

Program outcomes, program specific outcomes and course outcomes for all programs offered by the institution are stated and displayed on website and communicated to teachers and students.

Bachelor of Business Administration

Programme Specific Outcome:

1. Study of Business Administration enables the student to enter the arena of Management of organizations, industrial activities and individuals, and also crisis management.
2. Study of Finance Management enlightens the students to understand the financial requirement, availability, allocation and utilization of financial resources.
3. Study of Marketing Management enables the students to learn about marketing strategies, viability of a project, marketing techniques, market demand study, etc.
4. Human Resource Management enriches style of management of people, management of self and optimum use of human capital.
5. The curriculum also contributes towards personality development of an individual.
6. BBA Course enables students from heterogeneous background to learn and develop skills related homogeneous platform called 'Management'.
7. When students graduate from this course, acquainted and equipped with management and its various implications, industry treats them as 'Job Ready' products.
8. This is a professional course with high degree of employability. Therefore the 'Return on Investment' is quick and highly probable in comparison to its contemporaries.
9. Along with core management papers, there are other subjects taught in this course like Statistics, Operational Research, Business Communication, which enriches the Critical, Operational and Analytical abilities of the students as well as boosts their public presence and confidence.

This course therefore focuses upon the 'All Round' development of the students academically, socially, psychologically & industrially.

Course Outcomes:

1. Students improve their communication skills and they learn the integrated parts of corporate communication. They learn how to draft corporate correspondence and design CV, notice etc.
2. Principals of Management & Organizational Behaviour - The subject Principles of Management help students learn the basics of Management which helps them to have an overview on management as a whole. Organizational Behaviour on the other hand helps understand the psychological or Behavioural patterns of the working of the organization, which strengthens a student's perception about an Organization and its component human behaviour.
3. Business Accounting - This Enables the students to understand the fundamentals of accounting and also aims to highlight how accounting principles work within a business concept by means of practical problems and solutions.
4. Entrepreneurship Development - Upon successful completion of this course the student develop and can systematically apply an entrepreneurial way of thinking that will allow them to identify & create business opportunities
5. Organisations function and flourish in the environment, therefore the students should be well versed with organisational impact on environment and how both can survive and sustain each other with mutual cooperation.
6. This subject will enable students to compare data and facts from the past and draw inference to take most appropriate decision.
7. Upon successful completion of this course students will be able to develop and understanding of the applications of managerial economics. Students can interpret regression analysis and discuss why its employed in decision making.
8. It helps the students learn to strike a balance between corporate profit earning and social welfare. They learn the basics of Corporate Social responsibility.
9. The Students will develop an understanding about the Human Resource Management systems and its relevance in organizations and learn necessary skill sets for application of various Human Resource issues and this knowledge will help in taking correct business decisions.
10. Marketing management is one of the important subjects to be understood, by a student of management. The knowledge arms students with the understanding of the mechanisms of market.
11. This subject helps the students to know about the account to be maintained by the managers. It helps them to understand the different procedures of managing accounts and how they are created. It involves the students to take decisions after analysing the various accounts coming under it.
12. Students learn the basics of Production and Operations. The learning is supported by practical exposures of industrial tours. Students learn about the Japanese Quality endorsement systems set as a benchmark of quality standard specifications.

13. This paper helps the students to understand the growing need and different features of information technology and to optimally utilize it for the smooth running and development of the organisation.

14. Students learn the basics of research orientation in business. They get hands on training on Research methodology. They learn how to design hypothesis and how the same could be tested.

15. This paper gives them in depth knowledge about different economic variables like National Income, GDP, Unemployment rate etc.

16. Students can learn about the various tools and techniques applied to finance. It helps them to take decision about investment. It helps students to analyse and recommend about worthy of an investment whether its personal or corporate.

17. Students will get to know about different concepts regarding tax planning, computation of Income from House property, computation of income under the head of salary, profits and gain from business and profession, concept of Goods and Services Tax (GST), taxable income and tax liability of companies etc.

18. It enables them to acquire hands on experience from work floor and relate theory with real world experience.

19. Quantitative Techniques Upon successful completion of this course the students can identify the source of a quantifiable problem, recognise the issues involved and produce an appropriate action plan. Students can translate a problem into a simple mathematical model to allow easier understanding and to aid problem solving.

20. Legal Aspects of Business - Knowledge about the laws that control organizations, and its components helps students have the understanding about the legal framework within which corporations are bound to work. Companies Act 2013, Limited liability Partnership Act 2008, Consumer protection Act 1986, and Right to Information Act 2005 consolidates the legal understanding of the student.

21. Strategic Corporate Finance (*only for Finance Major*) - Students can have detailed idea of different types of costs arising in a business concern, strategies for Management Buy in and out, financial distress and corporate restructuring, process of company valuation etc.

22. Investment Analysis and Portfolio Management (*only for Finance Major*) - The outcome of the subject taught under this is the real life investment and what are the parameters the investors must consider and how portfolio is managed. The students can act as an advisor to those who are investing in financial market. This subject is all about investment in share market, mutual funds other avenues available in financial market. The students after learning this subject can act as a friend, philosopher and guide to the investors.

23. Consumer Behaviour (*Only for Marketing Major*) - Students are made aware of the determinants of consumer behaviour. They know about Consumer rights. They are introduced to different models of business communication.

24. Advertising and Brand Management (*Only for Marketing Major*) - The Students will be able to examine Advertising and its functions in relation to brand success. They will be able to

critically evaluate how creative concepts and executions will contribute to brand success and analyse advertising and branding techniques and apply them to a variety of different issues.

25. Business Policy and Strategy - This enables the students to understand different market polices available and what are the different strategies to be adopted to overcome different policy related challenges.

26. Financial Institutions and Markets - Students can learn the role of financial system on economic development and also various issues related to risk and return, role of regulatory bodies, significance of commercial banking etc.

27. Investment Banking and Financial Services (*only for Finance Major*) - The main focus of this field of study is to teach students how to minimise the risks associated with investments.

28. Marketing of Services (*Only for Marketing Major*) - In a dynamic economic environment where services contribute to almost two-third of the world economy, this paper helps students to understand the different associated challenges in the industry and what actions and processes are to be taken to deliver the goods to end customers.

29. Research Project - Students take up a major project based on their internship or from the project guide, upon which they conduct independent survey and research work to find out certain predefined objectives. These activities induce independent thinking and analytical ability in them.

Bengali

Programme Specific Outcome

1. Grasp the complexity of language as a communication system shaped by cognitive, biological, cultural, and social factors.
2. Demonstrate understanding of the concepts, theories, and methodologies used by linguists in qualitative and quantitative analyses of linguistic structure, and patterns of language use.
3. Demonstrate understanding of processes of language change and variation, the role of language in reflecting and constructing social identities, and the distinctive properties of human language.
4. Are able to collect, organize and analyze linguistic data from diverse languages, to form hypotheses about language structure/use and to test those hypotheses against new data.
5. Acquire the technical vocabulary and theoretical tools of the field, necessary to read published linguistic research.
6. Can synthesize research findings and construct a readable, well supported research report.
7. Are ready for significant scholarly participation in the field of linguistics.
8. Studying Bengali Literature can raise students' awareness of aspects of Bengali culture

9. It enables students to understand that culture is a broad concept that can mean different things to different people.
10. Students can understand and respond to ideas, viewpoints, themes and purposes in texts.
11. They can relate texts to the social, historical and cultural contexts in which they were written and can analyse how writers' use of linguistic and literary features shapes and influences meaning writers' use of organisation, structure, layout and presentation.
12. They also can generate ideas, planning and drafting.
13. They are able to use and adapt the conventions and forms of texts on paper and on screen.
14. Students can vary sentences and punctuation for clarity and effect.
15. Studying Literature helps the students to improve vocabulary for precision and impact.
16. It also helps the students to develop varied linguistic and literary techniques. Students learn structuring, organising and presenting texts in a variety of forms on paper and on screen.
17. The course of Literature helps them to develop and use editing and proofreading skills on paper and on screen.
18. Help them Commenting on language use and also locating and extracting information.

Course Outcome

Paper I and II

- The course provides a brief introduction to the history of Bengali language. The beginning of writing system in Bengali within the emergence of writing culture in India is addressed to start with. The followed by a discussion on the language family of the Indian sub-continent and *IndoAryan* family of languages to which Bengali belongs to. The subsequent three parts deal with Old Bengali, Middle Bengali & Modern Bengali phases of the language. Rather than discussing the features only, we plan to introduce some texts of the said periods (i.e :Chorjapod, Srikrisnokirton, Mongolkabya)

Paper III and IV

- The spoken language is very different in various geographical locations. Also there are dissimilarities in various social groups within a language – community. We tend to present before the students various dialects spoken in various parts of Bengal and surrounding areas. Also we will discuss different language styles in various social groups in this course.
- Cultural Behavior of the language community Here the students will get to know the behavior of this cultural community called *Bengali*. Both the historical and descriptive approach will be taken into account.

Paper V

- Bengali has a rich oral tradition from the olden days. Objective of this paper is to focus upon various oral traditions like Folktales, Folklore/Songs and Myths and proverbs of Bengali and to make the students familiar to that abundance of beliefs and practices which had been a source of energy for our everyday life and had been passed down from earlier generations to us.
- To enhance students' knowledge to words Bengali culture, folk elements are most important component. In this paper, students will be acquainted with some of the performing arts of Bengal.
- This paper will survey the literary History from modern period to contemporary. Trends in these periods are to be discussed.(i.e:Modern Novel and short stories, Essay literature etc)

Paper VI

- Rabindranath Tagore is the first recipient of Nobel prize in Literature in the Asia continent. So, we tend to introduce some of his literary works in this paper.

Paper VII

- A Text of collected Essays by important Authors to be studied in this course. There will be ten essays to be studied in the whole semester/Courses

Paper VIII

- This paper will highlight the cultural background and history of Bengali Culture ,and history of Sanskrit, and English Literature also .

BOTANY

Programme specific outcome

- Students develop a holistic knowledge in the undergraduate course starting from archegoniate group, Taxonomy of Angiosperm, Palaeobotany, Anatomy to advanced fields of plant science such as Cell and Molecular Biology, Plant protection , Plant metabolism.
- In practical classes students work out the specimens which help them to understand and to identify the specimens.
- The local and long field excursions help the students to develop knowledge about the local flora and flora of specific phytogeographic region in their natural habitat.
- Students build up awareness and knowledge in environmental related issues such as waste management, biodiversity conservation, pollution monitoring, etc.
- Students after passing post graduate course can explore in various field of research viz. Conservation of Ecosystem, Environmental Disaster Management, herbal drugs and medicinal plants, Host pathogen interaction, crop protection and plant disease management, GIS and remote sensing, Intellectual Property Rights, Quarantine etc.
- Students of UG course get the chance to have an exposure in skill enhancement courses such as Plant breeding, Mushroom culture and elective courses such as Industrial and environmental Biology, Medicinal and Ethno Botany etc . This will open up new avenues and job opportunities for the students .
- The students of Post Graduate Department get a hands on experience in Research during carrying out dissertation work. This helps the students to have research exposure which will be beneficial for those who will join the Ph.D. programme in future.
- The contents of core course and optional courses in PG curriculum are beneficial for the students to get prepared for NET/SET/GATE and also GRE and other competitive examinations.

Course specific outcome

Undergraduate

The undergraduate course in Botany under CBCS credit system has been semesterised in 2018. In each semester the **core courses** have theoretical and practical papers.

Sem I

In Sem I there are two core courses Phycology and Microbiology (CC1) and Mycology and Phytopathology (CCII). A brief account on classification, life history and economical importance of different algal and fungal genera are taught in these two papers which help the students to develop a clear concept on these two cryptogamic groups of plant kingdom. Besides, the practical classes the local field excursions enable the students to identify the fungal and algal genera. In Microbiology part the students develop a clear knowledge on different aspects of bacteria and virus. Students learn various culture techniques and bacterial staining method in practical class. In Phytopathology, students study about important plant diseases, host pathogen interaction and plant disease management. The study of Phytopathology is very much essential in the field of crop protection and disease management .

Sem II

In Sem II there are two core courses Plant Anatomy (CCIII) and Archaeogoniate (CC IV). The subject Plant Anatomy helps the students to know about Internal structural organisation of plant organs. The students also do practical to study the anatomical details of plant tissue and organs. In archaeogoniate paper the students study about Bryophyte, Pteridophyte and Gymnosperm groups of plant kingdom. In this semester students go for a long excursion in a place of higher altitude to observe and identify these groups of plants in their natural habitat.

Sem III

In Sem III there are three core courses. In Palaeobotany and Palynology (CC5) paper the students are taught about plant fossils, pollen structure and applied palynology viz. Forensic palynology, aeropalynology etc. In Reproductive Biology of Angiosperms (CC6) the students learn about morphology of angiosperm and embryology. Plant systematics paper (CC7) deals with the Taxonomy of Angiosperms. This is a very important field of Plant Science which deals with Plant nomenclature, System of Classification and Taxonomic families. The students work out on angiosperm specimens in practical class and they also learn to identify plants. A number of local field excursions are in the curriculum during this semester. Students learn to prepare field note book, voucher specimen book and herbarium specimens.

Sem IV

In Sem IV students are offered three core courses. In Plant Geography paper (CC8) students study about plant evolution, plant ecology and plant evolution. Long excursion to a phytogeographic region in India is being carried out in this semester. This field trip helps the students to understand the characteristic flora of that particular phytogeographic region. In Economic Botany paper (CC9) students study about economically rich groups of plant crops viz. cereals, legumes, sugar and starches, spices, beverage, oil and fat, drug yielding plants etc. In Genetics paper (CC10) students get a clear concept on various topics of Genetics. In practical classes the students study about mitotic and meiotic chromosomes.

Sem V

In this semester two core courses are offered. In Cell and Molecular Biology paper (CC11) students come to know about origin and evolution of cells, DNA replication, transcription, translation, gene regulation and recombinant DNA technology. In Practical classes students carry out a number of experiments on Plant Molecular Biology. In Plant Biochemistry (CC12) paper students study about basic molecules of life, energy flow and enzymology and other biochemical processes of plant cell.

Sem VI

There are two core courses in this semester. In Plant Physiology (CC13) paper students acquire knowledge about various physiological processes viz. Photomorphogenesis, plant growth regulators, seed dormancy etc. In plant metabolism paper (CC14) students study about primary and secondary metabolic pathways such as photosynthesis, respiration, nitrogen and lipid metabolism etc.

Skill enhancement course and Discipline specific elective course :

In third and fourth semesters students have to take one skill enhancement course such as Plant Breeding, Mushroom Culture technique, Biofertiliser etc. In fifth and sixth semesters students have to opt for two Discipline specific elective courses in each semester such as Industrial and environmental Biology, Medicinal and Ethno Botany, Plant Biotechnology, Natural Resource Management etc. These special courses will open up new avenues for the students and they will be able to acquire knowledge in the applied fields of Plant Sciences.

CHEMISTRY

PSO1. Understand bonding, physical properties, stereochemistry and reaction mechanism in organic molecules.

PSO2. Understand reactions in unsaturated, carbonyl and associated compounds and organometallics.

PSO3. Study nitrogenous compounds, rearrangement reactions and logical synthesis of organic molecules.

PSO4. Study and analyze organic spectroscopy.

PSO5. Study carbocycles, heterocycles, pericyclic reactions, carbohydrate and biomolecules.

PSO6. Analyze solid binary mixtures; determine boiling points of organic liquid samples; prepare small scale organic compounds; identify pure solid and liquid samples, Separate organic mixture in chromatographic method and analyzes organic compounds by spectroscopy.

PSO7. Understand atomic structure, radioactivity, periodic properties and acid base reactions.

PSO8. Understand chemical bonding, structure and properties of covalent compound, structure, defects and properties and chemical forces of ionic and non ionic crystalline solids.

PSO9. Study preparation, bonding, structure and properties and reactions of compounds of s, p, d and f block elements.

PSO10. Study organometallic and coordination compounds and bioinorganic chemistry.

PSO11. Understand principles of separation techniques, quantitative estimation of metal ion single or present in a mixture, ore and mineral analysis, spectroscopic techniques.

PSO12. Identify cation and anion present in a mixture of inorganic salts, oxides, hydroxides or carbonates.

PSO13. Estimate quantitatively metal ions present in mixture by volumetric analysis.

PSO14. Understand basic principal of thermodynamics, thermochemistry, equilibrium, colligative properties, phase rule and statistical thermodynamics.

PSO15. Study and understand properties of ideal gases; speed, kinetic energy heat capacity, real gases, intermolecular forces, liquefaction.

PSO16. Understand properties of liquid; viscosity and surface tension.

PSO17. Understand principle of quantum mechanics and analyze related phenomenon, study quantum mechanical model.

PSO18. Understand and analyze molecular spectroscopy.

PSO19. Determine physical properties like surface tension, viscosity, partition coefficient, rate constant of a reaction, pKa, pKIn etc.

CO1. Understand physical and chemical properties of chemical compounds and correlate these properties with their structure, bonding, intermolecular forces and other features as explained by different theories and principles of chemistry.

CO2. Understand periodic correlation of properties of metals, nonmetals and metalloids.

- CO3. Understand and practice basic principle of analytical techniques used for identification, separation and estimation of chemical species.
- CO4. Understand laws of nature and apply them to explain the behavior of solid, liquid and gases and their mixture.
- CO5. Understand different laws which guide the physical processes and chemical reactions and measure the parameters involved.
- CO6. Understand principle of spectroscopy and analyze molecules by spectroscopic techniques.
- CO7. Understand and practice instrumental methods used in chemical analysis.

COMMERCE

PROGRAM SPECIFIC OUTCOMES:

After successfully completing B.Com(H) in Accounting and Finance Specialization(only specialisation offered in our college) :-

- PSO1. Students will be able to prepare and regularly maintain books of accounts for any individual or corporate entities.
- PSO2. Students will be able to analyse and interpret the financial statements of organizations to depict their financial performance.
- PSO3. Students will be capable to perform Tax Management and Tax Planning and will be able to compute income tax liability of an individual assessee.
- PSO4. Students will develop drafting skills and writing techniques of business letter, circulars and other formal notices.
- PSO5. Students will get the basic structural idea of various Management disciplines, which will help them to perform managerial functions in the future.
- PSO6. Students will acquire basic legal knowledge to understand various Acts and draft contracts and other legal documents.
- PSO7. Basic knowledge of Accounting Software is acquired by the students.
- PSO8. Analysis of Capital Market, Stock Exchange, Financial Instruments and Financial Services are learnt by the students. They acquire working knowledge of the financial markets prevalent in India and financial system currently running in the Indian Economy.

PSO9. Students will acquire economics based knowledge for various strategic investment decision making and savings planning.

PSO10. Students will get the knowledge on Auditing and its quality assurance and gets updated understanding of all the current changes of statutes and laws taking place in the Indian Economy as well as in the World Economy.

COURSE OUTCOMES:

- CO1. Proper commerce-based understanding will help in developing rational individuals in the society to deal with relevant economic dilemma.
- CO2. Helps the student individually in understanding the concept of Saving-Investment and its impact in the Macro-economic development of the society.
- CO3. Updated knowledge of computation and management of direct and indirect taxation helps in curtailing black money and secures the Government's estimated revenue.
- CO4. Helps in development of the tertiary sector of the economy by providing rational decision makers, managerial personnel and marketing sales force to the market. Also the upkeep and management of the human resource department of every corporate or non-corporate entity is facilitated with the help of the knowledge gained by studying Financial Management, Human Resource Management and Marketing Management.
- CO5. Updated knowledge of Accountancy and Book-keeping at par with the World helps India to shine in the World Economy and encourages the MNCs to invest in India Inc. and in turn develops the overall market and economy of our country.
- CO6. The study of Human Resource Management helps in positioning the right person to the right job and in turn increases the efficiency of every sector. It also helps in addressing employees' grievances leading to job satisfaction; stress relief and overall sense of containment of every working individual in the society.

COMPUTER SCIENCE

Program specific Outcomes (PSO):

After successful completion of B.Sc. in Computer Science, students gain the knowledge of the following:

1. An essential skill of problem solving with different dimensions of computer science and computing.
2. Ability to understand the principles and working of computer systems to assess both the hardware and software aspects.
3. Professional skills of software design including familiarity and practical competence with a broad range of programming language and open source platforms.
4. Ability to apply mathematical methodologies to solve computation task, model real world problem using appropriate data structure and suitable algorithm.
5. Ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.
6. Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
7. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
8. Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Course Outcomes (CO):

1. Study of Computer Fundamentals, Digital Circuits and Basic Electronics enables the students to describe the usage of computers, why computers are essential components in business and society and identify categories of programs, system software and applications.
2. Computer Networks and Data Communication helps the students to utilize the Internet Web resources, evaluate on-line e-business system and solve common business problems using appropriate Information Technology applications. It also gives the knowledge to distinguish various types of network standards and communication software.
3. Study of Numerical Analysis and Discrete Mathematics helps to apply algorithmic, mathematical and scientific reasoning to a variety of computational problems.
4. Study of Software Engineering helps to gather requirements, design correctly, implement and document solutions to significant computational problems and analyze performance standards.

5. Data Structure and Algorithm helps to analyze and compare alternative solutions to computing problems.
6. Study of Computer Organization, helps to learn about the design of computers which includes both overall design, or architecture, and their internal details, or organization.
7. Study of Operating System & System Software helps them to understand how operating system allows a computer's hardware components, including processors and drives, to communicate with its software components, such as applications and data instruction sets.
8. Formal Languages and Automata Theory helps to perform computations on an input by moving through a series of states or configurations.
9. Study of C language can be used for low-level programming, such as scripting for drivers and kernels and it also supports functions of high level programming languages, such as scripting for software applications etc.
10. Study of Java and Python will allow the students to build multi-device, multi-platform app, GUI applications to 3D graphics for games to real-time mathematical simulations.
11. Study of 8085 Microprocessor helps the students to understand the design of personal computers as well as a number of other embedded products. They will understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
12. Computer Graphics and Image Processing will help the students to design abstract, synthetic objects such as mathematical surface in 3D, animations, motion dynamics and update dynamics.
13. Database Management System (DBMS) helps the students to understand how to handle huge volumes of data and multiple concurrent users, data integrity, consistency, security, and appreciable system performance.
14. Study of UNIX helps students to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks, monitor system performance and network activities.
15. With HTML, CSS, PHP and MySQL students will be able to understand the fundamentals of web, can design and develop dynamic, database-driven web applications using PHP. Students will learn how to connect to any ODBC-compliant database, and perform hands on practice with a MySQL database to create database-driven HTML forms and reports etc. Students will also learn how to configure PHP and Apache Web Server. They can also describe the function of JavaScript as a dynamic webpage creating tool.

ECONOMICS

Programme specific outcome:

1. Sound financial understanding and application in day to day life.
2. Understand how government helps in mediating between consumers and producers.

3. Understanding international relation in terms of economic co-operation.
4. Addressing various economic problems like unemployment, inflation etc.
5. How economic growth of a country affects in general income of a person.
6. Prescribe methods of improving health, education and other activities of life.
7. Good employment opportunity in teaching, research and industry.
8. Helps in starting new ventures as successful entrepreneurs.

Course outcome:

1. Introductory microeconomics:

This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations.

2. Mathematical method for economics:

This is the first of a compulsory two-course sequence. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

3. Introductory macroeconomics:

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variable like savings, investment, GDP, money, inflation, and the balance of payment.

4. Intermediate microeconomics:

The course is designed to provide a sound training in microeconomic theory to formally analyze the behaviour of individual agents. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts. This course looks at the behaviour of the consumer and the producer and also covers the behavior of a competitive firm

5. Intermediate macroeconomics:

This course introduces the students to formal modeling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context. It also introduces the students to various theoretical issues related to an open economy.

6. Statistical method for economics:

This is a course on statistical methods for economics. It begins with some basic concepts and terminology that are fundamental to statistical analysis and inference. It then develops the notion of probability, followed by probability distributions of discrete and continuous random variables and of joint distributions. This is followed by a discussion on sampling techniques used to collect survey data. The course introduces the notion of sampling distributions that act as a bridge between probability theory and statistical inference. The semester concludes with some topics in statistical inference that include point of interval estimation.

7. Intermediate microeconomics 2:

This course is a sequel to Intermediate Microeconomics I. The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers general equilibrium and welfare, imperfect markets and topics under information economics.

8. Intermediate macroeconomics 2:

This course is a sequel to Intermediate Macroeconomics I. In this course, the students are introduced to the long run dynamic issues like growth and technical progress. It also provides the micro-foundations to the various aggregative concepts used in the previous course.

9. Indian economy 1:

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

10. Development economics 1:

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points. Given the rapid changes taking place in India, the reading list will have to be updated annually.

11. Indian economics 2:

This is the first part of a two-part course on economic development. The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored. The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

12. Development economy 2:

This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list will have to be updated annually.

This is the second module of the economic development sequence. It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of communities and organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development.

ENGLISH

Programme Specific Outcomes

- The Department of English sees itself as a centre for intellectual and creative thinking which will help students to become sensitive human beings possessing aesthetic awareness. Partaking of the legacy of a 189 year old department it attempts to redefine the parameters of knowledge dissemination within the rich cultural heritage of the College. In the process students will imbibe more humane qualities which will equip them to deal with the challenges of a fast paced world of mechanical existence.

- Analytical skills in linguistic communication and literary criticism enable them to analyse oral and written discourse of various genres, social, cultural, political and historical contexts and use them in advanced studies in a wide range of corporate, communication, research and knowledge fields.
- Students who have graduated from the department of English have used their newly acquired knowledge practices and aesthetic expressions to engage in research work and higher studies. Others have used their writing and reading skills to take up professions like teaching, journalism, copywriting, editing, publishing, advertising and marketing as well as analogous disciplines like theatre and film studies. Knowledge of English and precise communication skills stand them in good stead in professions like banking, public administration and human resource.

Course Outcomes

- Canonical English Literature gives the students a solid grounding in British and American Literature that helps them to be grounded research scholars and teachers.
- Stress on the Classical Papers and History of Literature gives a synchronic view of literature and helps contextualize.
- The innovative and interdisciplinary courses like Popular Literature help the students to expand their expertise over various other disciplines which help them to survive in an increasing interdisciplinary world of academics.
- Postcolonial, Indian and Partition literature makes the students aware of their immediate surroundings and expands the possibility of relevant and localized research.
- The courses on translation help the students to bridge the gap of language in academics and daily life. In a multilinguistic country like India reading literature of various languages help the students to diversify their knowledge base.
- The Skill Enhancement Courses (SEC) explores the practical side of English language in a globalised world and makes them ready for the demands of the work place. It also helps them to understand the process of business communication and augments their competency in reading and writing skills.
- Courses like American Literature, Philology and Linguistics broaden the scope of the discipline and acquaint students with the subsidiary branches of English studies.
- The DSE courses with a focus on specific target areas helps students to gain specialization in specific fields that gives them an edge in the world of academia.

HISTORY

Programme specific Outcome

After completing History Honours Undergraduate Course

1. Students shall be able to demonstrate thinking skills by analyzing, synthesizing, and evaluating historical information from multiple sources.
2. Students will develop the ability to distinguish between fact and fiction while understanding that there is no one historical truth.
3. Students will produce well researched written work that engages with both primary sources and the secondary literature.
4. Students will develop an informed familiarity with multiple cultures.
5. Students will employ a full range of techniques and methods used to gain historical knowledge.
6. Students will develop an ability to convey verbally their historical knowledge.
7. Students will demonstrate their understanding of cause and effect along with their knowledge of the general chronology of human experience.

Course Outcomes

1. Study of Historiography helps in constructing original historical arguments based on primary source material research along with the development of the ability to convey verbally thesis research and relevant historiography and theory.
2. The Study of Early World History and Cultures proposes the idea that humankind as a whole has a history to be investigated and that a world history course may be more than study of various “cultures,” each disconnected from the others. It encourages to think explicitly about the aims of world history education and about the knowledge and understandings It is conceived on the premise that students will achieve will greater competence in world history and more successfully meet content and performance standards, if they are guided to relate particular subject matter to larger patterns of historical meaning and significance.
3. Students will acquire a sophisticated awareness of the relationships that develop through time between political, social, economic, cultural, intellectual, and religious factors, weaving into “patterns” and trends.
4. Students will learn the methods and techniques of research and analysis in the discipline of history, including the “social sciences” and “humanities” traditions as well as the “rules of evidence” employed in historical thinking and writing – all components of “critical thinking.”
5. Students will acquire a rudimentary sense of historiography – historical argumentation and debate – on key questions of professional research.
6. Students will develop communications skills to express historical perspectives, including writing and oral presentations of expression.

HINDI

Program Specific Outcomes

PSO1. Understand the gradual progress of language and its literature with orientations and changes occurred during the flow of time and history.

PSO2. Analyse the relationship among language, literature and society.

PSO3. Understand the behavioral approach of human beings.

PSO4. Perform more scientifically for the betterment of mankind by learning functional hindi and basics of journalism.

Course Outcomes

CO1. Describe the history of hindi literature with evolution of language.

CO2. Write down the characteristics of ancient and medieval literature in context of different socio-economic environments.

CO3. Identify the modern literary reactions towards the changes of society.

CO4. Write down the characteristics of official language of India and its implementation in society.

MATHEMATICS

Program Specific Outcomes (PSO)

10. Develop the skill to deal with the abstract ideas of Mathematics.

11. Become proficient in writing proofs.

12. Expertise in problem solving.

13. Acquire the skill to pursue career not only in school education but also in business, civil services, banking, finance etc.

14. Can continue study of Mathematics at the post graduate level and more.

15. Can apply Mathematical methods in problems of Mathematics and related fields of science and engineering.

16. Learn how to teach Mathematics in undergraduate level.

17. Develop the ability of analytical and logical thinking which will help them in all aspects of life.

Course Outcomes (CO)

1+1+1 System

PAPER I

CLASSICAL ALGEBRA, MODERN ALGEBRA I, ANALYTICAL GEOMETRY OF TWO AND THREE DIMENSIONS AND VECTOR ALGEBRA:

Learn concepts of Classical Algebra such as Complex numbers, Inequality, Integers, Theory of Equations, introductory ideas of Modern Algebra such as Set, Mapping, Relations and introduction of Group Theory and Analytical Geometry which includes Transformation of axes, Pair of Straight Lines, Circle, Ellipse, Parabola, Hyperbola, Rectangular Cartesian coordinates in Space, Equations of Plane, Straight lines in Space, Position Vectors, Vector Products, Application of Vector Algebra, Vector Equations

PAPER II

ANALYSIS I , EVALUATION OF INTEGRALS, LINEAR ALGEBRA AND VECTOR CALCULUS I:

Get the basic knowledge of Analysis including Real Number System, Set and Sequences of Real Numbers, Countability of Sets, Continuity of Real Valued Functions of Real Variables. Apart from that Methods of Evaluation of Definite and Indefinite Integrals, Matrices, Determinants, Vector Space, Vector Differentiation, Scalar and Vector Field.

PAPER III

MODERN ALGEBRA II AND LINEAR PROGRAMMING, GAME THEORY, ANALYSIS II AND DIFFERENTIAL EQUATIONS I:

In extension to the Modern Algebra Course in Paper I student learns Cosets, Cyclic Groups, Rings and Fields. Learn theories and problem solving mechanisms of Linear Programming Problems and Game Theory. Also as an extension of Paper II Analysis course, learns the Infinite Series of Real Numbers, Derivatives of Real Valued Functions of Real Variables. Finally methods to solve ordinary Differential equations and introduction to Partial Differential Equations

PAPER IV

REAL VALUED FUNCTIONS OF SEVERAL VARIABLES, APPLICATION OF CALCULUS, ANALYTICAL GEOMETRY OF THREE DIMENSIONS II, ANALYTICAL STATICS I AND ANALYTICAL DYNAMICS OF A PARTICLE

I: Learn concepts of function of several variables, for example Point Sets, Limit, Continuity, Differentiability, Jacobian etc. Then Application of Calculus which involves Asymptotes, Curvature, Envelopes, Concavity, Convexity, Sphere, Cone, Cylinder,

Ellipsoid, Hyperboloid, Paraboloid, Surface of Revolution, Transformation of Axes, Friction, Astatic Equilibrium, Newton's Laws, Impact of Elastic Bodies, Accelerations, Damped Harmonic Oscillators, Motion in a Plane under Laws of Resistance,

PAPER V

ANALYSIS III, LINEAR ALGEBRA II, MODERN ALGEBRA II, TENSOR CALCULUS, DIFFERENTIAL EQUATION II OR GRAPH THEORY:

Get ideas of Compactness in \mathbb{R} , Functions of Bounded Variations, Riemann Integration, Sequence and Series of Real Functions, Linear Transformation, Normal Subgroup, Homomorphism, Isomorphism, Tensor Calculus, Laplace Transformation and Series Solution of Ordinary Differential Equations or Graph Theory

PAPER VI

VECTOR CALCULUS II, ANALYTICAL STATICS II, ANALYTICAL DYNAMICS OF A PARTICLE II, HYDROSTATICS AND RIGID DYNAMICS:

Learns advance Vector Calculus, advance Analytical Statics and Dynamics, Hydrostatics and Rigid Dynamics

PAPER VII

ANALYSIS IV, METRIC SPACE, COMPLEX ANALYSIS, PROBABILITY AND STATISTICS:

Learns Improper Integral, Fourier Series and Multiple Integrals, Metric Space and Complex Functions and probability and statistical methods in detail.

PAPER VII

NUMERICAL ANALYSIS, COMPUTER PROGRAMMING AND PRACTICALS:

Familiarize oneself with the application of method of estimation in absence of exact solution or when finding exact solution is tough and also learn to write the computer programming of the numerical methods in C or Fortran, fundamentals of Computer Science and Boolean Algebra.

Course Outcomes (CO)

CBCS System

CC1

CALCULUS, GEOMETRY AND VECTOR ANALYSIS: Learn the foundational knowledge of Calculus, Geometry and Vector Analysis and learn to plot graphs of functions, sketch parametric curves, trace conics etc using free software.

CC2

ALGEBRA: Develop the basic ideas of Classical Algebra(Complex Number, Theory of Equation, Inequality), Abstract Algebra(Relation, Mapping, Integers) and Linear Algebra(Rank of a Matrix, System of Linear Equations etc).

CC3

REAL ANALYSIS: Get the ideas of Real Numbers, Countable and Uncountable Sets, Bounded and Unbounded Sets, Limit Points, Interior Points, Real Sequence, Subsequence in detail and learn to plot sequences and verify theorems through plotting of sequences.

CC4

GROUP THEORY-I: Learn Group, its properties and examples, Subgroup, its properties and examples, Cyclic Group, Permutation, Quotient Group, Homomorphisms, Isomorphisms.

CC5

THEORY OF REAL FUNCTIONS: Acquire the knowledge of Limit, Continuity and Differentiability of Real Functions.

CC6

RING THEORY AND LINEAR ALGEBRA-I: Learn the definition of Ring, Subring, Integral Domain, Field, Ideals, Ring Homomorphism and their properties and theorems in the Ring Theory and in Linear Algebra, the fundamentals of vector Space, Linear Transformation, Algebra of Linear Transformation, Eigen Values, Eigen Vectors.

CC7

ORDINARY DIFFERENTIAL EQUATION & MULTIVARIATE CALCULUS-I: Learn methods to solve Ordinary Differential Equations and introductory ideas of Multivariate Calculus(Concept of Neighbourhood, Limit Point, Interior Point, Chain Rule, Directional Derivatives).

CC8

RIEMANN INTEGRATION & SERIES OF FUNCTIONS: Get the knowledge of Riemann Integration, Improper Integral, Sequence and Series of Functions, Power Series, Fourier Series.

CC9

PARTIAL DIFFERENTIAL EQUATION & MULTIVARIATE CALCULUS-II:

Learn methods to solve Partial Differential Equations (PDE) and some problems involving PDE and in Multivariate Calculus, learn Multiple Integrals, Vector Field, Divergence, Curl, Green's Theorem, Stoke's Theorem and Divergence Theorem.

CC10

MECHANICS: Learn Coplanar Forces in general, an arbitrary force system in space, Equilibrium in the presence of Sliding Friction force, Virtual Work, Stability of Equilibrium, Kinematics of a particle, Newton Laws of Motion and Law of Gravitation, Problems in Particle Dynamics, Planar motion of a particle, Motion of a particle in three dimensions, Linear Momentum Principle, Angular Momentum Principle, Energy Principle.

CC11

PROBABILITY & STATISTICS: Learn probability and statistical methods in detail and also learn to do the graphical representation of data.

CC12

GROUP THEORY-II & LINEAR ALGEBRA-II: Get the idea of Automorphism, External Direct Product, Inner Product Spaces and Norms, Dual Spaces, Eigen Spaces.

CC13

METRIC SPACE & COMPLEX ANALYSIS: Get the concept of Metric Spaces, Compactness, Connectedness and in Complex Analysis Stereographic Projections, Differentiability, Power Series, Complex Integration etc.

CC14

NUMERICAL METHODS: Familiarize oneself with the application of method of estimation in absence of exact solution or when finding exact solution is tough and also learn to write the computer programming of the numerical methods.

- From the elective **SKILL ENHANCEMENT COURSES** one can learn C, C++, Scientific Computing with SageMath and R and Mathematical Logic.
- From the elective **DISCIPLINE SPECIFIC ELECTIVE COURSES** one can get an overview of specialized sections of Mathematics which will help to choose the right track for future.

MICROBIOLOGY

Programme Specific Outcome

Microscopic living organisms, bacteria, viruses, fungi, and protozoa, have a profound influence on our daily lives, including our health, food, fuel, and the environment. Microbiology is the study of microorganisms including, bacteria, viruses, algae, fungi and protozoa. Microorganisms are most famous for their ability to cause diseases, however, microorganisms are also vital to agriculture, industry and ecology. In fact, life on Earth would not survive without microorganisms.

Microbiology as an undergraduate degree course offers a number of avenues to the students. It includes both theoretical as well as practical aspects.

By the end of this course, the students will be able to:

1. Understand the contributions of various scientist in microbiology and scope of various branches, understand various kinds of prokaryotic & eukaryotic microbes and their interactions , details of Bacteriology, which includes the structure, cellular organization, growth, reproduction and various culture methods
2. Comprehend the importance of organic compounds found in living cells and also their biochemistry. Understand and explain various processes of metabolism of carbohydrates amino acids and vitamins.
3. Explain the cellular structures, functions, cell cycle, cell signaling, cell division and cancer biology.
4. Make out the details of viral lifecycle and viral genetics.
5. Learn about environmental aspects of microbiology.
6. Explain DNA, RNA and protein structure and their synthesis, basic concepts of gene and their regulation of action.
7. Have clear concept about Immune system and its function.
8. Understand the concept of disease development, spread, control and eradication from society.

9. Enhance their idea on industrial microbiological processes, application of microbes in food industry, learn details about quality control of various products and control contamination in industries.

10. Have hands on experience to microbiological processes through various practicals and projects.

Course specific outcome

CBCS system

Semester 1

In Semester 1 there are two core course papers CC1 and CC2.

In the core course theory paper CC1, students will be given the idea about introductory Microbiology and the idea about different groups of microorganisms for example viruses, bacteria, algae, fungi and protozoa. Different characteristic features of each group of Microorganisms with examples will be taught. Students in this core course will also be able to explore the interesting history of Microbiology and the future prospect of Microbiology.

In the CC1 practical part students will learn the use of different important instruments like autoclave, BOD Shaker, Hot Air Oven, light microscope etc. that are essential parts of Microbiology Laboratory and also about the good practices of Microbiology Laboratory. Students will observe also the morphology of different classes of Microorganisms. The assessment of sterility will also be done by using different sterilizing instruments.

In the core course Theory paper CC2, students will be taught the idea of cellular organization of Bacterial cell along with the growth, nutrition and reproduction of bacteria. This paper also illustrates use of different microscopes and microbial pure culture isolation techniques. In this core paper Bacterial systematics will teach the students about the recent approaches of Bacterial taxonomy with more extensive discussions on some selected important Archeal and Eubacterial groups.

In the core course Practical paper CC2 students will learn to prepare different microbial media and different staining techniques of bacteria. This paper will also teach the motility test and estimation of colony forming units of Bacteria.

In short, Semester 1 core course CC1 and CC2 will introduce the idea of Introduction of Microbiology with special emphasis on Bacteriology.

Semester 2

Semester -2 in CBCS consists of two core course papers namely CC3 (Biochemistry) and CC4 (Cell Biology).

After introductory Microbiology (in Semester 1) , semester 2 - CC3 theory part deals with the introduction of different bio-molecules for examples carbohydrates ,lipids, proteins, enzymes and vitamins .It also includes the views of different laws of bioenergetics.

Practical Part will help the students to learn about properties of water and to calculate different sums on bioenergetics. Apart from this students will perform different qualitative and quantitative tests for different bio-molecules and also study the structure of Proteins. In this practical paper students will experience the study of enzyme kinetics and of different factors on enzyme activity. Students will also elucidate estimation of one vitamin in this part.

In CC4 theory part students will be given illustrated views on cell biology which includes structure and organization of eukaryotic and prokaryotic cells, detailing of nucleus, protein sorting and transport, cell signalling, cell cycle, cell death and cell renewal.

In CC4 practical part students will study different stages of meiosis and mitosis. Through this practical paper students will explore the study of animal and plant cells and the structure of cell organelles. They will also perform the cyto- chemical staining of DNA and study of polyploidy. Demonstration of the presence of mitochondria also will be done in this part.

In short, in semester 2, CC3 and CC4 will expose students to different aspects of biochemistry as well as of cell biology.

Semester 3

In Semester 3, there are three core course papers CC5 (Virology), CC6 Microbial physiology and metabolism, CC7 (Molecular Biology) and one skill enhancement elective course (Microbial Quality Control in Food and Pharmaceutical Industries).

After studying Virology (CC5), students will learn about the nature and properties of various viruses. They will study about the virioids, satellite viruses, prions, cultivation of viruses, bacteriophage, lytic and lysogenic phages. Students will also discuss in details about viral transmission, salient features of viral nucleic acids, oncogenic viruses and prevention and control of viral diseases.

From Microbial physiology and metabolism (CC6) students will learn about microbial growth and effect of various environmental parameters on growth. Students will also study the different modes of nutrient uptake in bacteria, about their chemoheterotrophic, chemolithotrophic, phototrophic and nitrogen metabolism.

From Molecular biology (CC7) students will learn about structure of DNA and RNA: Watson and Crick model, salient features of double helix, types of DNA and replication of DNA. Students will discuss in details about transcription in prokaryotes and eukaryotes, post transcriptional processing, translation and regulation of gene expression.

In SEC (Microbial quality control in food and pharmaceutical industries) students will learn about laboratory safety rules, culturing and determining microbes in food and pharmaceutical

samples. This paper will also teach about detection of specific microbes in different media and food safety and microbial standards for different foods and water.

Semester 4

In semester IV, students are offered three core courses and one Skill Enhancement Elective Courses (SEC). In CC 8 theory, they learn about Microbial Genetics. In Microbial Genetics they are able to gain knowledge about the genome structure of *E. coli*, *Saccharomyces*, *Tetrahymena*. Te details mechanism of genetic mutations and repair. They will be taught about the structure, types and characteristic features of plasmids, which is the most important feature to be used as a vector in genetic engineering, various mechanisms of genetic exchange like transformation, conjugation, and transduction. Students will learn phage genetics , features of T4 genetics , genetics of lytic and lysogenic cycles. Transposable elements and uses of transposons and transposition will also be taught. In CC 8 Practical paper, students can have hands on experience on mutagenesis, AMES test, Isolation of Plasmid DNA, bacterial conjugation, demonstration of bacterial transformation and transduction.

In CC-9, students are taught about Environmental Microbiology (Theory). The habitat is an important concept in microbiology in particular because microorganisms are greatly affected by where they live. Here the students learn Microbial habitats — including soils, rivers, lakes, oceans, on the surface of living and dead things, inside other organisms, on man-made structures, and everything in between. They are also taught how microorganisms interact with each other and can be physically associated with another organism in a variety of ways and also their roles in maintaining biogeochemical cycles. After studying the course, students will gain knowledge of various means of water treatment and waste management. Through the practicals students will have experience on how to Analysis of soil, Isolation of microbes from soil, quality assessment of water, determination on activities of some important enzymes and Isolation of *Rhizobium* the nitrogen fixer from root nodules.

The CC-10 core course mainly deals with recombinant DNA Technology. Here students learn all the tools and strategies used in genetic engineering as well as the technique of molecular cloning, various methods of Polymerase Chain Reaction, methods of production of DNA library and application of recombinant DNA Technology in industry, in various fields for human welfare. The practicals of this paper helps a student to know most of the basic techniques of Recombinant DNA Technology like PCR, Restriction Digestion, Ligation, Molecular cloning, blotting, sequencing etc.

In Skill Enhancement course or SEC in semester – 4, students are offered either food fermentation techniques or microbiological analysis of air and water. Students have to opt for any one of the courses offered. Both the courses give the students an exposure to the techniques employed in Food industry and also in quality control measures employed in ar and water sanitation. After learning the food fermentation techniques, students gain knowledge about production of various fermented foods in industries .If the students opt for the 2nd elective, they learn about

Aeromicrobiology, Air Sample Collection and Analysis, Water Microbiology, Microbiological Analysis of Water, various control measures that one takes to sanitize air and water.

Semester 5

In Semester 5 there are two core course papers: (CC11) Food and dairy Microbiology, (CC12) Industrial Microbiology and two Discipline specific Elective (DSE) papers: DSE A1 Microbial Biotechnology and DSE B2 Microbes in sustainable agriculture and development.

After studying Food and dairy Microbiology (CC11), students will acquire knowledge about the intrinsic and extrinsic factors affecting the growth and survival of microbes in food and dairy products, how various fruits, vegetables, poultry and dairy products get spoilt. This paper gives an insight about the different methods of food preservation and about various fermented foods. After studying this paper, students will gain knowledge about various food borne diseases: causative agents, symptoms and preventive measures. Students will also learn about food sanitation and control.

The paper Industrial Microbiology (CC12) will teach the students about the various industrially important strains, their sources, their isolation, preservation, improvement and maintenance. Students will get to know about the different kinds fermentation processes and about the various biofermentors used in industry. This paper will also give an insight about the role of microbial fermentation in different products such as Vitamin B12, enzymes, penicillin, wine etc.

From DSE papers students will learn about the applications of microbial biotechnology in human therapeutics, agriculture and food industry. This paper will teach the students about production of recombinant vaccines, biopesticides, bioethanol, biodiesel and about bioremediation. Students will also learn about intellectual property rights. From the other paper students will learn about microbial activity in soil, how microbes are used as agents against plant pathogens, insects etc. Students will study about genetically modified crops and their advantages.

Semester 6

In Semester 6 there are two Core Course (CC) papers CC13 – Immunology and CC14 – Medical Microbiology and two Discipline Specific Elective (DSE) papers.

In the course of Immunology, students will get an insight about the role of many important scientists who have contributed in the development of this field of immunology. They will learn about the innate and adaptive immune systems of our body and also about the cells and organs of the immune system. They will get a detail idea about the structural and functional features of antigens and antibodies and will learn about different immunological techniques involving their interactions. Students will also learn about different pathways and types of immunological

responses exhibited by the body under different conditions. They will also get to know about different immunological disorders and tumor immunity.

In the Medical Microbiology paper, students will learn about the normal microflora of the human body and the host pathogen interactions. They will also learn how the clinical samples are being collected, transported and processed for the diagnosis and will study about some diagnostic techniques. They will get a detailed insight for some important bacterial, viral, protozoal and fungal diseases and the antimicrobial agents which can be used against them for their treatment.

In the DSE papers the students will learn about the concepts of plant pathology and will know about the contribution of some important scientists in the said field. They will study about the host pathogen interactions and also about many significant plant diseases and ways to control them. In the other DSE paper students will get a practical idea about how experiments are designed and performed and will learn about different techniques for the same. This will increase their critical thinking and reasoning abilities.

Course specific outcome (CBCS - General)

Semester I (GE- 1)

In this semester students are mainly introduced to scope of Microbiology. They learn the basic of Microbiology like History of Development of Microbiology, where they are mainly introduced to eminent scientists of Microbiology, diverse forms of microorganisms like algae, fungi, protozoa, viruses, various methods of microscopy. They acquire good knowledge on different methods of sterilization, impacts of microbes in human health & environment, industrial microbiology, and food and dairy microbiology. In practical they learn about Microbiology Laboratory Management and Biosafety, Preparation of culture media, Sterilization of medium, Study of different shapes of bacteria, Study of *Rhizopus*, *Penicillium*, *Spirogyra*, *Chlamydomonas*, *Amoeba*, *Entamoeba*, *Paramecium* and *Plasmodium* using permanent mounts.

Semester II (GE-2)

In this paper students are taught about the bacterial size, shape, morphology, growth and control. Students learn about the various culture media and different techniques for isolation of bacteria such as streaking, serial dilution and plating methods etc. Students are also taught about bacterial systematic and taxonomy, properties of viruses, isolation and cultivation of viruses, morphological characteristics of viruses, bacteriophages and role of viruses in diseases and its prevention.

Semester III (GE-3)

This paper teaches about microbial metabolism. Here students are taught how bacterial growth is measured, various environmental parameters effecting growth such as oxygen concentration, pH,

temperature etc. Students are also taught about the different mode of transportation across plasma membrane in bacteria. Students learn about concept of aerobic, anaerobic respiration, fermentation, electron transport chain, chemolithotrophic, phototrophic and nitrogen metabolism.

Semester IV (GE- 4)

In this semester students are mainly taught – Microbial Genetics. The students will learn the basic structures of genetic materials that are DNA and RNA and will have a clear idea about composition of genome of various organisms, DNA replication, mutation and repair, transcription, translation, genetic regulation of transcription. Students learn about various methods of prokaryotic recombination process and mapping of prokaryotic genes and also about plasmids and transposons. In practicals students will mainly be taught the basic techniques of Molecular Biology, like DNA, RNA structures, replication, their estimation methods, gel electrophoresis etc. and also learn about the effects of mutagens on bacterial cells.

Course Outcome (1+1+1) system

1. Microbiology as a 3-years degree course offers various fields of study. In the 1st year, it teaches basic structure and functions of microorganism, studies of their growth and reproduction and very basics of Biochemistry.
2. After studying the basics of Microbiology, in the 2nd year they learn the application of microorganisms in different fields like Food processing and Dairy Industry, Agricultural industry, public health and hygiene and pharmaceutical industry.
3. In 3rd year, they learn the application of microbes in recombinant DNA technology and Industrial Microbiology. They get to know a lot about the microbes being the causative agents of different diseases. They also learn about the immune system in mammals.
4. After studying all these in detail most of the students go for post graduation and higher studies. (They mainly go for research and get established in different biotechnological as well as pharmaceutical industries). Many of our ex-students are successfully doing their research work and many are placed in different hospitals and industries as microbiologist.

PHILOSOPHY

With a well-balanced proportion of diverse concerns of contemporary philosophy and cultivating synchronization between tradition and modern thought we encourage our students to become dedicated, responsible and help them build career in the world of academics, bureaucracy and

mass communication. The department is proud to be associated with excellent students and faculty members. Our graduate program produces students with comprehensive knowledge in different branches of the subject.

Program specific Outcomes:

After successfully completing B.A. in Philosophy:

1. Students will be able to explain philosophical texts and positions accurately, to identify and apply philosophical research methods consistently, to articulate and defend precise philosophical positions.
2. Students will be able to apply their philosophical learning to important public issues and to articulate why philosophical understanding is valuable in such debates.
3. Students will develop their own philosophical areas of interest and investigate them from various perspectives.
4. Students will attain the research skills necessary for writing a research paper that engages with primary and, where applicable, secondary literature on a topic in philosophy.
5. Students will be able to describe the ways in which the formal techniques of logic are important to philosophical research.
6. Students will acquire reading skills necessary to understand and critically engage with historical and contemporary philosophical texts.
7. Students will be aware of the existence of multiple philosophical traditions, and will be able to reflect on the cultural specificity of some of their own concepts and values.
8. Students will be able to explain epistemological concepts such as the nature of knowledge, justification, evidence and skepticism, and to summarize and evaluate major philosophical positions in relation to each.

Course outcomes: (CBCS System)

Indian Philosophy: CC1, CC3, CC11, CC13

1. Students will read and critically assess the work of central thinkers in the history of Indian philosophy.
2. Students will explore and understand the historical development of major Indian philosophical ideas.
3. Students will develop a critical understanding of various key concepts in philosophy such as 'prama', 'pramana', 'prameya', 'manas,' 'jiva' 'jagat', 'ishwara' 'karma', 'janmantara', and 'vedic authority'.

Western Philosophy: CC2, CC4, DSE-David Hume, SEC B1

1. Students will read and critically assess the work of central thinkers in the history of western philosophy.
2. Students will explore and understand the historical development of major western philosophical ideas.
3. Students will develop a critical understanding of various key concepts in philosophy such as ‘substance’, ‘God’, ‘scepticism’, ‘mind-body problems’, ‘man and the god relation’ and ‘Universal’.

Western Metaphysics: CC10, DSE Analytic Philosophy

1. Students will read and critically assess the work of central thinkers in the history of western metaphysics.
2. Students will explore and understand the historical development of major western metaphysical ideas.
3. Students will develop a critical understanding of various key concepts in philosophy such as ‘reality’, ‘mind,’ ‘causal theory’, ‘evolution theory’, and different views on metaphysical thought of the philosophers.

Ethics: CC12, CC14

1. Students will learn to identify and evaluate ethical principles, values and traditions of moral reasoning.
2. Students will learn to identify and evaluate critically the ethical foundations of key social institutions and professions with a view toward social justice.
3. Students will be able to explain and discriminate between major approaches to moral philosophy such as consequentialism, deontology and virtue ethics, and to summarize and evaluate the views of at least one philosopher associated with each.

Logic: CC8, CC9, SEC A1

1. A solid understanding of the basic concepts of logic, and in particular what it means for an argument to be valid, and the related notion of what it means for a set of statements to be consistent.
2. The ability to apply formal techniques and systematically codify deductively valid arguments.
3. The ability to translate natural language sentences into precise symbolic form and rigorously evaluate standard inferences.
4. Acquire a firm foundation for the study of other disciplines where logic plays an important role (mathematics, computer science, formal semantics in linguistics).
5. Generic analytical and critical thinking skills, including: the ability to identify the argument in a piece of prose and analyse its logical structure.

Psychology: CC5

1. Application of knowledge with critical thinking skills: Students should be able to use critical thinking to evaluate and interpret evidence, and to apply psychological concepts, theories, and research findings to individual, social, and cultural issues.
2. Study of Psychology will help students to understand themselves and others better and to solve, to a great extent, their own problems. Mutual understanding and respect will produce a society where peace and harmony will prevail.

Social and Political Philosophy: CC6

1. Students will be able to explain philosophical texts and positions accurately, to identify and apply philosophical research methods consistently, to articulate and defend precise philosophical positions, and to anticipate and rebut objections to those positions.
2. Students will be able to apply their philosophical learning to important public issues and to articulate why philosophical understanding is valuable in such debates.
3. Students will develop their own philosophical areas of interest and investigate them from various perspectives.
4. Students will attain the research skills necessary for writing a research paper that engages with primary and, where applicable, secondary literature on a topic in philosophy.
5. Students will acquire reading skills necessary to understand and critically engage with historical and contemporary philosophical texts.
6. Students will be aware of the existence of multiple philosophical traditions, and will be able to reflect on the cultural specificity of some of their own concepts and values.
7. Students will be able to explain and discriminate between major approaches to political philosophy such as Libertarianism, Marxism, Liberalism and Communitarianism, and to summarize and evaluate the views of at least one philosopher associated with each.

Philosophy of Religion: CC7

1. Students will be able to read complex texts from a variety of traditions
2. Students will understand and be able to apply the methodological tools used in the study of religion including textual analysis, sociology of religion, anthropology of religion and comparative religions
3. Students will understand the basic features of Western, Eastern and indigenous religious traditions, be able to recognize the foundations of traditions and be able to compare them.

3 Year Degree Course (1+1+1) system

Course outcomes:

1. Study of Ethics or Moral Philosophy will produce morally upright individuals who are socially concerned and sensitive to moral issues.

2. Study of Psychology will help students to understand themselves and others better and to solve, to a great extent, their own problems. Mutual understanding and respect will produce a society where peace and harmony will prevail.
3. Study of Western and Indian Philosophy will help students to develop their own Philosophy of life and to think critically.
4. Study of Logic enables clear thought through a rigorous demand for truthfulness. The relevance of Logic to everyday life is that its use improves the likelihood of satisfactory outcomes in the day-to-day decisions each person makes.
5. Study of Sociology has a great value especially in modern complex society. Sociology has great practical importance in the sense that it keeps us up to date on modern social situations and development.

PHYSICAL EDUCATION

Program Specific Outcomes

1. Understand the behavioral approach of human beings.
2. Students will have set their foundation to pursue their higher education in physical education.
3. After completing Graduation you can take up B.P.Ed or M.P.Ed or M.Phil or P.hd or even become a Sports Officer, School teacher & College teacher.

Course Outcomes(CO)

1. To understand the needs, scope & importance of physical education.
2. To understand the relationship between physical education & general education.
3. To understand the role of physical education in modern society.
4. To understand the philosophical foundation of physical education idealism, pragmatism, naturalism & existentialism.
5. To know the history of physical education in ancient times & in modern time & with reference to India & the world.
6. To know various national & international sports movements.
7. To know the contribution to the growth of physical education by the various physical educators.

8. To understand the anatomy & physiology cell, tissues, various organs & organ systems of the body.

PHYSICS

Programme Specific Outcome (PSO)

1. Physics deals with wide variety of systems that is to be tested both theoretically and experimentally. The subject needs proper blending of both theory and experiment. Each theories needs to be tested experimentally and the varieties of experimental facts needs proper explanation from its theoretical viewpoint. Physics uses mathematics to organize and formulate experimental results. From those results new predictions can be made or a theory can be ruled out. Computational physics is playing a vital role in this regard. The students need proper understanding of the different aspects of physical theories and experimental techniques so that they can apply those techniques in the upcoming advanced courses when they have finished their UG 3 year syllabus.
2. Students are expected to acquire knowledge in physics, including the major disciplines of classical mechanics, quantum mechanics, electromagnetic theory, electronics, optics, special theory of relativity and modern physics. They must have a proper understanding of programming so that they can apply appropriate scientific programming skills wherever necessary.
3. Students should have the skill of identifying the key factors and applying appropriate principles and assumptions in the formulation of physical problems.
4. Students should learn how to design and conduct an experiment (or series of experiments) demonstrating their understanding of the scientific method and processes. Not only that they are expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.
5. Students will realize and develop an understanding of the impact of physics and science on society.
6. Students are also expected to develop written and oral communication skills in communicating physics-related topics.
7. Apply conceptual understanding of the physics to general real-world situations.
8. Discover physics concepts in other major disciplines such as mathematics, computer science, engineering, and chemistry.
9. After the completion of program, students will be able to have in-depth knowledge of basic concepts in physics.
10. Students will be able to apply the laws of physics in real life situations to solve the problems.

11. Student develop attitude of doing research through undertaking small projects.
12. Student will have set his foundation to pursue higher education in physics.
13. After completing the program student will have developed interdisciplinary approach and can pursue higher studies in subjects other than physics.

Course Outcomes (CO)

Course Title: Mathematical Physics (Semester I, III, IV)

- To have clear idea about limit, continuity convergence so that the idea can be applied to solve physical problems.
- To be able to solve various types of differential equations so that the idea can be applied to solve physical problems.
- To have clear concept of vectors and matrices so that the idea can be applied to solve physical problems.
- To have clear idea of Fourier series and integral transforms so that the idea can be applied to solve physical problems.
- To have idea about probability theory so that the idea can be applied to solve physical problems.
- To have idea about complex analysis so that the idea can be applied to solve physical problems.
- To have idea about variational principle so that the idea can be applied to solve physical problems.
- To be able to handle mathematical problems using python programming

Course Title: Mechanics (Semester I)

- To be able to analyze motion of single particle and system of particles
- To study physical problems using inertial and non-inertial frames
- To understand rigid body dynamics and be able to study complicated motion of rigid bodies
- To understand Fluid dynamics
- To be able to measure different elastic constants experimentally

Course Title: Waves and Optics (Semester II)

- To understand physical characteristics of simple harmonic, damped and forced oscillations.
- To be able to analyze the cases when various simple harmonic motions superpose
- To understand the mechanism of various wave propagations in nature.
- To understand Interference, Diffraction using wave theory of light.
- To be able to study Interference and Diffraction phenomena experimentally.

- To be able to handle different optical instruments such as telescopes, microscopes, interferometers, spectrometers

Course Title: Electricity and Magnetism (Semester II)

- To be able to solve various electrostatic problems applying Coulomb's law, Gauss's Law, Superposition principle.
- To understand nature and properties of dielectrics
- To be able to solve various magnetostatic problems applying Biot Savart's law, Ampere's circuital law
- To understand induction phenomena
- To develop skill of various problem solving.
- To be able to study electric circuits.

Course Title: Thermal Physics (Semester III)

- To understand the basic laws and formulations of Thermodynamics.
- To understand the concept of entropy and 2nd law and to apply these ideas in real situations.
- To be able to apply Maxwell velocity distribution and equipartition of energy in varieties of situations.
- To understand the origin of gas pressure and conduction properties in terms of kinetic theory
- To understand behavior of real gases in nature.
- To be able to study various thermal properties of matter experimentally.

Course Title: Modern Physics (Semester III)

- To have idea on Black Body Radiation, Compton Effect, Photo electric effect
- To learn fundamentals of quantum mechanics and to be able to study dimensional motion problems
- To learn basic working principle of lasers
- To learn fundamentals of quantum mechanics and apply to one dimensional motion of particles
- To acquire knowledge about nuclear structure.
- To acquire knowledge about nuclear reactions.

Course Title: Scientific Writing (Semester III)

- To develop skill to write project reports, papers, articles, lab reports, CV, slides, books using Latex.

Course Title: Quantum Mechanics (Semester IV)

- To learn the mathematical tools needed to solve quantum mechanics problems.

- To be able to solve different problems such as Barrier problem, Linear Harmonic Oscillator problem, Hydrogen atom problem
- To obtain a detailed study of atom.
- To learn about the behavior of atoms in different excited states.
- To learn about different phenomena under the action of external electric and magnetic field.
- To learn about many electron atoms.

Course Title: Analog Electronics (Semester IV)

- To learn working principle of different electronic circuit and their application in real life.
- To have clear idea about properties and applications of zener diode, transistors, OPAMPs.
- To be able to construct regulated power supply, amplifier, oscillator, multi vibrator, temperature controller.

Course Title: Arduino (Semester IV)

- To have basic idea about Arduino
- To be able to write programmes

Course Title: Electromagnetic Theory (Semester V)

- To learn Maxwell's equations, gauge transformation, Poynting theorem etc and to be able to apply them to solve problems.
- To understand electromagnetic wave propagation.
- To learn Polarization phenomena of light using basic idea of electromagnetic theory.

Course Title: Statistical Mechanics (Semester V and VI)

- To understand how statistics of the microscopic world can be used to explain the thermal features of the macroscopic world.
- To learn both classical and quantum mechanical approach
- To learn both equilibrium and non-equilibrium statistical mechanics
- To be able to use thermal and statistical principles in a wide range of applications.
- To be able to apply MB, BE and FD statistics to solve problems
- To learn computer techniques to solve statistical problems.

Course Title: LASER and Non-linear Optics (Semester V)

- To be familiar with operation and construction of lasers.
- To learn about the properties of laser radiation, and how laser beams propagate through optical materials.
- To learn about practical properties of laser such as line broadening, line shape

- To have basic idea about Fiber Optics, Holography and non-linear optics

Course Title: Astro Physics (Semester V)

- To have the basic concepts in astronomy.
- To learn about the galaxy.
- To describe and understand the physical processes in the Sun and other stars.
- To have basic idea about cosmology.

Course Title: Solid State Physics (Semester VI)

- To be able to analyze the structural properties of elemental solids
- To be able to calculate electronic conductivity of solids
- To learn to evaluate thermal properties of solids using statistical approach
- To learn about super-conducting behavior of solids
- To learn about dielectric and magnetic properties of solids.

Course Title: Digital Electronics (Semester VI)

- To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.
- To be able to design Digital Circuits.

Course Title: Nano materials and applications (Semester VI)

- To learn about the background on Nanoscience
- To learn about the synthesis and characterization of nano materials.
- To know about special properties of nano materials.
- To know about huge application of nano materials in technology.

POLITICAL SCIENCE

Program Specific Outcomes

1. This course in B.A. in Political Science enables the students to develop an overall understanding on political institutions, society, culture, politics and international relations. More specifically, it shall enable the students to evolve a critical understanding on Indian Politics and its nature and contemporary trends.
2. The exposure to Political Science also encourages them to develop a scientific outlook on above-stated subjects, as it emphasizes the role of empirical methods and theories in building up the knowledge over discipline.

3. It not only introduces the students to the structural and functional dimensions of political institutions but also a range of theories which equips them with a critical understanding on society and politics. For example, after studying the degree programme, the students shall be capable of providing political analysis on political parties, party system, and models of democracy.
4. The contemporary topics as included in the syllabus shall generate interest for research among the students in future.

Course Outcome

1. This program on Political theory aims to introduce certain key aspects of conceptual analysis in political theory and the skills required to engage in debates surrounding the application of the concepts. In today's inter-disciplinary world, this program equips students to take on in-depth analysis of concepts like rights, equality, justice, freedom which are emerging as ever-pertinent questions.
2. The program on International Relations will provide students with great insights on political affairs, public policies, economic trends, social issues, law and many more. As an international relations specialist a student will have a broad set of career options in addition to politics, including in fields like economics, social systems and the cultural life of communities. Students can either opt for higher education such as master's degree or prepare for various competitive examinations such as UPSC and other state governments. They can also act as a link between the country you represent and the country where they are stationed; collect and report on all the information that would affect nation's interests.
3. The program on Public Administration is a system through which the government carries out its business of ruling and controlling effectively. Public Administrators may choose careers in the government sector. It will prepare the students to work in many governmental and other management careers, including health care administration, human resources management and even city management. Students can either opt for higher education such as master's degree or prepare for various competitive examinations such as UPSC and other state governments.
4. The program on Comparative Government and Politics will enable the students to have the access to a broad range of career options and job opportunities. They can apply their knowledge and critical thinking skills in political analysis as well as public policy analysis. The students can find the jobs in various non-profit organizations, in the scientific and academic fields. The typical employers are: government, nonprofit organizations, research institutes or think-tanks, private companies including foreign corporations, educational institutions.
5. The program Indian Government and Politics enables the students to hone their skills in analysing the current political events in the country. It trains them to take up news

analysis and journalism as possible career prospects. It also allows them to take up a career in mass media - with mass communication and public relations.

PSYCHOLOGY

Program specific outcome

Part I:

PSO 1. Understanding the basic psychological process, nature, scope and branches of psychology, sensory processes and perception, difference between sensation and perception, gestalt theory of perception, attention, emotion.

PSO 2. Understanding the biological bases of behaviour including nervous system and endocrine glands.

PSO 3. Understanding developmental psychology, its methods for research, the relative importance of hereditary and environmental factors, and different phases of life span development.

PSO 4. Understanding educational psychology and the relation between psychology and education, nature and scope of educational psychology, learning and memory processes, forgetting and intelligence.

PSO 5. Understanding social psychology, attitude formation and change, social perception, person perception, conformity and compliance.

PSO 6. Understanding Industrial psychology, personnel selection, job motivation, job satisfaction, leadership style, work culture, work environment and human resource management.

PSO 7. Understanding psychopathology, criteria of normality, methods used in clinical psychology, causes and symptoms of abnormal behaviour and basic idea regarding counselling and psychotherapy.

PSO 8. Understanding adjustment, conflict, stress management.

PSO 9. Conducting experiments on psychological variables and administration of psychological tests.

PSO 10. Application of statistics in data analysis.

Course outcome:

CO1. Understanding basic psychological processes and biological basis of behaviour

CO 2. Understanding developmental and educational psychology

CO 3. Understanding social and industrial psychology.

CO 4. Understanding psychopathology and adjustment.

CO 5. Conducting experiments and psychological tests; use of statistics in data analysis.

Course outcome

Part I:

In module 1.1 students will learn the basic psychological process. It covers a wide range of topics: nature, scope and branches of psychology, sensory processes and perception, difference between sensation and perception, gestalt theory of perception, attention, emotion and biological bases of behaviour including nervous system and endocrine glands. Module 1.2 is all about Developmental psychology and educational psychology. In developmental psychology one learns the scope and methods used in developmental researches, the controversy regarding the relative importance of hereditary and environmental factors and different phases of life span development. In educational psychology students learn the relation of psychology with education, nature and scope of educational psychology, learning and memory processes, forgetting and its causes and intelligence.

Part II:

Part II has four modules (two is for theory and two is for practical). In the theory portion there is social psychology, industrial psychology, psychopathology and adjustment. In practical portion one learns to use statistical techniques for data analysis, conducting experiments on attention, learning, memory, administration of intelligence and personality assessment.

CBCS system

Semester 1: Foundation of psychology- here students learn the historical background of the subject, perspectives, methods, Indian context in studying psychology, cognitive processes, motivation, emotion, personality and intelligence. They have an experiment on memory and an Intelligence test in their practical syllabus.

Semester II: Introduction to social psychology- here students learn the historical background of the subject, scope, methods, approaches to understand social behaviour, attitude (formation and change) interpersonal processes, and group dynamics. Practical on group cohesiveness and group influence on behaviour are also included in the curriculum.

Semester III: Psychological disorders- The aim of studying this part is to develop an understanding of the development of psychological disorder, theoretical perspectives of psychological disorder, clinical features of various psychological disorders, and the treatment of those psychological disorder. Practical on anxiety and stress are also in the syllabus.

Semester IV: Statistical methods and psychological research- here the objective is to introduce basic statistical methods, psychological testing, qualitative methods and their uses. The topics covered are measurement procedures, graphical representation of data, data analysis, psychological testing and qualitative methods.

SANSKRIT

After successful completion of B.A. Honours in Sanskrit

- PSO 1. Students will learn Sanskrit Language and communication skills in Sanskrit very efficiently. By learning a new language they will be able to compare its characteristics, grammatical foundation, enriched vocabulary etc. with other Indian languages especially with those who belong to OIA family of languages.
- PSO 2. Through the Sanskrit language students will get connected to the ancient heritage of Indian subcontinent, its glorious culture and diversity, its history and its journey from past to present. The actual India with its splendid culture will be in front of the students devoid of any external misinterpretation because the students will be able to access the primary sources and will not depend on the secondary sources like translation or exposition in other languages.
- PSO 3. Students will learn to read the ancient manuscripts and will get initial knowledge about Inscriptions, different ancient scripts and some other languages derived from Sanskrit like Pāli and Prākṛta etc. which will lead them to learn Ancient Indian History in a very authentic way. Students will be ready to serve in different projects related to Manuscripts and archives.
- PSO 4. Students will know the base and basic ideas of Indian society and social Institutions and Indian Polity as well. Being aware about the evolution of Indian society with all its details they will be critical to the social rules and regulations and therefore they will be awakened citizens and will help to make a better Indian society. They will be able to bring forth the liberal ideas from Ancient Indian texts and to propound harmony in different aspects of society.
- PSO 5. Students will enjoy Ancient and Modern Sanskrit literature and will be well-versed in Indian Poetics. Students will acquire good writing skill and will learnt the art of articulating different aspects and emotions of life following the literary creation of great poets (*kavi*) of all time like Kālidāsa, Bāṇa, Māgha and others.

- PSO 6. The syllabus gives the students a great chance to literate themselves in computer and computational Sanskrit simultaneously. Students will learn digitizing of texts, data typing and printing, different software and machines (searching, translating, analyzing etc.) related to Sanskrit. They will get a chance to get employed in few of trending fields of ICT as well.
- PSO 7. Students will be well aware about the trending ideas of Indology in both East and West, which will provide them the chance to choose future streams of research in both India and abroad. Because of the revolution in Information and technology field students will get the chance to stay in touch with the learned researchers and their research works and with the renowned institutions as well.
- PSO 8. Students will get introduced to Indian Philosophical schools and will read a few texts on it. They will also know the differences and characteristics of Schools of Indian Poetics as well. After the completion of the course they will know their field of interest which will help them to choose future specializations in academic venture. Students will learn the Pāṇinian system of Sanskrit Grammar and will know the structure of any language very well and will be efficient enough to learn other languages than students of other streams.
- PSO 9. Students will read the texts like Ramayana and Mahabharata which simultaneously will grow their interest in Indian Culture and literature and will develop their personality. Bhagavad Gīta, Nītiśataka and other nīti texts will help them to lead a healthy and balanced life which is the need of the hour.
- PSO 10. Students will find themselves employable in academic fields, language teaching posts, administration through competitive examinations, different manuscript, translation and in other projects and also make them ready for further studies and research works in specific fields.

Course Outcome

- CO 1. Core Courses of the Under Graduate Syllabus cover a wide range of subjects of Indology through Sanskrit Language and therefore provide a good opportunity to students to acquire diversified knowledge about Indian's rich ancient knowledge tradition encompassing literature, poetics, dramaturgy, ancient science, philosophy, grammar, smṛti (Social Institutions and Polity), Epigraphy and Paleography, mythology etc. Students will get introduced in all these fields and will read a few texts related to each field in a very scientific way.
- CO 2. Through the Skill Enhancement courses (SEC) students acquire practical knowledge about Sanskrit language and its applicability in day to day life and in Information and Communication Technology as well. Students become well equipped both in theoretical and practical aspects of Sanskrit Language and the texts related to the language. These courses enhance the writing and conversation skills of the students to make them free from being dependent from secondary sources.

- CO 3. Discipline Specific Courses (DSE) allow the students to dive deep into the theoretical parts of different fields of Indology like Philosophy, Poetics, Ancient and Modern Literature etc. These courses gradually improve the critical thought of the students and they will be expert in explanation and analysis of the ancient texts and will find applicability of them in current context.
- CO 4. Students will read Vedic, classical and modern Sanskrit literature and therefore will get the chance to critically perceive the evolution pattern being guided by the research works done by great scholars of East and West for a long time. Students will read the literary creations of the renowned poets of all time like Kālidāsa, Bāṇa etc. and will be able to appreciate them and compare their works with others of past and present.
- CO 5. Students will learn the Indian Social Institutions and Indian Polity from the Mahābhārata, Rāmayaṇa, Arthaśāstra, Manusamhitā etc. They will learn the ideas of people like MK Gandhi, Aurobindo, Vivekananda and other modern thinkers regarding them as well.
- CO 6. Students will learn the discussions on Indian Dramaturgy which is very enriched and ahead of time. The lessons on the schools of Indian Poetics will grow a critical approach in the students while discussing and analyzing any literature form.
- CO 7. Students will get introduced to the Indian Philosophical Schools both the Orthodox and non Orthodox and will read a few canonical texts related to the schools.
- CO 8. The courses on Paleography and Epigraphy will educate the students in Ancient Manuscripts, Inscriptions and Scripts which will create an expertise in discussion of Ancient Indian History.
- CO 9. Students will learn Pāṇinian Grammar following the authentic primary texts which will allow them to analyze the structure of Vedic and Classical Sanskrit Language. This structure will help a lot while creating translating software or while decoding the structure of any language.
- CO 10. Students will learn a lot about Indian approach on ethics, yoga, science and other practical aspects following the ancient texts. Self management in Gīta is a very important addition to the syllabus which will teach the students to manage the balance in their personal life and lead to a very creative and fruitful social life simultaneously.

Course Outcomes (1+1+1 System)

Paper I:

1. Basic introduction to Sanskrit syntax, Morphological generation, and Semantics.
2. Textual analysis of Sanskrit prose literature and different composing styles (i.e. Kādambarī and Daśakumāracarita)
3. Textual and literary criticism of Kālidāsa's Abhijñānaśakuntala (act 1-3)
4. Basic introduction to Sanskrit Poetics with the help of Kāvyaśāstra

Paper II:

1. Study of Sanskrit Metres (i.e. Chandomañjarī)
2. Textual and literary analysis of drama from pre-kālidāsa era (i.e. Svapnavāsavadatta)
3. Textual and literary criticism of Kālidāsa's Abhijñānaśakuntala (act 4-7)
4. Textual and literary analysis of Mahākāvya from post-kālidāsa era (i.e. Kirātārjunīya)

Paper III:

1. General Introduction of Indian Poetology (Poetological Text in Sanskrit: Sāhityadarpaṇa of Viśvanātha-Kavirāja; chapter 6-10)
2. Introduction and basics of Vedic, scientific and Technical Sanskrit Literature

Paper IV:

1. Essay in Sanskrit; on topics of Indic culture, idols, ideals, social values, current sensibility and the like.
2. Post-Kālidāsa Sanskrit Mahākāvya: Bhaṭṭikāvya (or Rāvaṇavadha) of Bhaṭṭi (Canto 2)
3. History of classical Sanskrit Literature including Inscriptional and Historical Works

Paper V:

1. Vedic texts and Vedic grammar (Vedic texts: Hymns of Ṛgveda — 1.1. Agnisūkta, 10.121. Hiraṇyagarbhasūkta, 10.125. Devīsūkta, 10.34. Akṣasūkta, 10.191. Saṃjñānasūkta)
2. Vedic Grammar: Padapāṭha and general outline of Vedic grammar.
3. Vedic texts; Yajurveda; Atharvaveda and Brāhmaṇa, Upaniṣad (Rudrādhyāya (Śukla-Yajurveda, 16.1-14), Atharvaveda (12.1.1-10), Maumatsyakathā (śatapathabrahmaṇam), śunaḥśepopakhyānam (Aitareyabrāhmaṇam, 3.3.3), Bṛhadāraṇyakopaniṣad (4.4. and 4.5.)

Paper VI:

1. Texts on Dharmaśāstra and Arthaśāstra
 - a) Basic introduction to ancient Indian legal system
 - b) Comparison with Modern Indian legal system (specially with Indian Penal Code) (Yājñavalkya-saṃhitā - Chapter 2 Vyavahārādhyāya)
 - c) Different perspectives on ancient Indian polity (i.e. rājadharmaprakaraṇā of Manu and arthaśāstra of kauṭilya)
 - d) History of Indian Dharmaśāstra, Arthaśāstra and Nītiśāstra

Paper VII:

1. Sanskrit Grammatical text : Siddhāntakaumudī of Bhaṭṭojidīkṣita.

2. General Acquaintance with Phonetic Tendencies (The following topics — Assimilation, dissimilation, epenthesis, prosthesis, metathesis, anaptyxis, haplology, syncope, apocope, aphaeresis, cerebralisation, analogy).
3. Siddhāntakaumudī of Bhaṭṭojidīkṣita — Samāsaprakaraṇa; excluding Samāsāntavidhāna
4. Elementary knowledge about ‘Science of Language’, the IE family of language and the phonetic laws, history of the concept of IE language, divisions of IE. (Among phonetic laws the following are important — Grimm’s law, Verner’s law, Grassmann’s law, Bartholomae’s law, Collitz’s law, Fortunatov’s law)

Paper VIII:

1. General Acquaintance with the Indian philosophical systems.
2. Elementary knowledge about the subject of Annambhaṭṭa’s Tarkasaṃgraha.

SOCIOLOGY

PSO

After successfully completing B.A. in sociology Students will be able to explain sociological texts and positions accurately, to identify and apply sociological research methods consistently, to articulate and defend precise sociological positions.

1. Sociological Imagination

Students will be able to apply “sociological imagination” to analyzing current events, political, economic and cultural context.

- Describe how sociology differs from and is similar to other social sciences and give examples of these differences and similarities.
- Apply the sociological imagination and sociological concepts and principles to her/his own life. Participate actively in civic affairs.

2. Sociological Understanding:

The ability to demonstrate sociological understandings of phenomena, for example, how individual biographies are shaped by social structures, social institutions, cultural practices, and multiple axes of difference and/or inequality.

3. Critical Thinking:

The ability to demonstrate critical thinking through the ability to analyze and evaluate social, political, and/or cultural arguments.

- Apply critical thinking skills to sociological data and theory.
- Easily move from memorization to analysis and application to synthesis and evaluation.
- Identify underlying assumptions in particular methodological approaches to an issue.

4. Social Structure

To understand how social structure operates, such that the student will be able to:

- Demonstrate how global processes shape local social structures and the effects on individuals.
- Show how institutions interconnect in their effects on each other and on individuals.
- Demonstrate how social change factors, such as population, urbanization, or technology affect social structure and individuals.
- Describe how social structure varies across time and place and the effects of such variations.
- Demonstrate how social change affects social structure and individuals and show how structure is constantly in a process of becoming.

5. Social Theory:

The ability to demonstrate an understanding of, and the ability to use, several of the major classical and/or contemporary perspectives in social theory.

6. Creating Sociological Knowledge

Sociology uses sociological methods to systematically Creating Knowledge and also uses sociological methods to systematically investigate social phenomena. They organize and analyze empirical materials to develop findings that illuminate social processes and problems.

7. Social

Problems

Sociology focuses on the ways in which problems come to be socially defined, understood, debated, and resolved. Students learn about the varied processes through which problems reflect underlying social conflicts.

8. Social Research Method

At the end of the course, students should be able to:

- understand the characteristics and issues that make science different from other ways of knowing.
- understand the historical antecedents of methodology as they relate to the social sciences today and also understand the links between theory and research.

STATISTICS

PROGRAMME SPECIFIC OUTCOME

The students can understand that the subject statistics has wide application in different branch of science, arts and commerce. They can understand that there is no such a branch that the subject does not creep in.

1. Descriptive statistics which includes different representation of statistical data and analysis of Univariate quantitative data. This also includes Fitting of Binomial, Poisson and Normal distributions, analysis of Bivariate quantitative data (Correlation and Regression Analysis, Rank Correlation)
2. The students have their course on Analysis of Multivariate quantitative data. All these Courses help the students to do their research work in future study.
3. All the topics of statistics do help the students to do their research works in medical sciences, agricultural sciences, management sciences etc.

Course Specific Outcome

Undergraduate

The undergraduate course in Statistics under CBCS credit system has been semesterised in 2018. In each semester the **General Elective** have theoretical and practical papers.

Sem I

In Sem I there are mainly 3 units . The first unit consists of basic and introductory concept of Statistics and the introduction to different types of data and there different modes of representation. The second unit consists of the basic measures of descriptive statistics like different Measures of central Tendency, Measures of Dispersion and Measures of Moments. The third unit consists of descriptive measures based on bivariate data and specifically concepts on Linear regression and Method of Least Square. At the end of the topic the students will be able to understand the basic statistics and the basic concepts of descriptive statistics.

Sem II

In Sem II there are mainly 3 units. The first unit consists of basic introductory concept of Probability Theory. The second unit consists of the basic concepts of random variables (both Discrete and Continuous) and the distribution of random variables. The third unit consists of few common distribution of both Discrete and Continuous random variables with different useful properties and the basic concepts of Central Limit Theorem (CLT). At the end of the topic the students will be able to understand the basic concept of Probability, random variables and Few standard (Discrete and Continuous) distributions and central limit theorems.

Sem III

In Sem III there are mainly 3 units. The first unit consists of Population and Sample, different methods of Estimation and basic concept of Testing of Hypothesis. It also consists of three important distributions (Normal, Chi-Square, t and F) useful for statistical inference. The second unit consists of basic concepts and useful terminology used for Testing of hypothesis and different hypothesis testing based on random sample generated from Single Univariate and Two Independent Univariate Normal Distribution. The third unit consists of Analysis of Variance (ANOVA), both One Way and Two Way (with single observation per cell and more than one observation per cell). It also consists of Basic concepts and basic principles of Design of Experiment with analysis of Completely Randomized Design (CRD) and Randomized Block Design (RBD). At the end of the topic the students will be able to understand the basic concept of Probability, random variables and Few standard (Discrete and Continuous) distributions and central limit theorems.

Sem IV

In Sem IV there are mainly 3 units. The first unit consists of concepts of Population and sample and different methods of sample Survey (like Simple Random Sampling and Stratified Random Sampling) and useful theorems. The second unit consists of the basic concepts of Index Number and different measures of Index number and their uses and limitations. This unit also consists of the basic concept of Time Series and different models, measurements used in Time Series Analysis. The third unit consists of Demographic Methods like different measures of Birth, Death and reproduction with their uses and merits and demerits. This unit also consists of basic concepts and uses of Life Table in connection with Demographic Data. At the end of the topic the students will be able to understand and learn the various applications of statistics.

ZOOLOGY

Programme Specific Outcome

After successfully completing B.Sc. in Zoology:

1. The Zoological study will enable students to gain knowledge on the overall animal world their habit and habitat and the role in environment. This will inculcate them the importance of every surviving animal in the earth and necessity of their presence for the survival of the ecosystem.
2. The concept of Ecology will enable the students to have an idea about the various pollutions in the ecosystem that are disturbing the balance of the nature. The concept of sustainable

development teaches the students to learn the optimum uses of the non-renewable resources of the earth and to apply methodologies for the use of renewable resources in the survival of the mankind.

3. The study of Molecular Biology, Biochemistry, Immunology, Parasitology, and Developmental Biology will help the students to gain knowledge in the life processes and will provide them scope in researches.

4. Biotechnology will provide impetus to the students to the use of various technologies in the field of biology. The use of animals in the welfare of human society like Apiculture, Sericulture, Poultry, Lac-culture, etc., Researches in this field will provide different job-oriented courses which will be beneficial to the students.

5. Field Excursion conducted is very much beneficial to the students. The visit to National Park or Sanctuary or Biosphere Reserve help the students to learn the various conservation strategies, both in-situ as well as ex-situ, for animals and plants. This forest study will help students to understand the importance of forests and their resources. This study provides them the idea about the status of different animals on the ecosystem and also the need of conservation of the threatened or endangered species.

6. The study of animal dissections will benefit the students to have an idea of the internal anatomy of the animal which will provide them a sound knowledge about the internal environment of the living animals.

7. The study harmful microbes help the students to know about the mode of infection of those pathogens. Moreover the control measures and the prophylactic measures will give a clear idea about how to manage the diseases and to design new medicines in combating the infections caused by harmful microbes.

8. Taxonomical studies enable the students to learn about the different variety and variability of the animal world. Taxonomy helps them to identify unknown specimens and also to group animals in a systematic way by way of phenotypic or genotypic or behavioural characteristics. This study is particularly important to the students in understanding the overall diversity.

9. The study of various ecosystems including marine, forest, aquatic, wetland etc., provide good idea to the students about the variety of ecosystems and their difference and interrelationships. The study also provide an idea about the floral and faunal communities of those ecosystems and give an idea about the native species of respective ecosystems.

Zoology Course outcomes (CBCS System)

Non-Chordates and Chordates: SEM 1-CC1 and GE 1, SEM 2-CC3 and GE 2, SEM 3-CC 5, SEM 4-CC 8

Upon successful completion of this course students will be able to appreciate the diversity of life and develop a critical understanding how animals changed from a primitive cell to a collection of cells to a complex body plan. The project assignments will also offer them an essence of research to find the process involved in studying biodiversity and taxonomy.

Molecular Biology and Biotechnology: SEM 1-CC 2, SEM V-DSE A 1 and A2

Upon successful completion of this course students should develop a thorough grasp over the concepts, and relevance of molecular biology in the present day world. They should get well versed in recombinant DNA technology which holds immense application in the field of biomedical science, genomics, agriculture, environment management, etc. Therefore, a fundamental understanding of Molecular Biology will help in career opportunities in all these fields. They should also get research ideas in areas such as therapeutic strategies or related opportunities in industry.

Cell Biology: SEM 2- CC4

Upon successful completion of this course, students should acquire the detailed knowledge of different pathways related to cellular functioning in healthy and diseased states, cell signaling and apoptosis which will enable them to understand the pathology of tumor genesis and cancer. They should also be able to give a 'health forecast' by analyzing the genetic database and cell information. They should also get new avenues of joining research in areas such as genetic engineering, cloning, development of vaccine, transplant of organs etc.

Animal Physiology: SEM 3- CC 6, GE 3, SEM 4- CC9

Upon successful completion of this courses, the students should be able to develop an understanding on the development and function of vertebrate tissue, organ and organ system. They should also know understanding abnormal physiological changes in animal and human diseases and new methods for treating those diseases. They may also undertake research in any aspect of animal physiology in future.

Biochemistry: SEM 3- CC7

Upon successful completion of this course, the students will be able to understand the structure and biological significance of carbohydrates, proteins, lipids, enzymes and nucleic acids.

It will prepare them for making clinical diagnosis, understanding pathology of diseases, treatment of diseases, designing of drugs and understanding their metabolism and manufacture of various biological products like amino acids, proteins, antibiotics, hormones, enzymes, nutrients, etc. The composition of food materials including the quality-milk and possible adulterations can be checked by biochemical tests. This discipline will provide career opportunities in farming, fishery, poultry, sericulture, bee keeping and in environmental remediation.

SEC A: APICULTURE, SEM -3

Upon successful completion of this course, the student will understand the prerequisite to beekeeping, be able to identify where to purchase equipment and demonstrate how to assemble it and may set up a cottage industry. They also acquire detailed knowledge about the nutritional and medicinal importance of honey and economic importance of other bee products.

Immunology, CC10- SEM 4

Upon successful completion of this course Upon successful completion students will be able to understand the difference between the innate versus adaptive immune systems; and humoral versus cell-mediated immune responses; be able to distinguish various cell types involved in immune responses and associated functions; be able to distinguish and characterize antibody isotypes, development, and functions; understand the role of cytokines in immunity and immune cell activation; and be able to identify and characterize cytokines of particular immune importance; understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation. They will be able to take up research careers in biomedical research, healthcare, agriculture and environmental monitoring.

SEC B: Aquarium Fisheries

Upon successful completion of this course, the students will develop awareness about the vast potentials involved in ornamental fish farming and trading. They will learn the scientific method of setting an aquarium, culture breeding and marketing techniques of common indigenous ornamental fishes besides learning the diseases in fishes and other constraints in their culture.

Ecology CC 11-SEM 5

Upon successful completion of this course students should understand the need to study animal ecology. They will be able to engage in field-based research activities to understand the theoretical aspects taught besides learning techniques for gathering data in the field. They will also be able to analyze a biological problem, derive testable hypotheses and then design experiments and put the tests into practice. They will also develop the ability to solve the environmental problems involving interaction of humans and natural systems at local or global level.

Genetics CC12- SEM 5, GE4-SEM 4

Upon successful completion of this course students will be able to understand the basic organization of prokaryotic and eukaryotic genome and perform genetic analysis at the gene, genome and population levels, understand gene expression and gene regulation mechanisms and be able to solve genetic problems. It also helps students to learn the molecular aspects of genetic disorders and mutations.

Parasitology DSE A1, SEM 5

Upon successful completion of this course, the students will be able to describe the mechanisms for transmission, virulence and pathogenicity of parasites, diagnose the causative agents, describe pathogenesis and treatment for important diseases like malaria, leishmaniasis, trypanosomiasis, toxoplasmosis, schistosomiasis, cysticercosis, filariasis etc, assess the importance of incidence, prevalence and epidemiology in parasitic infection.

Endocrinology DSE B1, SEM 5

Upon successful completion of this course the student should have detailed knowledge of the human body, especially the endocrine system. They should also be well qualified about the knowledge of all the prevailing hormonal disorders and their symptoms. It will imbibe career opportunities as pathologists, clinicians and allied medical fields.

Developmental Biology CC 13 SEM 6

Upon successful completion of this course, students will be able to understand that how a complete organism develops from a single cell, very similar mechanisms are used in very diverse organisms; and development is controlled through molecular changes resulting in variation in the expression and function of gene networks. They will also be able to examine the evolutionary history of the taxa based on developmental affinities and understand the relevance of developmental biology in medicine and its role in development of diseases.

Evolutionary biology CC14 SEM 6

Upon successful completion of this course a student should be able to understand and explain the forces behind evolution (mutation, migration, natural selection, sexual selection, genetic drift) and the interaction among them, both over ecological and evolutionary time. They should also be able to generate evolutionary hypotheses for a wide variety of biological phenomena, read and understand research literature dealing with evolutionary biology and apply the evolutionary principles in their own research

Animal Behaviour and Chronobiology DSE B 2, SEM 6

Upon successful completion of this courses, the students will be able to develop a wide range of theoretical and practical techniques used to study animal behaviour. They will also be able to understand and evaluate the role of behavior of all animals, including humans, in the complex ecological world and use it in the protection and conservation of animals in the wild.

TEACHER EDUCATION

Programme Specific Outcomes:

The B.Ed. curriculum 2015 in the light of the stipulations of the NCTE Regulations 2014 has been organised in three broad categories namely:

1. Perspectives in Education
2. Curriculum and Pedagogic Studies and
3. Engagement with the Field

Perspectives in Education

To imbibe knowledge and develop an understanding of:

- the growth and development of the child and adolescents
- contemporary India and Education
- issues of diversity, inequality and marginalisation in Indian education
- theoretical foundations of knowledge and curriculum
- learning and teaching
- gender in the context of school and society
- creating an inclusive school

Curriculum and Pedagogic Studies

1. To develop competencies for organizing various instructional and student support activities: various methods and approaches of organizing learning experiences of secondary school students.
2. To develop skills required in selecting and organizing learning experiences.
3. To develop skills involved in dealing with the academic and personal problems of learners.
4. To acquire knowledge and develop an understanding of the various procedures and techniques of evaluation and their classroom applications.
5. To develop skills involved in selecting, developing and using evaluation tools.
6. To acquire knowledge and develop an understanding of various aspects of school management and activities

Engagement in the Field/ Practicum

1. To provide sustained engagement with the
 - Self
 - Child
 - Community
 - School

2. To establish close connections between different curricular areas.
3. To connect theoretical curricular areas with practicum through assignments and field work.
4. To provide a reflective school experience through a 20 week internship programme.
5. To enhance the professional capacities of the student-teachers through EPC courses.

Course Outcomes

Perspectives in Education:

Course-I (1.1.1): Childhood and Growing Up

1st Half - Development and its Characteristics

Objectives

The student teachers will be able to:-

1. Explain the concept of growth and development and stages of development with special reference to the stage of adolescence.
2. Remember about the developmental characteristics
3. Analyse the influence of heredity, environment including socio-cultural factors on developmental process
4. Develop the skills of applying the principles of development in improving the teaching learning process.

2nd Half - Aspects of Development

Objectives

The student teachers will be able to:-

1. Know about various aspects related to development.
2. Be acquainted with theories, types and factors of motivation, attention and interest.
3. Understand the nature of intelligence and know various theories related to it.
4. Develop skills for identifying and nurturing creativity.

Course-II (1.1.2): Contemporary India and Education

1st Half - Education in Post-Independent India

Objectives

The student teachers will be able to:-

1. Comprehend the various constitutional provisions
2. Compare the recommendations of various commissions and the National Policies of Education.
3. Examine the problems and solutions of elementary and secondary education and find out probable solution.
4. Acquire the skill to eradicate inequality, discrimination and marginalization in education.
5. Develop an idea about National Values.

2nd Half - Policy Framework for Education in India

Objectives

The student Teachers will be able to:-

1. Realize the policy framework for Education in India
2. Identify the contemporary issues in education
2. Develop the knowledge about various policies on education
3. Evaluate the role and functions of different monitoring agencies of education
4. Infer the role of community participation and development in education
5. Acquire skill to develop educational planning and management.

Course-III (1.2.3): Learning and Teaching

1st Half - Learning

Objectives

The student teachers will be able to:-

1. Comprehend the range of cognitive capacities among learners.
2. Reflect on their own implicit understanding of the nature and kinds of learning.
3. Compare and contrast different theoretical perspectives on learning
4. Demonstrate his/her understanding of different skills at different phases of instruction.

2nd Half - Teaching for Learning

Objectives

The student teachers will be able to:-

1. Define the process of teaching.
2. Identify and efficiently used different models of teaching.
3. Engage in teaching with proper approach.
4. Develop skills required for teaching.

Course-VIII-(A) (1.2.8A) Knowledge and Curriculum- Part-I

Objectives

The student teachers will be able to:-

1. Introduce themselves to perspectives in education focusing on epistemological, philosophical and sociological bases of education.
2. Distinguish between knowledge and skill, teaching and training, knowledge and information and reason and belief.
3. Understand education in relation to constitutional goal, social issues and modern values.
4. Explain the concept, scope and objectives of education.
5. Realize the concepts of curriculum and syllabi.
6. Design curriculum in the context school experiences, evaluation, power, ideology, process and practice & its transactional modes.

Course-VI (1.4.6) Gender, School and Society

Objectives

The student teachers will be able to:-

1. Develop gender sensitivity among the student teachers.
2. Discuss the gender issues faced by the schools.
3. Evaluate the paradigm shift with reference to gender studies.
4. Explain how gender, power and sexuality relate to education (in terms of access, curriculum and pedagogy).

Course-VIII (B) (1.4.8B) Knowledge and Curriculum- Part-II

Objectives

The student teachers will be able to:-

1. Compare the concepts of curriculum and syllabi.
2. Discover the relationship between power, ideology and curriculum.
3. Design curriculum in the context of school experiences, evaluation, power, ideology, process and practice & its transactional modes.

Course-X (1.4.10) Creating an Inclusive School

Objectives

The student teachers will be able to:-

1. Sensitize to the concept of inclusive education and social inclusion.
2. Familiarize with the legal and policy perspectives behind inclusion in education.
3. Describe the types, probable causes, preventive measures and characteristics of different types of disability.
4. Differentiate between street children, platform children, and orphans, children born and brought up in correctional homes, child labour and other socioeconomically backward children.
5. Analyse how inclusion can be practiced in mainstream class.

Pedagogy and Curriculum Studies:

Course-IV(1.1.4) Language across the Curriculum

Objectives

The student teachers will be able to:-

1. Recognize nature, function and role of language across the curriculum.
2. Acquaint with obstacles in language usage while using the language and ways to overcome them.
3. Understand the importance and use of first and second language, multilingualism and impact of culture.

4. Acquire knowledge about the communication process and verbal and nonverbal communication skills.
5. Familiarize the students with barriers to (Listening, Speaking, Reading, Writing) LSRW skills and activities for developing these skills.

Course-V (1.1.5) Understanding Discipline and Subjects

Objectives

The student teachers will be able to:-

1. Remember the basis of knowledge and branches of emerging knowledge.
2. Examine the emergence of various disciplines.
3. Develop among the teacher trainees, an understanding of science as a discipline
4. Understand the nature of Mathematics as a discipline.
5. Develop among the teacher trainees an understanding of language as a discipline.
6. Develop among the teacher trainees an understanding of social science as a discipline.

Course-VII-(A) (1.2.7A) Pedagogy of a School Subject Part-I

Pedagogy of Language Teaching (Bengali, English,)

Objectives

The student teachers will be able to:-

1. Merit effective and constructive acquaintance with the basic foundations of Language teaching in India and West Bengal.
2. Acquire practical expertise in pedagogical analysis and develop behavioural competencies in teaching skills.
3. Apply principles abstracted from the study of various methods and approaches as regards purpose and procedure of planning lesson.
4. Work out and practice strategies for teaching language skills and communication skills.
5. Credit working acquaintance with concepts of language learning assessment.
6. Turn in to resourceful user of different kinds of Language Test.
7. Become efficient in construction of Test and Test Items.
8. Explore and experience various resources for target language learning.
9. Try out various means of organizing various resources for target Language Learning.

Pedagogy of Social Science Teaching (History, Geography, Philosophy,)

Objectives

The student teachers will be able to:-

1. Appreciate the significance of teaching Social Science.
2. Remember different branches of Social Science and correlation among those.
3. Explain and compare the approaches & Methods of Teaching Social Science.
4. Apply the knowledge and skills in teaching Social Science.

5. Analyse various practical aspects of Social Science.
6. Construct different Test Items.

Pedagogy of Science Teaching (Life Science)

Objectives

The student teachers will be able to:-

1. Appreciate the significance of teaching Science.
2. Discuss the Approaches & Methods of Teaching Science.
3. Apply different scientific knowledge and skills.
4. Develop the demonstration skill for laboratory based practical.
5. Describe different laboratory based practical works in Science.

Course-IX(1.2.9) Assessment for Learning

1st Half - Assessment of the Learning Process

Objectives

The student teachers will be able to:-

1. Discuss the assessment for learning.
2. Define the process of evaluation and its uses.
3. Write educational objectives following Revised Bloom's Taxonomy.
4. Compare different techniques of evaluation, tools of evaluation and their uses.
5. Explain different characteristics of instruments of evaluation.
6. Identify different types of teacher made tests and will construct them.
7. Compute simple statistics to assess the learning.

2nd Half - Assessment of the Learning System

Objectives

The student teachers will be able to:-

1. Recognize different aspects of the complexities of the learning system.
2. Compare various school records designed for specific purposes.
3. Establish the relationship between school and the community.
4. Remember the physical, infrastructural and human resources available in the schools.
5. Understand the curricular process in the school.
6. Evaluate the school effectiveness and other functional aspects of the schools.
7. Explore the students support services available and achievements of the schools.

Course-VII-(B) (1.3.7B) Pedagogy of a School Subject Part-II

Pedagogy of Language Teaching (English, Bengali):

Objectives

The student teachers will be able to:-

1. Design appropriate teaching – learning strategy/approach suited to particular content.
2. Be at home with the principles of constructing content analysis of school curriculum.
3. Use ICT and various teaching aids in teaching of Languages.
4. Understand the historical development of Language Teaching.
5. Develop various skills related to language learning.
6. Prepare a blueprint before entering into a class.

Pedagogy of Social Science Teaching (History, Geography, Philosophy):

Objectives

The student teachers will be able to:-

1. Remember the steps in doing Pedagogical Analysis of Content.
2. Provide the students authentic historical knowledge with the proposed content & make them to be competent to do pedagogical analysis of the subject.
3. Examine critically the major concept, ideas, principles & values relating the subject concerned.
4. Compare various Methods and skills in teaching Social Science.
5. Develop the skills to prepare teaching-learning materials.
6. Evaluate different assessment procedures in Social Science.

Pedagogy of Science Teaching (Life Science):

Objectives

The student teachers will be able to:-

1. Be aware of teaching & learning of Science subject concerned.
2. Examine critically the major concept, ideas, principles & values relating to the subject concerned.
3. Develop the skills to prepare teaching-learning materials.
4. Make them competent to do the pedagogical analysis of the subject concerned.
5. Organize laboratory based practical in Science subject in particular.

EPC Papers:

Course EPC –1 (1.1EPC1) Reading and Reflecting on Texts

Objectives

The student teachers will be able to:-

1. Remember the meaning, process, importance and characteristics of reading.
2. Appreciate and apply different levels, types, techniques and methods of reading.
3. Acquaint with the skills of reading different types of texts.
4. Develop different types of reading skills through various activities and met cognition.
5. Learn the skills of reading comprehension and to enhance vocabulary.
6. Acquaint with the problems of reading across curriculum.

CourseEPC-2 (1.2EPC2) Drama and Arts in Education

Objectives

The student teachers will be able to:-

1. Understand the use of 'Drama' as Pedagogy.
2. Use 'Role play' technique in the teaching learning process.
3. Discuss the importance of dramatic way of presentation.
4. Integrate singing method in teaching learning process.
5. Analyse various 'Dance forms' and their integration in educational practices.
6. Use art of drawing and painting in teaching learning process.
7. Develop creativity through different creative art forms.
8. Explain the efficacy of different art forms in education.

CourseEPC-3 (1.4EPC3) Critical Understanding of ICT

Objectives

The student teachers will be able to:-

1. Understand the social, economic, security and ethical issues associated with the use of ICT.
2. Identify the policy concerns for ICT.
3. Describe a computer system;
4. Operate the Windows and/or Linux operating systems.
5. Use Word processing, Spread sheets and Presentation software.
6. Acquire the skill of maintaining the computer system and the skill of trouble shooting with the help of Anti-Virus and Other tools.
7. Operate on Internet with safety.
8. Elucidate the application of ICT for Teaching Learning.
9. Develop various skills to use computer technology for sharing the information and ideas through the Blogs and Chatting groups.

CourseEPC-4 (1.4EPC4) Understanding the Self

Objectives

The student teachers will be able to:-

1. Define the meaning and importance of self-concept and self esteem.
2. Explain different factors related to self-concepts and self-esteem.
3. Describe the concept and importance of yoga and well-being.
4. Be sensitized about the concepts and interrelationships of interpersonal intelligence, personality development and emotional intelligence
5. Develop their personality through various practices likeMeditation ,Yoga etc.

Optional Papers:

Course-XI (1.4.11) Optional Health and Physical Education

Objectives

The student teachers will be able to:-

1. Build a scenario of Health Education in India.
2. Develop a Knowledge Base of the Most Common and Uncommon Diseases in India, their Diagnosis & Remediation
3. Discuss the Tech Related Health Risks & Learn How to Fix These.
4. Study the Health Education Vision & Mission of India.
5. Practice healthy habits.

Course-XI (1.4.11) Optional Peace & Value Education

Objectives

The student teachers will be able to:-

1. Define the meaning and role of peace education and value education in present context.
2. Identify the components of peace and value education.
3. Explain different perspectives of peace and value education.
4. Discuss the methods and evaluation of value education.
5. Organize/Participate in various value based activities.

Course-XI (1.4.11) Optional Guidance and Counseling

Objectives

The student teachers will be able to:-

1. Discuss guidance and counseling in details.
2. Define mental health.
3. Develop the knowledge about adjustment and maladjustment.
4. Acquire skill to develop tools and techniques.
5. Analyse the Abnormal Behaviour and Mental illness.

Course-XI (1.4.11) Optional Environmental & Population Education

Objectives

The student teachers will be able to:-

1. Explain the concept of population and environmental Education.
2. Discuss the objectives, scope and methods of teaching environmental and population education.
3. Nurture environmental attitudes and values within one-self.
3. Analyse the population and environmental education policies, the process of urbanization and migration.
4. Judge the importance of sustainable development and Agenda 21.
5. Evaluate the various issues related to population and environmental education.