelian and Neo-mendelian genetics
		• study the phenomenon of dominance, laws of segregation, independent assortment of genes.
		• understand the different types of genetic interaction, incomplete dominance, co-dominance, inter allelic genetic interactions, multiple alleles and quantitative inheritance etc. • understand the principles and mechanisms of linkage and crossing over.
		• study human sex anomalies including eugenics and euphenics, genetic drift and disorders due to mutant genes.
	ZOO-352 Cell and Molecular biology	• interpret Symbiotic-Non symbiotic nitrogen fixation in leguminous plant

		• interpret Assimilation of sulphur and phosphorus by plants
		• interpret Bio fertilizer, comparison between bio fertilizer and chemical fertilizer
		• understand the Concept of plant pathology,classification of plant diseases based on symptoms
		• understand Plant diseases- a)Bacterial blight of pomegranate b) Bacterial blight of cotton c) Whip smut of sugarcane
		• understand Integrated pest management(IPM)- insect resistant crop
	ZOO-353: Mammalian Histology and Physiology I	• Understand the History, scope, principle, merits and demerits of animal cell and tissue culture.
		• Understand the Laboratory facilities and culture media for animal tissue culture.
		• Understand the Cell lines, application of animal cell and tissue culture, biohazards and Biosafety.
		• Get information about transgenic animals, cryopreservation, apoptosis, Animal cloning.
		• Understand the Cell transformation, DNA microinjection.
		• Understand the Economic aspects of transgenic animals and Ethical issues of animal welfare and animal rights.
	ZOO-354 Biochemistry	• Understand the Concept and types of strain improvement techniques
		• Understand the Fermentative productions of representative biomolecules like Enzymes, antibiotics, vitamin, beverages
		• Understand the Recovery and purification of biomolecules
		• Understand the Quality control procedures like sterility, toxicity, carcinogenicity testing
		• Understand the Concept and features of cost economics and GLP
	ZOO-355- Systematics, Evolution and Palaeontology	• Understand the Primary Source of microbes in various foods
		• Understand the Definition, general features and different products of milk
		• Understand the Microbial analysis of milk
		• Understand the Microbial production of fermented food viz. cheese, bread etc.
		• Understand the Causes of food spoilage, Spoilage of fruit, Vegetables, Dairy product
		• Understand the Food Preservation –Chemical Method, Physical method
	ZOO 356- A)Biotechnology	• Understand the Domestic waste water treatment, Classification Of Waste water treatment
		• Understand the Biodegradation-Concept,Biodegradation of hydrocarbon,Measurement of biodegradation
		• Understand the Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation)
		• Understand the Phytoremediation-Concept(Rhizofiltration,Phytotransformation,Phytostimulation)
		• Understand the Xenobiotics and recalcitrant ,Generalize Fate of xenobiotic Degradation
		• Understand the Xenobiotic biodegradation, Herbicide Degradation ,Metabolism of Xenobiotics
	ZOO-357 Practicals related to Zoo 351 and Zoo 353	• Understand the Fermentative production of biomolecules like vitamin, antibiotics, ethanol etc
		• Understand the Biochemical estimation of fermentative products like organic acids, vitamin, antibiotics etc.
		• Understand the Chemical estimation of penicillin
		• Understand the Industrial visit and demonstrative session at outdoor industry
	ZOO-358: Practicals related to Zoo 352 and Zoo 355	• Understand the Blood film preparation and identification of blood cells, human blood grouping
		• Understand the Immunological techniques, double diffusion, widal test, ELISA.
		• Understand the Animal cell culture media preparation and sterilization .
		• Understand the Survival curve of bacteria against UV radiation

		• Understand the Immobilization of whole cell .
		• Understand the Nucleic acid separation using Agarose gel electrophoresis.
	ZOO-359: Practicals related to Zoo 354 and Zoo 356	• Understand the Isolate and characterize food fermenting organisms
		• Understand the Analyse the mycotoxin from fungus contaminated food materials
		• Understand the Microscopic examination of food and milk by breed methods
		• Understand the Qualitative checking and evaluation of pasteurization of milk by MBRT test and phosphatise test
		• Understand the Study the quality of soil by determining the total carbohydrate, nitrogen and phosphorus.
		• Understand the Study the quality of water by determining the Biological oxygen demand and chemical oxygen demand.
	ZOO-361:Chordates III	• Understand the Basic of rDNA technology, Concept and principle and application of genetic engineering.
		• Understand the Principles, material and methodology of techniques involved in rDNA technology, include Gel electrophoresis, blotting techniques, sequencing methods, PCR. RFLP, RAPD, DNA fingerprinting.
		• Understand the Definition, history and scope of bioinformatics
		• Understand the Classification database used in bioinformatics Primary and secondary.
		• Understand the BLAST, gene bank, EMBL, DDBJ, NCBI
	ZOO-362 General Embryology	• Understand the Preperation of media and sterilization of plant tissue culture materia
		• Understand the Methods of plant tissue culture
		• Understand the Methods of secondary metabolites production
		• Understand the plant pathogen and pathology concepts
		• Understand the methods of embrio cullture
		• Understand the Methods of biofertilizer preperation
	ZOO-363 Mammalian Histology and Physiology II	• Understand the Immune system, types of immunity, primary and secondary lymphoid organ.
		• Understand the Innate and acquired immunity, antigen, immuneresponse primary and secondary immune response, complement system, interferons.
		• Understand the Ag-abinteractions,precipitation, agglutination, RIA, ELISA, monoclonal antibodies.
		• Understand the Immunosuppresion, Vaccines, passive immunization, immunodeficiency disorder.
		• Understand the Immunepharmacology, nonsteroidalanti-inflammatory drugs and glucocorticoids.
	ZOO -364:Research Methodology	• Understand concept and types of Biotranformation
		• Understand the Enzyme immobilization types and applications
		• Understand the Types and principles of biofules
		• Understand the Biogas and conversion of lignocellulose to biogas
		• Understand the Biosorption and Bioleaching of metals
	ZOO- 365:Microtechnique	• Understand the Concept, classification production and applications of secondary metabolites
		• Understand the Classification and production and characterization of antimicrobial ganets
		• Understand the Biological techniques to estimates antibiotics like MIC
		• Understand the Structure, mechanisms and applications of different antibiotics like sulfonamides, griseofulvin, quinolones etc.
		• Understand the Concept and principle of protein engineering

		• Understand the Molecular aspects of drug designing
	ZOO-366:C) Applied Zoology III (Vermiculture, Poultry and Fisheries)	• Understand the Concept of evolutionary, molecular taxonomy
		• Understand the Concept, characteristics of biodiversity and its conservation methods
		• Understand the Concept, types and applications of bio-indicators
		• Understand the Concept of biostatistics and samples
		• Understand the Techniques of sampling and data analysis
		• Understand the Biological data analysis through various techniques of measures of dispersion
	ZOO-367 Practicals related to Zoo 361 and Zoo 363	• Understand the Isolation and identification of Xanthomonascitri, Rizobiumsp, Azotobactor
		• Understand the Determination of IAA Activity
		• Understand the Pereration of stocks and sterization of media for PTC
		• Understand the Callus culture of medicinal plants
		• Understand the Shoot tip culture of medicinal plants
	ZOO-368:Practicals related to Zoo 362 and Zoo 365	• Understand the Monohybrid and dihybrid crosses, single point and two point crosses,Gene mapping
		• Understand the conjugation, competent cell system and transformation.
		• Understand the isolation of DNA from E. col
		• Understand the various domains of bioinformatics, database.
		• Understand the Gene and protein information searching and accessing from web
		• Understand the Protein secondary structure prediction using Rasmol.
	ZOO-369: Practicals related to Zoo 364, 366 and Project work.	• Understand the Sterility testing of pharmaceutical products injectable/Ophthalmic solution, membrane filter technique
		• Understand the Chemical assay of antibiotic (Streptomycin/penicillin), Microbiological assay of Streptomycin or Penicillin by cup plate/ paper disc method, Determination of Minimum Inhibitory Concentration (MIC) of Antibiotic.
		• Understand the Microbial limit test (MLT) of pharmaceutical product, Isolation of antibiotic resistant bacteria population by gradient plate method
		• Understand the Validation of laminar air flow cabinet, Validation of autoclave using biological indicator

		• Understand the various techniques of isolation of seed lac from raw lac.
		• Compulsory visit to the Goatary and Lac Cultivation Industry gives more knowledge to the students.
SYBSc	ZOO 231: Non Chordates-II	• Understand the Characters of class Asterias with help of animal Sea star.
		• Understand the internal as well as external morphology of that animal.
		• To study and understand the concepts-Metamorphosis, regeneration and autotomy.
		• Understand the Mouthparts of insects.
		• Understand the Canal system in sponges.
		• Understand the Locomotion in Protozoa.
		• To observe and study the Foot in Mollusca.
	ZOO 232: Medical Zoology	• To study and understand the scope and branches of Medical Zoology.
		• To aware the students for various parasites and diseases which spreads in human with the help of study of host-parasite relationship.
		• To increase awareness for the health in students.
		• Understand the various disease causing vectors like Mosquitoes.
		• To aware about the typhoid, cholera like disease.
		• Understand the importance of medical diagnostic and also understand the term forensic Entomology.
	ZOO 241: Chordates -II	• To study and understand the external as well as internal characters of class Aves,by studying animal Columbia livia domestica.
		• Understand the various systems of pigeon.
		• Understand the General Topics like Accessory respiratory organs in fishes.
		• Able to know the reptiles of Mesozoic era.
		• Understand the adaptations in aquatic mammals.
	ZOO 242: Applied Zoology	• Introduce the term apiculture to the students.
		• To aware the students and provides the economical importance of Apiculture.
		• Understand the Bee keeping equipments and apiary management.
		• To study and understand the various species of Bees.
	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 in molluscs.
		• To understand the viruses like chikungunya, Swine flu, tetanus.
		• To aware the students for virus carrying vectors, like Aedes, culex and anopheles.
		• To understand the various diseases diagnostic methods.
	ZOO 243:Practicals sem-II	• Study of Evolutionary history of animals.
		• Study and understand the types of fins.
		• Understand the adaptation in Aquatic mammals ex. whale and seal.
		• Study and understand the diseases, pest, parasites and predators of Honey Bee.
		• To study and aware the students for honey bee products and their uses.
		• To aware the students for Adulteration.
TYBSc	ZOO 351: Non-Chordates III	• To understand the Parasite leech Derive.
		• Understand relation between host and parasite.
		• Study the various systems in leech.

		• Understand the economical importance of Leech.
		• Understand the terms Spiracles.
		• Understand the osmoregulation in Protozoa.
		• Understand the process of pearl formation.
	ZOO 352: Cell and Molecular Biology	• Understand the cell biology and molecular biology.
		• Understand the various cell types and cell divisions.
		• Understand the structure and function of the cells.
		• Understand the term cell signalling.
		• Aware the students for Cancer.
		• Understand the Tools and Techniques in Molecular Biology.
		• Understand the term ELISA technique and DNA finger printing.
	ZOO 353: Mammalian Histology and Physiology I	• Understand the terms Histology and Physiology
		• Understand the cell, tissue, organ, system and organisms.
		• Study the derivatives of skin- horns, nails, hairs.
		• Study and understand the terms- acidosis, alkalosis, asphexia, hypoxia, anoxia and cyanosis.
	ZOO 354: Biochemistry	• Understand about the agencies responsible for Production of various products using biochemistry.
		• Understand the term pH ,Buffer.
		• Understand the structure and function of carbohydrate, amino acids, proteins, and lipids.
		• Understand the concept Enzymes and also Vitamins and minerals.
		• Understand the Principle role of Vitamins in metabolism and Deficiency diseases.
	ZOO 355: Systematic, Evolution and Palaeontology	• Understand the Origin and development of animals.
		• Understand the process of evolution.
		• Clear the concepts of Universe, theories of life cycles.
		• Understand the Lamarkism, Neo-Lamarkism and Darwinism.
		• Understand the Geological time scale.
		• To aware the students for Palaentology ie. Fossils and its significance.
		• Understand the Zoogeographical realm.
	ZOO 356: Biotechnology	• Understand the various Applications of Biotechnology.
		• Study and Understand the Hybridoma technology as well as Enzyme biotechnology.
		• Study and understand the DNA Recombinant technology.
		• Understand the industrial and environmental biotechnology.
		• Study and understand the Stem cell biotechnology.
		• Understand the Scope and Significance of Biotechnology.
	ZOO 357: Practical I	• Understand the Internal as well as External characters of the Non-Chordates.
		• Study and understand the different types of tissues.
		• Understand and study of histological permanent slide of mammalian skin.
		• Understand the methods how to measure the blood pressure as well as heart beat under normal and stress condition.
		• Understand the techniques of preparation of Haemin crystals.
	ZOO 358: Practical II	• Understand and study of different cell organelles with respect to their structure and function.
		• Understand the Estimation technique of DNA and RNA.

		• Understand the process of Vital Staining by using Janus Green-B stain.
		• Understand preparation of Paper model of DNA.
		• Understand the Hierarchic classification of Non-chordates.
		• Understand the evidences from evolution.
		• Understand the Geological time scale.
		• Understand the Study of Fossils of different animals.
	ZOO 359:Practical III	• Understand the test of Identification of carbohydrates, like Solubility test, Molisch‟s test, Iodine test, Benedict‟s test, Barfoed‟s test, Phosphoric acid test and Osazone test.
		• Understand the process of isolation oh Casein from milk by isoelectric precipitation.
		• Understand the Detection of amino acids by Lowry‟s method.
		• Study the Qualitative test for fats.
		• Understand the detection of amino acids.
		• Isolation of starch from potato and haemoglobin from blood sample.
		• Understand the preparation of solution of given percentage, normality and molarity.
		• Understand the analytical instruments.
		• Estimation of DNA and RNA.
		• Understand the working principle of laminar air flow, autoclave, inverted microscopes, colorimeter.
		• Unerstand the techniques of cell culture and preparation of primary culture media.
		• Understand the process of Electrophoresis.
		• Understand the Biogas plant.
		• Understand the process of isolation of microorganisms.
	ZOO 101:Structure and function of Invertebrates	• Understand the Organization And Life: Homology and Analogy, Diversity of invertebrates, Phylogeny of invertebrates.
		• Understand the Organization of coelom and its types.
		• Understand various processes like Digestion, Locomotion, Respiration, Excretion, Nervous system.
		• Understand the larval forms of the invertebrates.
		• Understand the colonial and social life in invertebrates.
	ZOO 102:Cell and Developmental Biology	• Understand the structure and function of the cell and its organelles.
		• Understand the various processes like cell cycle and cell signalling.
		• Understand the terms: Gametogenesis, Fertilization and early development.
		• Understand the Morphogenesis and Organogenesis in animals.
		• Understand the Aging, Apoptosis and Senescence.
	ZOO 103:Quantitative Biology	• Understand the Applications and uses of Statistics.
		• Understand the Data Classification: Frequency, Relative frequency, class limits, class width, inclusive and exclusive method of classification.
		• Understand the measures of central tendency and dispersion like Computation of arithmetic mean, mode and median.
		• Understand the Computation of Variation.
		• Understand the Correlation and Regression.
		• Understand the testing of hypothesis.
		• Understand the Statistical hypothesis, Null Hypothesis, Alternative hypothesis etc.
		• Understan the t-test, F-test.
		• Understand the analysis of variance, meaning of ANOVA. One way and two way classification.
	ZOO 104:Practical Sem-I	• Understand the various systems of Grasshopper by Dissecting the Grasshopper.

		• Understand the process of Mounting.
		• Understand the classification of Invertebrates.
		• Study of various cell organelles by using their microphotographs.
		• Understand how to prepare the mitotic chromosomes.
		• Understand the Detection of Carbohydrates by PAS reaction, Protein by bromophenol blue, DNA by feulgen reaction, Mitochondria by Janus green method.
	ZOO 105:Practical Sem-II	• Understand the Preparation of permanent slide of Chick Embryo.
		• Understand the different types of eggs.
		• Study and understand the term Cleavage, Blastulae, Gastrulae, and types of Placenta.
		• Constuct the frequency distribution and its graphical representation.
		• Understand the computation of Arithmetic Mean, Mode, median.
		• Understand the computation of Standard deviation, Variance and Coefficient of Variation.
		• Understand the correlation and REGRESSION.
		• Understand the F-Test and ANOVA.
	ZOO 201:Structure and Function of Vertebrates	• Understand the Organization of Protochords, Urochordata and Cephalochordata.
		• Understand and study of the Origin and phylogeny of the vertebrates.
		• Understand the classes of vertebrates: fishes, Amphibia, Reptilia, Aves and Mammals.
		• Study of endoskeleton of human.
		• Understand the comparative account of urogenital system of vertebrates.
		• Understand the Receptor organs in vertebrates.
	ZOO 202: Biochemistry and Enzymology	• Understand the Basics of Biochemistry and Chemistry of biomolecules and their significance.
		• Understand the Protein structure e. Primary, Secondary, Tertiary and Quaternary.
		• Understand the chemistry of hormones.
		• Understasnd the structure and properties of the enzymes as well as its activity.
		• Understand the process of Immobilization.
	ZOO 203: Tools and Techniques for Biology	• Understand the Principle, parts, and its application of Microscopic techniques.
		• Understand the principle of analytical instruments.
		• Understand the working principle of UV-Vis principle, Colorimeter, Fluorimeter.
		• Understand the term Electrophoresis, Radioactivity.
		• Understand the working principle of Centrifuge, Incubator, pH meter.
		• Understand the cell culture techniques and separation techniques in biology.
		• Understand the function of Biosensors.
	ZOO 204:Practical Sem II	• Understand the classification of Urochordata up to order Doliolida and Cephalopodata up to order Amphioxiformes.
		• Understand the classification of Pisces.
		• Understand the classification of Amphibia, Reptilia, Aves, Mammals.
		• Understand the Axial skeleton of human.
		• Understand the urinogenital system of vertebrates.
		• Understand the Preparation of Buffer of known molarity and pH.
		• Determine the pKa value of Glycine.
		• Estimate the Cholesterol, Nucleic acid, DNA and RNA.
		• Determine the protein by using Lowery method.
		• Estimate the Vit “C” from suitable source.

	ZOO 301 (A):Animal physiology sec-I	• Understand the Importance of physiology and branches of it.
		• Understand the terms-Osmosis, diffusion, pH and Buffer.
		• Understand the Digestion and Excretion process, by studying the Organs of it.
	ZOO 301 (B):Animal physiology sec-II	• Understand the process of Metabolism.
		• Understand the term Detoxification.
		• Understand the Circulatory system and Lymphatic system.
		• Study the nervous system.
	ZOO 302 (A):Freshwater Zoology	• Understand the Aquatic environment like Lotic habitat and Lentic habitat.
		• Understand the Physical conditions of water: Depth, Viscosity, Density, Buoyancy.
		• Understand the chemical conditions of water: dissolved oxygen and carbon-di-oxide, hardness etc.
		• Understand the physiological and protective adaptations in: Protozoa, Rotifer, Crustaceans, Fishes.
		• Understand the respiratory and locomotory adaptations in freshwater insects and their larvae.
		• Understand the economical importance of molluscs.
	ZOO 302 (B): Scientific research Report writing	• Understand the scope of Communication.
		• Understand the techniques which improve the communication.
		• Understand the terms listening, Conferencing, oral communication, presentation skill.
		• Understand how to write a research report.
	ZOO 303(A): Medical physiology	• Understand the Digestive System and disorders of Liver, Pancreas, Stomach.
		• Understand the Excretory System-Renal function test, Nephrotoxicity, Nephritic syndrome.
		• Understand the Circulation and Respiratory System, Blood clotting, Clotting factors and like all this.
		• Understand the disorders like asthma, bronchitis, swine flu, emphysema.
		• Understand the Nervous system and its disorders like Alziemer, Parkinson‟s.
		• Understand the Process of reproduction and endocrinology.
	ZOO 303 (B):Animal Biotechnology	• Understand the animal cell and tissue, Introduction of animal tissue culture and terminologies used in animal biotech.
		• Principle and merits and demerits of Animal cell/tissue culture.
		• Understand the Equipments and media for cell culture.
		• Understand the cell culture I-Measurement of Viability and cytotoxicity of cell.
		• Understand the process of scaling up of Animal cell culture.
		• Understand the cell transformation, risks and safety in the animal cell culture.
		• Understand the applications of animal biotechnology, Application of Recombinant DNA.
	ZOO 304:Practical-I	• Understand the units of measurements buffers, normal solutions and normalities, physiological Saline solution.2
		• Demonstratesd the principle of dialysis as well as Osmosis.
		• Determine the Salivary digestion and Pancreatic digestion.
		• Determine the GFR.
		• Determine the Nitrogenous excretory product.
		• Understand the Antioxidant activity.
		• Understand the reflexes in man.
		• Estimate the plasma proteins by copper sulphate specific Gravity method. Prepare the culture of Paramoecium, Daphnia and Hydra.
		• Understand the locomotory and respiratory adaptations in amphibians and reptiles.

		• Study of aquatic and semi aquatic adaptations in amphibians and reptiles.
		• Understand the economical importance of Freshwater fishes and crustaceans.
	ZOO 305:Practical-II	• Understand the Communication techniques.
		• Prepare a protocol of any experiment.
		• Prepare tables and graphs from any hypothetical data.
		• Understand the paragraph writing.
		• Record the lung volumes and capacities by spirometry.
		• Determine the SGOT/SGPT.
		• Perform semen analysis.
		• Study the blood clotting and bleeding time, RBC and WBC counting.
		• Construct the ideal animal cell culture laboratory and understand the working principles of instrument using in it.
		• Prepare a cell culture media.
		• Understand the Cell counting and testing cell viability.
		• Prepare a single cell suspension.
		• Understand the process of ovulation e. Induction of Super ovulation in any suitable animal.
		• Assessment of glandular product for its biological activity.
	ZOO 401 (A): Animal physiology -II	• Understand the water relation and ionic regulation as well as Adaptation To freshwater habitat; Adaptation to terrestrial habitat; Adaptation to brackish water habitat.
		• Understand the support and location means their properties. Also study the skeleton joints.
		• Understand the physiology of movements.
		• Understand the respiratory system and Respiratory pigments.
		• Understand the process of Temperature regulation.
	ZOO 401 (B):Animal physiology II	• Understand the reproductive system.
		• Understand the Endocrine system and Mechanism of hormone action.
		• Understand the Integumentary system e. Structure of skin.
		• Understand the Sensory physiology e.sensory coding, chemoreception, Mechano reception, Mechano transduction, mechanoreceptors.
	ZOO 402(A): Systematic and evolutionary biology	• Understand the principles and methods of taxonomy.
		• Understand the Levels of structural organization.
		• Understand the Outline classification of Animals :Classification of animals.
		• Able to understand the Natural history of Indian subcontinent.
		• Understand the Common parasites and pathogens of humans, domestic animals, Host-Parasite relationship,
	ZOO 402(B): Advanced methods in Biology	• Understand the process of microbial fermentation and production of Useful Macromolecules.
		• Understand the Application of immunological principles e. Transgenic animals, molecular approaches to diagnosis and strain identification.
		• Understand the terms, Genomics and Proteomics.
		• To know the Biodiversity, Breeding in animals.
		• Understand the Bioremediation and Biosensors as well as Epigenetics.
	ZOO 403(A):Fundamental Processes and Tools in Biology	• Understand the Various Microscopic techniques.
		• Know the terms Photometry and Fluorimetry.
		• Understand the Electrophoresis and Radioactivity technique.
		• To know the working principles of various instruments like Centrifuge, Incubator, pH meter.

	ZOO 403(B):Forensic Biology	• Understand the term Forensic Science: Def, History and Development.
		• Know the Various Forensic laboratories in India.
		• Understand the various steps includes in the investigation in crime cases.
		• Unerstand and know the Various Biological fluids and its analysis.
		• Understand the Forensic Entemology.
	ZOO 404:Practical I	• Understand the Adaptation in various water bodies.
		• Determine the oxygen consumption.
		• Understand the different types of joints.
		• Understand the Super ovulation in Rat,
		• To know the Structure and function of skin and its derivatives.
		• Study the Endocrine glands with the help of slides/photographs.
		• Understand the Estimation of hCG.
		• Understand the level of organization and criteria used for classification.
		• Understand the various parasites and pathogens of human and domestic animals.
		• To demonstrate the Endo parasites in Frog.
	ZOO 405:Practical II	• Understand the process of Fermentation.
		• Understand the Isolation technique IgG immunoglobulin by Ammonium sulphate precipitation
		• Understand the various equipments used in Animal cell culture.
		• Understand the Biosensors.
		• Understand the calibration process.
		• Determine the Lamberts and Beers Law.
		• Understand and able to Record the ECG.
		• Determine the Molecular Weight of DNA by electrophoresis.
		• Identify the Animal hair and human hair.
		• Identify the own Blood group.