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NAAC

Criterion-II

Teaching- Learning and Evaluation

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Criterion-II

2.6 Student Performance and Learning Outcome



2.6.1. Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.



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THE PROGRAMME OUTCOMES

(POs)



Programme Outcomes (POs) of Bachelor of Science (B.Sc.) Programmes

Programme Outcomes (POs) are specific learning outcomes that a student is expected to achieve upon completing a particular program of study. In the case of a B.Sc. program, some of the POs that students should be able to demonstrate by the end of the program include:

- PO-1.** Demonstrate a strong foundation in their chosen field of study, including a solid understanding of core concepts, principles, and theories.
- PO-2.** Apply scientific methods, techniques, and tools to analyze and solve problems in their chosen field of study.
- PO-3.** Communicate scientific ideas and information effectively, both orally and in writing, using appropriate scientific terminology and conventions.
- PO-4.** Use critical thinking and analytical skills to evaluate and interpret scientific data, and to make informed judgments and decisions based on evidence.
- PO-5.** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PO-6.** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PO-7.** Be aware of the impact of scientific knowledge and technology on society, and to consider ethical, social, and environmental implications when making scientific decisions.
- PO-8.** Pursue lifelong learning and professional development, keeping abreast of new developments in their field of study, and adapting to changing contexts and challenges.

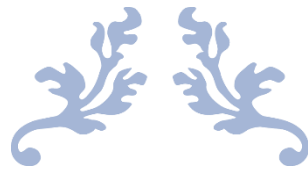
These POs are designed to ensure that B.Sc. graduates are well-prepared for careers in scientific research, industry, healthcare, education, and other fields. By achieving these POs, students are expected to be competent, confident, and capable of making meaningful contributions to their chosen fields of study.

Programme Outcomes (POs) of Bachelor of Commerce (B.Com.) Programmes

Programme Outcomes (POs) are specific learning outcomes that a student is expected to achieve upon completing a particular program of study. In the case of a B.Com. program, POs that students should be able to demonstrate by the end of the program include:

- PO-1.** Demonstrate a strong foundation in accounting, finance, marketing, and management, including a solid understanding of core concepts, principles, and practices.
- PO-2.** Apply business methods, techniques, and tools to analyze and solve problems in various business contexts.
- PO-3.** Communicate business ideas and information effectively, both orally and in writing, using appropriate business terminology and conventions.
- PO-4.** Use critical thinking and analytical skills to evaluate and interpret financial and other business data, and to make informed judgments and decisions based on evidence.
- PO-5.** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution, necessary to achieve business goals.
- PO-6.** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity, and adhere to ethical and legal business practices.
- PO-7.** Be aware of the impact of business activities and decisions on society, and to consider ethical, social, and environmental implications when making business decisions.
- PO-8.** Pursue lifelong learning and professional development, keeping abreast of new developments in business and adapting to changing contexts and challenges.

These POs are designed to ensure that B.Com. graduates are well-prepared for careers in finance, accounting, marketing, management, and other related fields. By achieving these POs, students are expected to be competent, confident, and capable of making meaningful contributions to the business world.



**THE PROGRAMME SPECIFIC
OUTCOMES
(PSOs)**





**THE PROGRAMME SPECIFIC
OUTCOMES (PSOs) OF
BACHELOR OF SCIENCE (B.Sc.)
PROGRAMMES**



PSOs for B.Sc. programme stated by Physics Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Physics), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Apply mathematical concepts and tools to analyze physical phenomena, including the laws of motion, energy, and electromagnetism.
- PSO-2** Apply experimental methods and techniques to design, conduct, and analyze experiments in physics, using various instruments and apparatus.
- PSO-3** Apply principles of classical mechanics, quantum mechanics, thermodynamics, and statistical physics to analyze and solve problems in various fields of physics.
- PSO-4** Demonstrate a strong foundation in theoretical physics, including an understanding of key concepts, principles, and theories.
- PSO-5** Apply principles of optics, electromagnetism, and electronics to design, analyze and troubleshoot various devices and systems, such as lasers, optical fibers, and electronic circuits.
- PSO-6** Demonstrate proficiency in the use of computational methods, software, and tools to simulate, analyze and visualize physical phenomena and data.
- PSO-7** Communicate scientific ideas and information effectively, both orally and in writing, using appropriate scientific terminology and conventions.
- PSO-8** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-9** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-10** Pursue lifelong learning and professional development, keeping abreast of new developments in physics, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Physics) graduates are well-prepared for careers in scientific research, teaching, industry, and other related fields. By achieving these

PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of physics.

PSOs for B.Sc. programme stated by Chemistry Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Chemistry), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Apply fundamental concepts of chemistry, including atomic structure, chemical bonding, thermodynamics, and kinetics, to analyze and solve problems in various fields of chemistry.
- PSO-2** Demonstrate proficiency in laboratory techniques, instrumentation, and safety procedures, and use them to conduct experiments, analyze data, and interpret results.
- PSO-3** Apply principles of organic, inorganic, and physical chemistry to design, synthesize, and characterize various compounds, including drugs, polymers, and materials.
- PSO-4** Analyze and interpret chemical data, using statistical and computational methods, to draw conclusions and make predictions about chemical phenomena.
- PSO-5** Apply knowledge of environmental chemistry, including principles of pollution, degradation, and remediation, to identify and solve environmental problems.
- PSO-6** Communicate scientific ideas and information effectively, both orally and in writing, using appropriate scientific terminology and conventions.
- PSO-7** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-8** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-9** Pursue lifelong learning and professional development, keeping abreast of new developments in chemistry, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Chemistry) graduates are well-prepared for careers in scientific research, teaching, industry, and other related fields. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of chemistry.

PSOs for B.Sc. programme stated by Mathematics Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Mathematics), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Apply fundamental concepts of mathematics, including algebra, calculus, and geometry, to analyze and solve problems in various fields of mathematics.
- PSO-2** Demonstrate proficiency in mathematical reasoning, logic, and proof, and use them to develop and evaluate mathematical arguments.
- PSO-3** Apply mathematical models and methods to solve problems in various fields, such as physics, engineering, economics, and finance.
- PSO-4** Analyze and interpret mathematical data, using statistical and computational methods, to draw conclusions and make predictions about mathematical phenomena.
- PSO-5** Apply knowledge of discrete mathematics, including graph theory, combinatorics, and optimization, to solve problems in various fields.
- PSO-6** Communicate mathematical ideas and information effectively, both orally and in writing, using appropriate mathematical terminology and conventions.
- PSO-7** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-8** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-9** Pursue lifelong learning and professional development, keeping abreast of new developments in mathematics, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Mathematics) graduates are well-prepared for careers in scientific research, teaching, industry, and other related fields. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of mathematics.

PSOs for B.Sc. programme stated by Electronics Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Electronics), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Apply fundamental concepts of electronics, including semiconductor physics, circuit theory, and signal processing, to analyze and solve problems in various fields of electronics.

- PSO-2** Demonstrate proficiency in designing and implementing electronic circuits, systems, and devices using simulation tools and software.
- PSO-3** Apply principles of analog and digital electronics to design and analyze electronic circuits and systems for various applications, such as communication, control, and instrumentation.
- PSO-4** Analyze and interpret electronic data, using statistical and computational methods, to draw conclusions and make predictions about electronic phenomena.
- PSO-5** Apply knowledge of electronic materials, devices, and manufacturing processes to design and develop electronic products, systems, and devices.
- PSO-6** Communicate electronic ideas and information effectively, both orally and in writing, using appropriate electronic terminology and conventions.
- PSO-7** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-8** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-9** Pursue lifelong learning and professional development, keeping abreast of new developments in electronics, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Electronics) graduates are well-prepared for careers in electronic engineering, research and development, manufacturing, and other related fields. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of electronics.

PSOs for B.Sc. programme stated by Computer Science Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Computer Science), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Apply fundamental concepts of computer science, including programming, algorithms, and data structures, to analyze and solve problems in various fields of computer science.
- PSO-2** Demonstrate proficiency in designing, implementing, and testing computer programs using appropriate programming languages, tools, and software development methodologies.

- PSO-3** Apply principles of computer organization, operating systems, and computer networks to design and analyze computer systems and networks for various applications.
- PSO-4** Analyze and interpret computer data, using statistical and computational methods, to draw conclusions and make predictions about computer systems and applications.
- PSO-5** Apply knowledge of databases, data mining, and information retrieval to design and develop database systems and applications.
- PSO-6** Communicate computer ideas and information effectively, both orally and in writing, using appropriate computer terminology and conventions.
- PSO-7** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-8** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-9** Pursue lifelong learning and professional development, keeping abreast of new developments in computer science, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Computer Science) graduates are well-prepared for careers in software engineering, system analysis, database administration, and other related fields. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of computer science.

PSOs for B.Sc. programme stated by Botany Department

Programme Specific Outcomes (PSOs) are specific learning outcomes that are unique to a particular program of study. For B.Sc. (Botany), some of the PSOs that students should be able to demonstrate by the end of the program include:

- PSO-1** Understand the basic principles of plant biology, including morphology, anatomy, physiology, and taxonomy.
- PSO-2** Demonstrate an understanding of the diversity of plant life, including the identification and classification of plants.
- PSO-3** Demonstrate an understanding of the ecological relationships between plants and their environment.
- PSO-4** Analyze and interpret plant data using statistical and computational methods to draw conclusions and make predictions about plant growth and development.

- PSO-5** Demonstrate proficiency in the use of scientific tools, techniques, and equipment to conduct laboratory and field-based experiments related to plant biology.
- PSO-6** Communicate botanical ideas and information effectively, both orally and in writing, using appropriate terminology and conventions.
- PSO-7** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-8** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.
- PSO-9** Pursue lifelong learning and professional development, keeping abreast of new developments in the field of botany, and adapting to changing contexts and challenges.

These PSOs are designed to ensure that B.Sc. (Botany) graduates are well-prepared for careers in plant research, agriculture, forestry, and other related fields. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of botany.

PSOs for B.Sc. programme stated by Zoology Department

By the end of the programme, Students would be able to”

- PSO-1** Develop a deeper sense with respect to phylum Protozoa to Echinodermata relation to taxonomy, classification, body organization and general characteristics this strengthens students’ capability in basic zoology.
- PSO-2** Grasp various the Systematic positions from Protozoa to Echinodermata their pathogenicity and its epidemiology.
- PSO-3** Describe unique characters and recognize life functions of Protozoa, Porifera, Coelenterate, Helminthes, Arthropoda, Annelida, Mollusca and Echinodermata. Improve ability and apply Knowledge of Non- chordates for its execution in Agriculture especially with the phylum Arthropoda.
- PSO-4** Implement an extensive idea about economic and ecological significance of various nonchordates phylum’s in human life.



**THE PROGRAMME SPECIFIC
OUTCOMES (PSOs) OF
LANGUAGES FOR B.Sc./B.Com.
PROGRAMMES**



PSOs for B.Sc./B.Com. programme stated by English Department

Programme Specific Outcomes (PSOs) for B.Sc./B.Com. in English language include:

- PSO-1** Develop advanced proficiency in the English language, including written and spoken communication skills, reading comprehension, and critical analysis.
- PSO-2** Demonstrate a comprehensive understanding of English language and literature, including literary genres, historical periods, and literary movements.
- PSO-3** Analyze and interpret complex literary texts, including poetry, drama, and fiction, using appropriate literary and critical theories.
- PSO-4** Demonstrate proficiency in research methodologies, including the use of library resources, online databases, and primary sources.
- PSO-5** Demonstrate effective writing skills in a variety of genres, including academic essays, research papers, and creative writing.
- PSO-6** Develop effective presentation skills, including the ability to communicate complex ideas and arguments through oral presentations, debates, and discussions.
- PSO-7** Demonstrate knowledge and understanding of the cultural and social contexts in which English language and literature are produced and consumed.
- PSO-8** Demonstrate proficiency in the use of technology, including word processing, multimedia presentations, and digital media.
- PSO-9** Work effectively in a team, demonstrating interpersonal skills such as collaboration, leadership, and conflict resolution.
- PSO-10** Demonstrate ethical and professional behavior, including integrity, responsibility, and respect for diversity.

These PSOs are designed to ensure that B.Sc./B.Com. graduates in English language are well-prepared for careers in diverse fields such as journalism, publishing, teaching, research, public relations, and creative writing. By achieving these PSOs, students are expected to be competent, confident, and capable of making meaningful contributions to the field of English language and literature.

PSOs for B.Sc./B.Com. programme stated by Hindi Department

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- पीएसओ-1 हिंदी भाषा के इतिहास, संस्कृति और साहित्य के बारे में विस्तृत ज्ञान होना।
- पीएसओ-2 हिंदी भाषा के विभिन्न वर्गों, जैसे कि व्याकरण, लेखन और भाषा विज्ञान में सटीकता से काम करना।
- पीएसओ-3 अनुवाद और भाषा अध्ययन के लिए उपयुक्त सॉफ्टवेयर और उपकरणों का उपयोग करना।
- पीएसओ-4 भाषा और संस्कृति के माध्यम से भारतीय समाज और संस्कृति को समझना।
- पीएसओ-5 हिंदी भाषा में लेखन कौशल और भाषा उपयोग के लिए संचार कौशल विकसित करना।
- पीएसओ-6 विभिन्न संस्थाओं और क्षेत्रों में हिंदी भाषा का उपयोग करने में सक्षम होना।
- पीएसओ-7 व्यक्तिगत उन्नयन और सामाजिक सेवा के लिए हिंदी भाषा का उपयोग करना।
- पीएसओ-8 हिंदी भाषा के माध्यम से विश्व के विभिन्न भाषाओं और संस्कृतियों को समझना।

PSOs for B.Sc./B.Com. programme stated by Marathi Department

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- पीएसओ-1 मराठी भाषेचे इतिहास, संस्कृती, व्याकरण, वाङ्मय आणि संचाराचे संपूर्ण ज्ञान विद्यार्थ्यांना देणे.
- पीएसओ-2 मराठी भाषेच्या शास्त्रीय संस्कृतीसाठी अपेक्षित विद्यार्थ्यांना मराठी साहित्य, छंद, अलंकार आणि तंत्रज्ञान यांचे संग्रह आणि व्याख्या करण्यास क्षमतेची प्राप्ती करावी.
- पीएसओ-3 मराठी भाषेचे संचार आणि बोलीच्या क्षेत्रात अपेक्षित ज्ञान अर्जित करण्यास क्षमतेची प्राप्ती करावी.

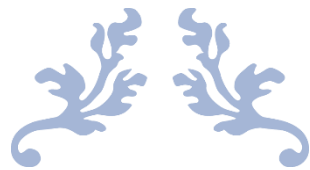
पीएसओ-4 मराठी भाषेतील गणित, विज्ञान, सामाजिक विज्ञान आणि संगणक अभियांत्रिकी या विषयांच्या संबंधीत शब्दांचा उपयोग करून समजून घ्यावे.

पीएसओ-5 मराठी भाषेचा अभिवादन, बोली, लेखन, विवेचन, तुलना, अनुवाद, टिप्पणी, संपादन आणि समाचार पद्धतींना समजून घ्यावे.

पीएसओ-6 मराठी भाषेची साहित्यिक विरासत आणि संस्कृती समजून घ्यावे आणि त्याचा उपयोग करून संबंधीत विषयांना समजून घ्यावे.

पीएसओ-7 मराठी भाषेचा इतिहास, व्याकरण, सामान्य विज्ञान, चित्रकला आणि संस्कृती या विषयांचा समजून घ्यावे.

पीएसओ-8 मराठी भाषेचे अभिमान आणि समाजातील स्थान समजून घ्यावे आणि भाषेच्या उपयोगाचे नियम आणि मराठी भाषेची भूमिका समजून घ्यावे.



**THE PROGRAMME SPECIFIC
OUTCOMES (PSOs) OF
BACHELOR OF COMMERCE
(B.Com.) PROGRAMMES**



PSOs for B.Com. programme stated by Commerce Department

The Programme Specific Outcomes (PSOs) for Commerce can vary depending on the specific focus and specialization of the program. However, some common PSOs for B.Com. programs can include:

- PSO-1** Develop an understanding of the principles and practices of accounting, finance, and business management.
- PSO-2** Acquire knowledge of the legal, economic, and social frameworks within which businesses operate.
- PSO-3** Develop analytical and problem-solving skills for making informed business decisions.
- PSO-4** Develop communication and interpersonal skills to effectively collaborate with diverse teams and stakeholders.
- PSO-5** Demonstrate proficiency in using technology for business analysis, decision making, and communication.
- PSO-6** Develop entrepreneurial and innovative thinking for identifying and pursuing business opportunities.
- PSO-7** Acquire knowledge of global business practices and cross-cultural communication.
- PSO-8** Develop ethical and socially responsible perspectives for making business decisions.
- PSO-9** Develop leadership and management skills for effectively managing people, projects, and resources.
- PSO-10** Demonstrate proficiency in written and oral communication for business purposes.



THE COURSE OUTCOMES
(COs)
STATED BY THE DEPARTMENTS





PHYSICS



COs for B.Sc. (PHYSICS) – Semester – I

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Physics) Semester – Ist, the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the fundamental concepts of mechanics, such as kinematics, dynamics, and conservation laws.
- CO-2** Apply mathematical methods to solve problems in mechanics, such as projectile motion and circular motion.
- CO-3** Demonstrate an understanding of the basic principles of thermodynamics, such as temperature, heat, and the laws of thermodynamics.
- CO-4** Apply mathematical methods to solve problems in thermodynamics, such as calculating the work done by a gas in a thermodynamic process.
- CO-5** Demonstrate an understanding of the basic principles of waves and oscillations, such as wave properties, wave equations, and resonance.
- CO-6** Apply mathematical methods to solve problems in wave and oscillation phenomena, such as calculating the frequency and period of a harmonic oscillator.
- CO-7** Demonstrate an understanding of the basic principles of optics, such as reflection, refraction, and interference.
- CO-8** Apply mathematical methods to solve problems in optics, such as calculating the focal length of a lens.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to mechanics, thermodynamics, waves, and optics.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a strong foundation in the core concepts and methods of physics, and are able to apply them to solve problems and conduct experiments. By achieving these COs, students will be well-prepared for more advanced courses in physics and related fields.

COs for B.Sc. (PHYSICS) – Semester – II

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Physics) Semester – IInd, the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Demonstrate an understanding of the basic principles of electricity and magnetism, including electric fields, magnetic fields, and electromagnetic waves.
- CO-2** Apply mathematical methods to solve problems in electricity and magnetism, such as calculating the electric potential and the magnetic field strength.
- CO-3** Demonstrate an understanding of the basic principles of quantum mechanics, including wave-particle duality, Heisenberg's uncertainty principle, and the Schrodinger equation.
- CO-4** Apply mathematical methods to solve problems in quantum mechanics, such as calculating the energy levels of a quantum system.
- CO-5** Demonstrate an understanding of the basic principles of statistical mechanics, including entropy and the Boltzmann distribution.
- CO-6** Apply mathematical methods to solve problems in statistical mechanics, such as calculating the partition function of a system.
- CO-7** Demonstrate an understanding of the basic principles of relativity, including the Lorentz transformation and the concept of spacetime.
- CO-8** Apply mathematical methods to solve problems in relativity, such as calculating the time dilation and length contraction of a moving object.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to electricity and magnetism, quantum mechanics, statistical mechanics, and relativity.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a strong foundation in the advanced concepts and methods of physics, and are able to apply them to solve problems and conduct experiments. By achieving these COs, students will be well-prepared for more specialized courses in physics and related fields, as well as for research and industry positions that require advanced physics knowledge.

COs for B.Sc. (PHYSICS) – Semester – III

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Physics) Semester – IIIrd, the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Demonstrate an understanding of the basic principles of classical mechanics, including Newton's laws of motion, conservation of energy, and conservation of momentum.
- CO-2** Apply mathematical methods to solve problems in classical mechanics, such as calculating the trajectory of a projectile or the motion of a simple harmonic oscillator.
- CO-3** Demonstrate an understanding of the basic principles of thermodynamics, including the laws of thermodynamics and the concept of entropy.
- CO-4** Apply mathematical methods to solve problems in thermodynamics, such as calculating the work done and the heat transfer in a thermodynamic process.
- CO-5** Demonstrate an understanding of the basic principles of optics, including the wave nature of light, the principles of geometric optics, and interference and diffraction phenomena.
- CO-6** Apply mathematical methods to solve problems in optics, such as calculating the focal length of a lens or the intensity pattern of a diffraction grating.
- CO-7** Demonstrate an understanding of the basic principles of electronics, including circuits, semiconductors, and transistors.
- CO-8** Apply mathematical methods to solve problems in electronics, such as analyzing the behavior of a simple circuit or designing a transistor amplifier.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to classical mechanics, thermodynamics, optics, and electronics.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a solid understanding of classical mechanics, thermodynamics, optics, and electronics, which are important foundational areas of physics. By achieving these COs, students will be able to apply their knowledge to solve a wide range of problems, and will be well-prepared for more advanced courses in physics and related fields, as well as for research and industry positions that require a strong background in physics.

COs for B.Sc. (PHYSICS) – Semester – IV

Course Outcomes (COs) for B.Sc. (Physics) Semester – IVth are specific learning outcomes that students are expected to achieve by the end of the semester. Some of the COs for B.Sc. (Physics) Semester – IVth include:

- CO-1** Demonstrate an understanding of the basic principles of electricity and magnetism, including Coulomb's law, Gauss's law, Ampere's law, and Faraday's law.
- CO-2** Apply mathematical methods to solve problems in electricity and magnetism, such as calculating the electric field and potential due to a point charge or the magnetic field of a current-carrying wire.
- CO-3** Demonstrate an understanding of the basic principles of quantum mechanics, including wave-particle duality, the uncertainty principle, and the Schrödinger equation.
- CO-4** Apply mathematical methods to solve problems in quantum mechanics, such as calculating the energy levels and wavefunctions of a particle in a potential well.
- CO-5** Demonstrate an understanding of the basic principles of special relativity, including time dilation, length contraction, and the Lorentz transformation.
- CO-6** Apply mathematical methods to solve problems in special relativity, such as calculating the time dilation and length contraction of a moving object.
- CO-7** Demonstrate an understanding of the basic principles of statistical mechanics, including the Boltzmann distribution, the partition function, and entropy.
- CO-8** Apply mathematical methods to solve problems in statistical mechanics, such as calculating the thermal properties of a gas or a crystal.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to electricity and magnetism, quantum mechanics, special relativity, and statistical mechanics.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a solid understanding of electricity and magnetism, quantum mechanics, special relativity, and statistical mechanics, which are important areas of modern physics. By achieving these COs, students will be well-prepared for more advanced courses in physics and related fields, as well as for research and industry positions that require a strong background in these areas of physics.

COs for B.Sc. (PHYSICS) – Semester – V

Course Outcomes (COs) for B.Sc. (Physics) Semester – Vth are specific learning outcomes that students are expected to achieve by the end of the semester. Some of the COs for B.Sc. (Physics) Semester – Vth include:

- CO-1** Demonstrate an understanding of the basic principles of classical mechanics, including Newton's laws of motion, conservation of energy and momentum, and the Lagrangian and Hamiltonian formalisms.
- CO-2** Apply mathematical methods to solve problems in classical mechanics, such as calculating the trajectory of a particle under the influence of a given force.
- CO-3** Demonstrate an understanding of the basic principles of electromagnetism, including Maxwell's equations, electromagnetic waves, and electromagnetic radiation.
- CO-4** Apply mathematical methods to solve problems in electromagnetism, such as calculating the electric and magnetic fields of a charged particle or a current-carrying wire.
- CO-5** Demonstrate an understanding of the basic principles of thermodynamics, including the laws of thermodynamics, the ideal gas law, and thermodynamic cycles.
- CO-6** Apply mathematical methods to solve problems in thermodynamics, such as calculating the work, heat, and entropy changes in a thermodynamic process.
- CO-7** Demonstrate an understanding of the basic principles of optics, including the wave and ray models of light, interference, diffraction, and polarization.
- CO-8** Apply mathematical methods to solve problems in optics, such as calculating the interference pattern produced by two or more light sources.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to classical mechanics, electromagnetism, thermodynamics, and optics.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a solid understanding of classical mechanics, electromagnetism, thermodynamics, and optics, which are important areas of physics. By achieving these COs, students will be well-prepared for more advanced courses in physics and related fields, as well as for research and industry positions that require a strong background in these areas of physics.

COs for B.Sc. (PHYSICS) – Semester – VI

Course Outcomes (COs) for B.Sc. (Physics) Semester – VIth are specific learning outcomes that students are expected to achieve by the end of the semester. Some of the COs for B.Sc. (Physics) Semester – VIth include:

- CO-1** Demonstrate an understanding of the basic principles of quantum mechanics, including wave-particle duality, the uncertainty principle, and the Schrödinger equation.
- CO-2** Apply mathematical methods to solve problems in quantum mechanics, such as calculating the energy levels and wavefunctions of a particle in a potential well.
- CO-3** Demonstrate an understanding of the basic principles of statistical mechanics, including the Boltzmann distribution, partition functions, and entropy.
- CO-4** Apply mathematical methods to solve problems in statistical mechanics, such as calculating the average energy and heat capacity of a system of particles in thermal equilibrium.
- CO-5** Demonstrate an understanding of the basic principles of solid-state physics, including crystal structures, band theory, and semiconductors.
- CO-6** Apply mathematical methods to solve problems in solid-state physics, such as calculating the energy bands and carrier densities in a semiconductor crystal.
- CO-7** Demonstrate an understanding of the basic principles of nuclear physics, including nuclear structure, nuclear reactions, and radioactivity.
- CO-8** Apply mathematical methods to solve problems in nuclear physics, such as calculating the decay rates and cross-sections of radioactive nuclei.
- CO-9** Demonstrate proficiency in the use of laboratory equipment and techniques to conduct experiments related to quantum mechanics, statistical mechanics, solid-state physics, and nuclear physics.
- CO-10** Communicate physics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Physics) students have a solid understanding of quantum mechanics, statistical mechanics, solid-state physics, and nuclear physics, which are important areas of modern physics. By achieving these COs, students will be well-prepared for more advanced courses in physics and related fields, as well as for research and industry positions that require a strong background in these areas of physics.



CHEMISTRY



COs for B.Sc. (CHEMISTRY) – Semester – I

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – Ist are specific learning outcomes that students are expected to achieve by the end of the semester. Some of the COs for B.Sc. (Chemistry) Semester – Ist include:

- CO-1** Demonstrate an understanding of basic principles and concepts in Chemistry, including atomic and molecular structure, chemical bonding, and states of matter.
- CO-2** Apply mathematical concepts and chemical laws to solve problems related to chemical reactions, stoichiometry, and equilibrium.
- CO-3** Describe and apply basic laboratory techniques, such as measurements, titrations, and separations, to conduct experiments and analyze data.
- CO-4** Analyze and interpret experimental data using appropriate statistical and graphical methods.
- CO-5** Demonstrate an understanding of the properties and behavior of common elements and compounds, including their physical and chemical properties.
- CO-6** Explain and apply the principles of acid-base chemistry, redox reactions, and thermodynamics to chemical systems.
- CO-7** Develop critical thinking skills and scientific reasoning abilities, including the ability to design and carry out experiments, analyze data, and draw conclusions based on evidence.
- CO-8** Communicate chemical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Chemistry) students have a solid foundation in basic principles and concepts of chemistry, as well as the laboratory skills and analytical abilities necessary to conduct experiments and analyze data. By achieving these COs, students will be well-prepared for more advanced courses in chemistry and related fields, as well as for research and industry positions that require a strong background in chemistry.

COs for B.Sc. (CHEMISTRY) – Semester – II

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – IInd build upon the foundational knowledge and skills developed in the first semester, and include:

- CO-1** Apply the principles of chemical kinetics, thermodynamics, and equilibrium to predict and analyze chemical reactions.
- CO-2** Describe the structure, properties, and reactions of organic compounds, including functional group chemistry and stereochemistry.
- CO-3** Apply spectroscopic methods, such as infrared and nuclear magnetic resonance (NMR), to analyze the structures of organic compounds.
- CO-4** Explain the properties and behavior of solutions, including colligative properties and acid-base equilibria.
- CO-5** Apply basic concepts in electrochemistry and materials science to analyze and design electrochemical cells and materials.
- CO-6** Demonstrate proficiency in basic laboratory techniques, including organic synthesis, spectroscopy, and electrochemistry, and be able to analyze and interpret experimental data.
- CO-7** Develop critical thinking skills and scientific reasoning abilities, including the ability to design and carry out experiments, analyze data, and draw conclusions based on evidence.
- CO-8** Communicate chemical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to provide B.Sc. (Chemistry) students with a deeper understanding of the principles and concepts of chemistry, as well as the laboratory skills and analytical abilities necessary to conduct more advanced experiments. By achieving these COs, students will be well-prepared for further studies in chemistry and related fields, as well as for research and industry positions that require expertise in chemical synthesis, spectroscopy, and electrochemistry.

COs for B.Sc. (CHEMISTRY) – Semester – III

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – IIIrd build upon the knowledge and skills developed in the previous semesters, and include:

- CO-1** Describe the fundamental principles and reactions of inorganic chemistry, including coordination compounds, organometallics, and bioinorganic chemistry.
- CO-2** Understand the principles and applications of analytical chemistry, including spectroscopy, chromatography, and electrochemical methods.
- CO-3** Analyze and predict the properties and behavior of solids, including crystal structures, bonding, and defects.
- CO-4** Describe the basic principles and applications of biochemistry, including metabolism, biomolecules, and biochemical techniques.
- CO-5** Demonstrate proficiency in advanced laboratory techniques, including inorganic synthesis, analytical methods, and biochemical assays, and be able to analyze and interpret experimental data.
- CO-6** Develop critical thinking skills and scientific reasoning abilities, including the ability to design and carry out experiments, analyze data, and draw conclusions based on evidence.
- CO-7** Communicate chemical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.
- CO-8** Demonstrate ethical and professional behavior in the practice of chemistry, including safety, accuracy, and responsibility in laboratory work.

By achieving these COs, B.Sc. (Chemistry) students will have a comprehensive understanding of the principles and concepts of chemistry, including inorganic, analytical, and biochemistry, and be able to apply this knowledge to a wide range of chemical systems. They will also have advanced laboratory skills and be able to design and carry out complex experiments, analyze data, and communicate their findings effectively. This will prepare them for further studies in chemistry, as well as for research and industry positions in chemistry, materials science, and biochemistry.

COs for B.Sc. (CHEMISTRY) – Semester – IV

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – IVth build upon the knowledge and skills developed in the previous semesters, and include:

- CO-1** Explain the fundamental principles and reactions of organic chemistry, including stereochemistry, reactions of carbonyl compounds, and heterocyclic chemistry.
- CO-2** Understand the principles and applications of physical chemistry, including thermodynamics, kinetics, and quantum mechanics.
- CO-3** Analyze and predict the properties and behavior of liquids and solutions, including colligative properties, phase equilibria, and acid-base equilibria.
- CO-4** Describe the basic principles and applications of environmental chemistry, including atmospheric and aquatic chemistry, environmental pollution, and remediation techniques.
- CO-5** Demonstrate proficiency in advanced laboratory techniques, including organic synthesis, physical chemistry experiments, and environmental sampling and analysis, and be able to analyze and interpret experimental data.
- CO-6** Develop critical thinking skills and scientific reasoning abilities, including the ability to design and carry out experiments, analyze data, and draw conclusions based on evidence.
- CO-7** Communicate chemical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.
- CO-8** Demonstrate ethical and professional behavior in the practice of chemistry, including safety, accuracy, and responsibility in laboratory work.

By achieving these COs, B.Sc. (Chemistry) students will have a comprehensive understanding of the principles and concepts of organic, physical, and environmental chemistry, and be able to apply this knowledge to a wide range of chemical systems. They will also have advanced laboratory skills and be able to design and carry out complex experiments, analyze data, and communicate their findings effectively. This will prepare them for further studies in chemistry, as well as for research and industry positions in chemistry, materials science, and environmental science.

COs for B.Sc. (CHEMISTRY) – Semester – V

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – Vth build upon the knowledge and skills developed in the previous semesters, and include:

- CO-1** Understand the principles of inorganic chemistry, including coordination chemistry, group theory, and organometallic chemistry.
- CO-2** Analyze the thermodynamic and kinetic aspects of chemical reactions, including reaction mechanisms, catalysis, and photochemistry.
- CO-3** Describe the properties and reactions of different classes of biomolecules, including amino acids, proteins, carbohydrates, and nucleic acids, and understand the principles of biochemistry.
- CO-4** Demonstrate proficiency in instrumental methods of analysis, including spectroscopic and chromatographic techniques, and be able to interpret and analyze experimental data.
- CO-5** Understand the principles and applications of polymer chemistry, including synthesis, properties, and applications of different types of polymers.
- CO-6** Develop skills in scientific writing, including the preparation of laboratory reports, research papers, and scientific presentations.
- CO-7** Demonstrate critical thinking and problem-solving skills, including the ability to identify and solve complex chemical problems using a variety of approaches and methods.
- CO-8** Demonstrate ethical and professional behavior in the practice of chemistry, including safety, accuracy, and responsibility in laboratory work.

By achieving these COs, B.Sc. (Chemistry) students will have a comprehensive understanding of the principles and concepts of inorganic, physical, organic, and biochemistry, and be able to apply this knowledge to a wide range of chemical systems. They will also have advanced laboratory skills and be able to design and carry out complex experiments, analyze data, and communicate their findings effectively. This will prepare them for further studies in chemistry, as well as for research and industry positions in chemistry, materials science, biochemistry, and related fields.

COs for B.Sc. (CHEMISTRY) – Semester – VI

Course Outcomes (COs) for B.Sc. (Chemistry) Semester – VIth build upon the knowledge and skills developed in the previous semesters, and include:

- CO-1** Understand the principles and applications of spectroscopic techniques, including nuclear magnetic resonance (NMR), infrared (IR), and mass spectrometry (MS), and be able to interpret and analyze spectra to determine chemical structures.
- CO-2** Describe the principles and applications of computational chemistry, including molecular modeling and simulation, and be able to use computational tools to solve chemical problems.
- CO-3** Understand the principles and applications of organic synthesis, including retrosynthesis, protecting groups, and multi-step synthesis, and be able to design and carry out complex organic syntheses.
- CO-4** Analyze the thermodynamic and kinetic aspects of chemical reactions, including reaction mechanisms, catalysis, and photochemistry, and be able to apply this knowledge to design and optimize chemical processes.
- CO-5** Understand the principles and applications of materials chemistry, including the synthesis and properties of different types of materials, and be able to design and synthesize new materials for specific applications.
- CO-6** Develop skills in scientific communication, including writing research proposals, scientific papers, and project reports, and be able to present scientific findings in oral presentations and posters.
- CO-7** Demonstrate advanced problem-solving and critical thinking skills, including the ability to analyze and solve complex chemical problems using a variety of approaches and methods.
- CO-8** Demonstrate professional and ethical behavior in the practice of chemistry, including safety, accuracy, and responsibility in laboratory work, and be able to work effectively in teams.

By achieving these COs, B.Sc. (Chemistry) students will have a deep understanding of the principles and concepts of chemistry, and be able to apply this knowledge to solve complex chemical problems in a wide range of fields. They will also have advanced laboratory and computational skills, and be able to design and carry out complex experiments and simulations to solve chemical problems. This will prepare them for further studies in chemistry, as well as for research and industry positions in chemistry, materials science, biochemistry, and related fields.



MATHEMATICS



COs for B.Sc. (MATHEMATICS) – Semester – I

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – Ist, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of calculus, including limits, derivatives, and integrals.
- CO-2** Apply the principles of calculus to solve problems related to rates of change, optimization, and integration.
- CO-3** Understand the properties of various types of functions, including polynomials, exponential, and trigonometric functions.
- CO-4** Apply the principles of functions to solve problems related to functions and their properties.
- CO-5** Understand the principles of linear algebra, including matrix operations, determinants, and systems of linear equations.
- CO-6** Apply the principles of linear algebra to solve problems related to systems of linear equations and matrices.
- CO-7** Understand the principles of mathematical reasoning, including logical operations, sets, and relations.
- CO-8** Apply the principles of mathematical reasoning to solve problems related to sets and logic.
- CO-9** Demonstrate proficiency in using mathematical software and tools, such as Matlab and Wolfram Alpha, to solve mathematical problems.
- CO-10** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in the core concepts and methods of calculus, functions, linear algebra, and mathematical reasoning. By achieving these COs, students will be well-prepared for more advanced courses in mathematics and related fields.

COs for B.Sc. (MATHEMATICS) – Semester – II

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – IInd, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the concepts of vector calculus and differential equations and their applications in physics and engineering.
- CO-2** Apply different techniques and methods to solve various types of differential equations such as first-order equations, linear equations, and higher-order equations.
- CO-3** Understand the concepts of vector spaces and linear transformations and their applications in solving real-world problems.
- CO-4** Apply the basic concepts of matrices and determinants in solving systems of linear equations and understanding the properties of matrices.
- CO-5** Develop an understanding of complex numbers and their applications in solving mathematical problems.
- CO-6** Understand the concept of sequences and series and their properties, and apply them in solving problems.
- CO-7** Apply the concepts of limits, continuity, and differentiability to various functions and their applications in physics and engineering.
- CO-8** Develop proficiency in the use of mathematical software such as MATLAB and Mathematica to solve mathematical problems and visualize mathematical functions.
- CO-9** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in the core concepts and methods of mathematics, and are able to apply them to solve problems and conduct research. By achieving these COs, students will be well-prepared for more advanced courses in mathematics and related fields.

COs for B.Sc. (MATHEMATICS) – Semester – III

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – IIIrd, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of real analysis, including limits, continuity, and differentiability of functions.
- CO-2** Apply various techniques of differentiation and integration to solve problems in calculus, such as finding derivatives, integrals, and solutions to differential equations.

- CO-3** Understand the basic principles of linear algebra, including vector spaces, linear transformations, and matrix operations.
- CO-4** Apply various techniques of linear algebra to solve problems, such as finding eigenvalues and eigenvectors, solving systems of linear equations, and diagonalizing matrices.
- CO-5** Understand the basic concepts of complex analysis, including analytic functions, Cauchy's theorem, and Laurent series.
- CO-6** Apply various techniques of complex analysis to solve problems, such as finding residues, computing integrals, and solving differential equations.
- CO-7** Understand the basic concepts of probability theory, including probability distributions, random variables, and statistical inference.
- CO-8** Apply various techniques of probability theory to solve problems, such as computing probabilities, finding expected values, and testing hypotheses.
- CO-9** Develop analytical and problem-solving skills by solving mathematical problems and exercises in class and in homework assignments.
- CO-10** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate mathematical terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in the core concepts and methods of mathematics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in mathematics and related fields, as well as for various career opportunities that require strong mathematical skills.

COs for B.Sc. (MATHEMATICS) – Semester – IV

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – IVth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the fundamental concepts of differential equations, including first-order, second-order, and systems of differential equations.
- CO-2** Apply various techniques of differential equations to solve problems, such as finding general solutions, particular solutions, and solutions using Laplace transforms.

- CO-3** Understand the basic principles of numerical methods, including interpolation, numerical differentiation and integration, and solutions to differential equations using numerical methods.
- CO-4** Apply various techniques of numerical methods to solve problems, such as approximating functions, estimating integrals, and finding solutions to differential equations using numerical methods.
- CO-5** Understand the basic concepts of algebraic structures, including groups, rings, and fields.
- CO-6** Apply various techniques of algebraic structures to solve problems, such as proving properties of groups, rings, and fields, and constructing examples of algebraic structures.
- CO-7** Understand the basic principles of graph theory, including graphs, trees, and network flows.
- CO-8** Apply various techniques of graph theory to solve problems, such as finding shortest paths, maximal flows, and minimal spanning trees.
- CO-9** Develop analytical and problem-solving skills by solving mathematical problems and exercises in class and in homework assignments.
- CO-10** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate mathematical terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in the core concepts and methods of mathematics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in mathematics and related fields, as well as for various career opportunities that require strong mathematical skills.

COs for B.Sc. (MATHEMATICS) – Semester – V

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – Vth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the fundamental concepts of abstract algebra, including groups, rings, and fields.

- CO-2** Apply various techniques of abstract algebra to solve problems, such as proving properties of groups, rings, and fields, and constructing examples of algebraic structures.
- CO-3** Understand the basic principles of topology, including topological spaces, continuous functions, and compactness.
- CO-4** Apply various techniques of topology to solve problems, such as proving properties of topological spaces and continuous functions, and identifying properties of different types of topological spaces.
- CO-5** Understand the fundamental concepts of measure theory and integration, including Lebesgue measure, measurable functions, and Lebesgue integration.
- CO-6** Apply various techniques of measure theory and integration to solve problems, such as computing integrals and proving convergence properties of integrals.
- CO-7** Understand the basic principles of functional analysis, including Banach and Hilbert spaces, linear operators, and applications to differential equations.
- CO-8** Apply various techniques of functional analysis to solve problems, such as finding solutions to differential equations using Banach and Hilbert spaces.
- CO-9** Develop analytical and problem-solving skills by solving mathematical problems and exercises in class and in homework assignments.
- CO-10** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate mathematical terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in the advanced concepts and methods of mathematics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in mathematics and related fields, as well as for various career opportunities that require strong mathematical skills.

COs for B.Sc. (MATHEMATICS) – Semester – VI

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Mathematics) Semester – VIth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic principles of measure theory, including measures, measurable functions, and Lebesgue integration.

- CO-2** Apply various techniques of measure theory to solve problems, such as computing integrals and proving convergence theorems.
- CO-3** Understand the fundamental concepts of functional analysis, including Banach and Hilbert spaces, linear operators, and functionals.
- CO-4** Apply various techniques of functional analysis to solve problems, such as finding norms, orthogonal projections, and solutions to linear equations.
- CO-5** Understand the basic principles of partial differential equations, including the classification of equations, the method of characteristics, and the Laplace and heat equations.
- CO-6** Apply various techniques of partial differential equations to solve problems, such as finding solutions using separation of variables, the Fourier method, and numerical methods.
- CO-7** Understand the basic concepts of algebraic topology, including homotopy, homology, and cohomology.
- CO-8** Apply various techniques of algebraic topology to solve problems, such as computing homotopy groups, homology groups, and cohomology groups.
- CO-9** Develop analytical and problem-solving skills by solving mathematical problems and exercises in class and in homework assignments.
- CO-10** Communicate mathematical concepts and information effectively, both orally and in writing, using appropriate mathematical terminology and conventions.

These COs are designed to ensure that B.Sc. (Mathematics) students have a strong foundation in advanced mathematics, including measure theory, functional analysis, partial differential equations, and algebraic topology. By achieving these COs, students will be well-prepared for graduate study in mathematics or related fields, as well as for various career opportunities that require advanced mathematical skills.



ELECTRONICS



COs for B.Sc. (ELECTRONICS) – Semester – I

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – Ist, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of electronics, including semiconductors, diodes, and transistors.
- CO-2** Apply various techniques of circuit analysis, such as Ohm's Law, Kirchhoff's Laws, and Thevenin's theorem to solve problems in circuit analysis.
- CO-3** Understand the basic principles of digital electronics, including Boolean algebra, logic gates, and flip-flops.
- CO-4** Analyze and design combinational and sequential logic circuits using various techniques.
- CO-5** Understand the basic principles of communication systems, including modulation, demodulation, and transmission media.
- CO-6** Understand the basics of electromagnetic fields and waves, including the properties of electromagnetic waves, wave propagation, and reflection and refraction of electromagnetic waves.
- CO-7** Apply various techniques of mathematics to solve problems in electronics, such as differential equations and Laplace transforms.
- CO-8** Develop analytical and problem-solving skills by solving electronics problems and exercises in class and in homework assignments.
- CO-9** Communicate electronics concepts and information effectively, both orally and in writing, using appropriate electronics terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronics and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities that require strong electronics skills.

COs for B.Sc. (ELECTRONICS) – Semester – II

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – IInd, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of digital electronics, including Boolean algebra, logic gates, and combinational and sequential circuits.
- CO-2** Design and analyze digital circuits using techniques such as truth tables, Karnaugh maps, and state diagrams.
- CO-3** Understand the basic concepts of analog electronics, including amplifiers, oscillators, and filters.
- CO-4** Design and analyze analog circuits using techniques such as Kirchhoff's laws, Thévenin's theorem, and Fourier analysis.
- CO-5** Understand the basic principles of communication systems, including modulation, demodulation, and transmission media.
- CO-6** Apply various techniques of communication systems to solve problems, such as designing and analyzing simple communication systems.
- CO-7** Develop practical skills in electronics by designing and building circuits and systems using electronic components and tools.
- CO-8** Understand the ethical and social implications of electronics and communication technologies, and apply ethical principles to engineering design and decision-making.
- CO-9** Communicate technical concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronics and communication systems, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities in industries such as telecommunications, electronics design and manufacturing, and research and development.

COs for B.Sc. (ELECTRONICS) – Semester – III

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – IIIrd, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of digital electronics, including Boolean algebra, combinational logic circuits, and sequential logic circuits.

- CO-2** Analyze and design digital circuits using various techniques such as K-maps, Boolean algebra, and state diagrams.
- CO-3** Understand the basic principles of microprocessors, including architecture, instruction set, and programming.
- CO-4** Develop programs for microprocessors using assembly language and understand the concept of interfacing.
- CO-5** Understand the basic principles of communication systems, including modulation techniques, noise, and channel capacity.
- CO-6** Analyze and design analog communication systems using various techniques such as amplitude modulation, frequency modulation, and pulse modulation.
- CO-7** Understand the basic principles of electromagnetic waves and transmission lines.
- CO-8** Analyze and design transmission line circuits using various techniques such as impedance matching and Smith chart.
- CO-9** Develop analytical and problem-solving skills by solving mathematical problems and exercises in class and in homework assignments.
- CO-10** Communicate electronic concepts and information effectively, both orally and in writing, using appropriate electronic terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities that require strong electronics skills.

COs for B.Sc. (ELECTRONICS) – Semester – IV

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – IVth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic principles of digital electronics, including Boolean algebra, logic gates, and combinational and sequential circuits.
- CO-2** Design and analyze combinational and sequential circuits using various techniques such as K-maps, state machines, and timing diagrams.

- CO-3** Understand the basic principles of analog electronics, including semiconductor devices, diodes, and transistors.
- CO-4** Analyze and design various amplifier configurations, such as common emitter, common base, and common collector amplifiers.
- CO-5** Understand the basic principles of communication systems, including modulation, demodulation, and transmission techniques.
- CO-6** Analyze and design various modulation techniques such as amplitude modulation, frequency modulation, and phase modulation.
- CO-7** Understand the basic principles of control systems, including block diagrams, feedback control, and stability analysis.
- CO-8** Analyze and design various control systems using techniques such as root locus and Bode plots.
- CO-9** Develop analytical and problem-solving skills by solving electronics problems and exercises in class and in homework assignments.
- CO-10** Communicate electronics concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities that require strong electronics skills.

COs for B.Sc. (ELECTRONICS) – Semester – V

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – Vth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the principles and applications of communication systems, including modulation and demodulation techniques, communication channels, and noise sources.
- CO-2** Analyze the characteristics of electronic devices used in communication systems, including diodes, transistors, and operational amplifiers.
- CO-3** Design and implement analog and digital communication systems, including AM/FM radio systems and digital modulation techniques.

- CO-4** Understand the principles and applications of digital signal processing, including Fourier analysis, discrete-time signals and systems, and digital filters.
- CO-5** Analyze the performance of digital communication systems, including channel coding, error correction, and information theory.
- CO-6** Understand the principles and applications of microwave engineering, including microwave transmission lines, waveguides, and antennas.
- CO-7** Design and implement microwave circuits and systems, including microwave amplifiers, oscillators, and mixers.
- CO-8** Develop analytical and problem-solving skills by solving electronic problems and exercises in class and in homework assignments.
- CO-9** Communicate electronic concepts and information effectively, both orally and in writing, using appropriate electronic terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronic communication systems, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities that require strong electronic skills.

COs for B.Sc. (ELECTRONICS) – Semester – VI

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Electronics) Semester – VIth, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the fundamental principles of digital signal processing, including sampling, quantization, and digital filtering.
- CO-2** Analyze and design digital filters using various methods, such as impulse response, frequency response, and pole-zero analysis.
- CO-3** Understand the basic principles of communication systems, including modulation, demodulation, and channel coding.
- CO-4** Analyze and design communication systems using various techniques, such as amplitude modulation, frequency modulation, and phase modulation.
- CO-5** Understand the basic principles of control systems, including system modeling, stability, and controller design.

- CO-6** Analyze and design control systems using various methods, such as root locus, frequency response, and state-space analysis.
- CO-7** Understand the basic principles of microwave engineering, including transmission lines, waveguides, and microwave components.
- CO-8** Analyze and design microwave circuits using various techniques, such as scattering parameters and Smith charts.
- CO-9** Develop analytical and problem-solving skills by solving electronic circuit problems and exercises in class and in homework assignments.
- CO-10** Communicate electronic concepts and information effectively, both orally and in writing, using appropriate electronic terminology and conventions.

These COs are designed to ensure that B.Sc. (Electronics) students have a strong foundation in the core concepts and methods of electronics, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in electronics and related fields, as well as for various career opportunities that require strong electronic skills.



COMPUTER SCIENCE



COs for B.Sc. (COMPUTER SCIENCE) – Semester – I

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Computer Science) Semester – Ist, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the basic concepts of computer organization and architecture, including CPU, memory, input/output devices, and bus architecture.
- CO-2** Understand the fundamental principles of programming, including algorithms, flowcharts, and programming constructs such as loops, conditionals, and functions.
- CO-3** Develop programming skills using a high-level programming language, such as C or Python.
- CO-4** Understand the basic concepts of discrete mathematics, including sets, relations, functions, and logic.
- CO-5** Apply various techniques of discrete mathematics to solve problems in computer science, such as counting principles, graph theory, and Boolean algebra.
- CO-6** Understand the fundamental principles of data structures, including arrays, linked lists, stacks, queues, and trees.
- CO-7** Apply various techniques of data structures to solve problems in computer science, such as searching and sorting algorithms, and tree traversal algorithms.
- CO-8** Understand the basic principles of database management systems, including data models, relational algebra, and SQL.
- CO-9** Develop skills in designing and implementing databases using SQL.
- CO-10** Develop skills in using software tools for software development, such as Integrated Development Environments (IDEs) and version control systems.

These COs are designed to ensure that B.Sc. (Computer Science) students have a strong foundation in the core concepts and methods of computer science, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in computer science and related fields, as well as for various career opportunities that require strong programming and analytical skills.

COs for B.Sc. (COMPUTER SCIENCE) – Semester – II

Course Outcomes (COs) are specific learning outcomes that are unique to a particular course. In the case of B.Sc. (Computer Science) Semester – IInd, some of the COs that students should be able to demonstrate by the end of the semester include:

- CO-1** Understand the fundamental concepts of computer organization, including digital logic circuits, memory, and CPU architecture.
- CO-2** Analyze and design basic algorithms and data structures, including arrays, linked lists, and trees.
- CO-3** Write and debug programs using a high-level programming language, such as C++, Java, or Python.
- CO-4** Understand the basic principles of database systems, including data models, schema design, and query languages.
- CO-5** Design and implement basic database applications using a relational database management system, such as MySQL or Oracle.
- CO-6** Understand the basic principles of operating systems, including processes, threads, and scheduling algorithms.
- CO-7** Understand the basic principles of computer networks, including network architecture, protocols, and topologies.
- CO-8** Understand the basic principles of software engineering, including software development life cycle models, requirements analysis, and testing.
- CO-9** Develop analytical and problem-solving skills by solving programming problems and exercises in class and in homework assignments.
- CO-10** Communicate computer science concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.

These COs are designed to ensure that B.Sc. (Computer Science) students have a strong foundation in the core concepts and methods of computer science, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in computer science and related fields, as well as for various career opportunities that require strong computer science skills.

COs for B.Sc. (COMPUTER SCIENCE) – Semester – III

Course Outcomes (COs) are specific learning outcomes that students are expected to achieve at the end of a particular course. In the case of B.Sc. (Computer Science) Semester – IIIrd, some of the COs that students should be able to demonstrate include:

- CO-1** Understand the basic principles of programming languages, including syntax, data types, and control structures.
- CO-2** Develop algorithmic thinking and problem-solving skills by designing, implementing, and testing programs in a high-level programming language.
- CO-3** Understand the fundamental concepts of computer organization, including memory hierarchy, processor architecture, and input/output devices.
- CO-4** Analyze the performance of algorithms using various complexity measures, such as time and space complexity.
- CO-5** Understand the basic principles of computer networks, including network topologies, protocols, and network layering.
- CO-6** Develop skills in database design and management, including data modeling, relational algebra, and SQL.
- CO-7** Understand the basic principles of software engineering, including requirements gathering, design, implementation, testing, and maintenance.
- CO-8** Develop communication and teamwork skills by working in groups to design, implement, and test software projects.
- CO-9** Apply ethical and professional standards to software development, including respecting intellectual property rights and privacy concerns.
- CO-10** Develop awareness of emerging technologies and their potential impact on society, including issues related to privacy, security, and social responsibility.

These COs are designed to ensure that B.Sc. (Computer Science) students have a strong foundation in the core concepts and methods of computer science, and are able to apply them to solve problems and communicate their results effectively. By achieving these COs, students will be well-prepared for more advanced courses in computer science and related fields, as well as for various career opportunities in the technology sector.

COs for B.Sc. (COMPUTER SCIENCE) – Semester – IV

The course outcomes for B.Sc. (Computer Science) Semester IV are designed to ensure that students have a strong understanding of core computer science concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the basic concepts of database management systems, including data modeling, database design, and query languages.

- CO-2** Develop skills in programming with Python, including advanced data structures, modules, and libraries.
- CO-3** Understand the principles of operating systems, including process management, memory management, and file systems.
- CO-4** Understand the principles of computer networks, including protocols, network layers, and network topologies.
- CO-5** Develop an understanding of the basics of computer security, including authentication, access control, and cryptography.
- CO-6** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-7** Develop analytical and problem-solving skills by working on programming assignments and exercises in class and in homework assignments.
- CO-8** Communicate technical concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.
- CO-9** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in computer science and related fields, as well as for careers in software development, data analysis, and network administration, among others.

COs for B.Sc. (COMPUTER SCIENCE) – Semester – V

The course outcomes for B.Sc. (Computer Science) Semester V are designed to build on the knowledge and skills developed in previous semesters and prepare students for more advanced topics in computer science. Some of the COs for this semester include:

- CO-1** Develop a strong understanding of advanced data structures and algorithms, including graph algorithms, dynamic programming, and greedy algorithms.
- CO-2** Develop skills in programming with Java, including object-oriented programming, GUI programming, and advanced data structures.
- CO-3** Understand the principles of computer architecture, including instruction set architecture, memory hierarchy, and input/output systems.
- CO-4** Understand the principles of compilers, including lexical analysis, parsing, and code generation.

- CO-5** Understand the basic concepts of artificial intelligence, including search algorithms, machine learning, and natural language processing.
- CO-6** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-7** Develop analytical and problem-solving skills by working on programming assignments and exercises in class and in homework assignments.
- CO-8** Communicate technical concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.
- CO-9** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in computer science and related fields, as well as for careers in software development, data analysis, and artificial intelligence, among others.

COs for B.Sc. (COMPUTER SCIENCE) – Semester – VI

The course outcomes for B.Sc. (Computer Science) Semester VI are designed to ensure that students have a deep understanding of advanced computer science concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the principles of artificial intelligence and machine learning, including supervised and unsupervised learning algorithms, decision trees, and neural networks.
- CO-2** Develop skills in programming with Java, including advanced concepts such as multithreading, networking, and GUI programming.
- CO-3** Understand the principles of computer graphics, including 3D modeling, rendering, and animation.
- CO-4** Understand the principles of natural language processing, including text classification, sentiment analysis, and language translation.
- CO-5** Develop an understanding of the principles of software engineering, including requirements analysis, design patterns, and software testing.
- CO-6** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-7** Develop analytical and problem-solving skills by working on programming assignments and exercises in class and in homework assignments.

CO-8 Communicate technical concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.

CO-9 Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for careers in software engineering, data analysis, artificial intelligence and machine learning, and computer graphics, among others. They will also be prepared for advanced study in computer science and related fields.



BOTANY



COs for B.Sc. (BOTANY) – Semester – I

The course outcomes for B.Sc. (Botany) Semester I are designed to ensure that students have a strong understanding of core concepts in plant biology. Some of the COs for this semester include:

- CO-1** Understand the basic principles of plant anatomy and morphology, including the structure and function of cells, tissues, and organs.
- CO-2** Develop an understanding of plant physiology, including photosynthesis, respiration, and plant growth and development.
- CO-3** Develop an understanding of plant systematics, including the classification and identification of plant species.
- CO-4** Understand the basic principles of genetics and molecular biology as they apply to plants.
- CO-5** Develop practical skills in plant identification, collection, and preservation.
- CO-6** Develop skills in scientific writing and communication, including writing laboratory reports and scientific papers.
- CO-7** Develop skills in using laboratory equipment and techniques commonly used in plant biology research.
- CO-8** Understand the importance of plants in ecosystem functioning and biodiversity conservation.
- CO-9** Apply the concepts learned in the course to solve real-world problems in plant biology, such as identifying plant diseases or designing experiments to test plant growth conditions.
- CO-10** Develop an appreciation for the diversity of plant life and the role of plants in human societies, including their use in agriculture, medicine, and culture.

By achieving these COs, students will be well-prepared for more advanced courses in plant biology and related fields, as well as for careers in plant breeding, horticulture, plant ecology, conservation biology, and related fields.

COs for B.Sc. (BOTANY) – Semester – II

The course outcomes for B.Sc. (Botany) Semester II are designed to ensure that students have a strong understanding of core botany concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Develop an understanding of the principles of plant physiology, including plant nutrition, water relations, and plant growth and development.
- CO-2** Understand the structure and functions of different plant tissues and organs, such as stems, roots, leaves, and flowers.
- CO-3** Develop an understanding of the principles of plant taxonomy and classification, including the use of taxonomic keys and the principles of nomenclature.
- CO-4** Develop an understanding of the principles of plant ecology, including the relationships between plants and their environment, community structure and dynamics, and the effects of human activity on ecosystems.
- CO-5** Understand the basic principles of genetics and the role of genetics in plant breeding and biotechnology.
- CO-6** Develop an understanding of the principles of plant biotechnology, including plant tissue culture, genetic engineering, and bioremediation.
- CO-7** Develop an understanding of the role of plants in human society, including the use of plants for food, medicine, and other purposes.
- CO-8** Develop practical skills in laboratory techniques used in botany, such as microscopy, plant tissue culture, and genetic analysis.
- CO-9** Develop analytical and problem-solving skills by working on assignments and exercises in class and in homework assignments.
- CO-10** Communicate scientific concepts and information effectively, both orally and in writing, using appropriate scientific terminology and conventions.

By achieving these COs, students will be well-prepared for more advanced courses in botany and related fields, as well as for careers in plant breeding and biotechnology, ecology and conservation, and other areas of plant science.

COs for B.Sc. (BOTANY) – Semester – III

The course outcomes for B.Sc. (Botany) Semester III are designed to ensure that students have a strong understanding of core botanical concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Develop an understanding of the basic concepts of plant physiology, including plant water relations, mineral nutrition, and photosynthesis.

- CO-2** Understand the principles of genetics, including Mendelian genetics, molecular genetics, and genetic engineering.
- CO-3** Develop an understanding of plant anatomy and morphology, including the structure of roots, stems, leaves, flowers, and fruits.
- CO-4** Understand the basics of plant ecology, including the relationships between plants and their environment, plant communities, and ecosystem processes.
- CO-5** Develop skills in fieldwork and laboratory techniques used in botany, including microscopy, plant identification, and data analysis.
- CO-6** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-7** Develop analytical and problem-solving skills by working on botany assignments and exercises in class and in homework assignments.
- CO-8** Communicate scientific concepts and information effectively, both orally and in writing, using appropriate terminology and conventions.
- CO-9** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in botany and related fields, as well as for careers in plant science, agriculture, and environmental science, among others.

COs for B.Sc. (BOTANY) – Semester – IV

The course outcomes for B.Sc. (Botany) Semester IV are designed to ensure that students have a strong understanding of the core concepts in plant sciences and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the principles of genetics and their application in plant breeding.
- CO-2** Understand the principles of plant ecology, including population dynamics, ecosystem functioning, and conservation.
- CO-3** Develop skills in plant anatomy and morphology, including the study of tissues, organs, and the overall structure of plants.
- CO-4** Develop an understanding of plant physiology, including photosynthesis, respiration, and nutrient uptake.
- CO-5** Understand the basics of plant biochemistry, including the structure and function of biomolecules such as proteins, carbohydrates, and lipids.

- CO-6** Develop an understanding of plant taxonomy and systematics, including the classification and naming of plants.
- CO-7** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-8** Develop analytical and problem-solving skills by working on practical exercises and assignments in class and in homework assignments.
- CO-9** Communicate scientific concepts and information effectively, both orally and in writing, using appropriate scientific terminology and conventions.
- CO-10** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in botany and related fields, as well as for careers in plant breeding, conservation, and agriculture, among others.

COs for B.Sc. (BOTANY) – Semester – V

The course outcomes for B.Sc. (Botany) Semester V are designed to ensure that students have a strong understanding of the principles of botany, and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Develop an understanding of the diversity and classification of plants, including their morphology, anatomy, and physiology.
- CO-2** Understand the ecological relationships between plants and their environment, including the interactions between plants and other organisms.
- CO-3** Develop skills in plant taxonomy, including identification and classification of plants using different taxonomic tools and techniques.
- CO-4** Understand the principles of genetics and molecular biology, and how they apply to plant science.
- CO-5** Develop an understanding of plant biotechnology, including the production and use of genetically modified crops.
- CO-6** Understand the principles of plant breeding and genetics, including the selection and improvement of crops for desirable traits.
- CO-7** Develop practical skills in plant tissue culture and micropropagation techniques.

- CO-8** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-9** Develop analytical and problem-solving skills by working on laboratory experiments and exercises in class and in homework assignments.
- CO-10** Communicate scientific concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.
- CO-11** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in botany and related fields, as well as for careers in plant science, plant breeding, biotechnology, and ecology, among others.

COs for B.Sc. (BOTANY) – Semester – VI

The course outcomes for B.Sc. (Botany) Semester VI are designed to ensure that students have a strong understanding of advanced concepts in plant biology and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the molecular mechanisms of plant growth, development, and responses to environmental cues.
- CO-2** Develop skills in genetic manipulation and molecular biology techniques to study plant processes and functions.
- CO-3** Understand the principles of plant systematics and taxonomy, including plant identification, classification, and nomenclature.
- CO-4** Develop knowledge of plant biotechnology and its applications, including genetic engineering, tissue culture, and bioremediation.
- CO-5** Develop an understanding of plant-microbe interactions, including symbiosis, pathogenesis, and biotic stress responses.
- CO-6** Understand the principles of plant ecology, including plant communities, succession, and ecosystem processes.
- CO-7** Develop knowledge of plant evolution, including the history of plant life on Earth, phylogenetic relationships among plant groups, and evolutionary adaptations of plants to different environments.
- CO-8** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.

CO-9 Develop analytical and problem-solving skills by working on experiments and projects in class and in homework assignments.

CO-10 Communicate technical concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.

CO-11 Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for careers in research, academia, and industry in the field of plant biology, as well as for advanced studies in related fields.



ZOOLOGY



COs for B.Sc. (ZOOLOGY) – Semester – I

The course outcomes for B.Sc. (Zoology) Semester I are designed to provide students with a basic understanding of the biological and ecological principles that underpin the study of animal life. Some of the COs for this semester include:

- CO-1** Understand the fundamental principles of animal diversity, including classification, anatomy, and physiology.
- CO-2** Develop an understanding of the basic concepts of genetics and evolution and how they apply to animal biology.
- CO-3** Develop an understanding of the basic principles of ecology, including the interrelationships between organisms and their environment.
- CO-4** Understand the diversity of animal behavior, including communication, social behavior, and learning.
- CO-5** Develop laboratory skills for the study of animal anatomy, physiology, and behavior.
- CO-6** Develop skills in scientific writing and communication through laboratory reports, essays, and oral presentations.
- CO-7** Develop teamwork and collaboration skills through group projects and laboratory work.
- CO-8** Understand the ethical principles that guide research on animals.

By achieving these COs, students will have a strong foundation in the basic principles of animal biology, which will prepare them for more advanced courses in zoology and related fields, as well as for careers in research, teaching, conservation, and animal health care.

COs for B.Sc. (ZOOLOGY) – Semester – II

The Course Outcomes (COs) for B.Sc. (Zoology) Semester II aim to equip the students with foundational knowledge and skills in the field of Zoology. Some of the COs for this semester include:

- CO-1** Understand the basic principles of animal classification, including the differences between major animal groups, their characteristics, and evolutionary relationships.

- CO-2** Develop knowledge of the structural and functional organization of the animal body at the cellular, tissue, and organ level.
- CO-3** Understand the basic principles of genetics and inheritance, including the structure and function of DNA, the mechanisms of gene expression, and the inheritance of traits.
- CO-4** Develop an understanding of the principles of ecology, including the distribution, abundance, and interactions of organisms in different habitats and ecosystems.
- CO-5** Understand the basic principles of animal behavior, including the mechanisms of communication, social organization, and the adaptive significance of different behaviors.
- CO-6** Develop skills in observation, data collection, and scientific writing through laboratory exercises and fieldwork.
- CO-7** Understand the basic principles of animal physiology, including the major systems of the body, such as digestive, respiratory, circulatory, and nervous systems.
- CO-8** Develop an understanding of the principles of evolutionary biology, including the mechanisms of evolution, the history of life on earth, and the diversity of life forms.
- CO-9** Analyze and interpret scientific data through quantitative methods and statistical analysis.
- CO-10** Develop an understanding of the ethical considerations and social implications of scientific research and its applications.

By achieving these COs, students will be well-prepared for more advanced courses in zoology and related fields, as well as for careers in wildlife conservation, animal behavior, genetics, and biotechnology, among others.

COs for B.Sc. (ZOOLOGY) – Semester – III

The Course Outcomes (COs) for B.Sc. (Zoology) Semester III are designed to ensure that students have a strong understanding of the fundamental concepts and principles of Zoology. Some of the COs for this semester include:

- CO-1** Understand the classification and diversity of animals, including their phylogenetic relationships and evolutionary history.

- CO-2** Develop an understanding of the anatomy and physiology of different animal systems, including the respiratory, circulatory, and nervous systems.
- CO-3** Understand the principles of animal behavior, including the mechanisms that govern animal communication, social behavior, and mating strategies.
- CO-4** Develop an understanding of the ecological relationships between animals and their environments, including the roles of different species in ecosystems, and the impact of environmental change on animal populations.
- CO-5** Understand the principles of genetics and heredity, including the mechanisms of inheritance, genetic variation, and the role of genetics in evolution.
- CO-6** Develop an understanding of the principles of animal development, including the processes of embryogenesis, morphogenesis, and organogenesis.
- CO-7** Develop an appreciation for the diversity of animal life, including the adaptations that have allowed animals to thrive in different environments.
- CO-8** Develop skills in scientific inquiry and critical thinking through laboratory exercises and independent research projects.
- CO-9** Develop communication skills, including the ability to present scientific information in written and oral formats.
- CO-10** Develop ethical principles of animal use and care in research, education, and conservation.

By achieving these COs, students will be prepared for more advanced courses in zoology and related fields, as well as for careers in areas such as animal conservation, biomedical research, and science education.

COs for B.Sc. (ZOOLOGY) – Semester – IV

The course outcomes for B.Sc. (Zoology) Semester IV are designed to ensure that students have a strong understanding of core zoology concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the principles of animal physiology, including the functioning of different body systems in animals.
- CO-2** Develop an understanding of the principles of animal behavior, including the mechanisms of behavior, social behavior, and communication.

- CO-3** Understand the basics of animal ecology, including the relationships between animals and their environment, and the principles of population ecology.
- CO-4** Develop skills in laboratory techniques commonly used in zoological research, including microscopy, dissection, and staining.
- CO-5** Develop an understanding of the principles of biostatistics, including the use of statistical methods in biological research.
- CO-6** Apply the concepts learned in the course to solve real-world problems through practical assignments and projects.
- CO-7** Develop analytical and problem-solving skills by working on lab assignments and exercises in class and in homework assignments.
- CO-8** Communicate scientific concepts and information effectively, both orally and in writing, using appropriate technical terminology and conventions.
- CO-9** Develop teamwork and collaboration skills through group projects and assignments.

By achieving these COs, students will be well-prepared for more advanced courses in zoology and related fields, as well as for careers in research, conservation, animal behavior, and animal welfare, among others.

COs for B.Sc. (ZOOLOGY) – Semester – V

The Course Outcomes (COs) for B.Sc. (Zoology) Semester V are designed to ensure that students have a comprehensive understanding of animal biology, ecology, and physiology. Some of the COs for this semester include:

- CO-1** Understanding the diversity of animals, their classification, and their evolutionary relationships.
- CO-2** Understanding the principles of animal behavior, including social behavior and communication, and the genetic and environmental factors that influence behavior.
- CO-3** Understanding the principles of animal ecology, including population dynamics, community interactions, and ecosystem function.
- CO-4** Understanding the structure and function of animal organ systems, including the nervous system, endocrine system, digestive system, and respiratory system.

- CO-5** Understanding the principles of genetics and genomics, including inheritance patterns, DNA structure and function, and genetic variation.
- CO-6** Developing practical skills in laboratory techniques, such as microscopy, dissection, and data analysis.
- CO-7** Understanding the ethical considerations and regulations related to animal research and experimentation.
- CO-8** Developing effective communication skills, both oral and written, to convey scientific concepts and ideas.
- CO-9** Developing critical thinking skills through analyzing and evaluating scientific literature and research findings.
- CO-10** Developing team-building and collaboration skills through group projects and assignments.

By achieving these COs, students will be prepared to pursue advanced study in zoology or related fields, as well as careers in research, conservation, education, and wildlife management.

COs for B.Sc. (ZOOLOGY) – Semester – VI

The Course Outcomes (COs) for B.Sc. (Zoology) Semester VI are designed to ensure that students have a strong understanding of core zoology concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the principles and concepts of animal behavior and be able to analyze the adaptive significance of different behaviors in animals.
- CO-2** Understand the principles and mechanisms of animal physiology, including the functions of different organ systems and the regulation of physiological processes.
- CO-3** Develop knowledge and understanding of the basic concepts in ecology, including the structure and function of ecosystems, population dynamics, and community interactions.
- CO-4** Understand the principles of evolutionary biology and be able to analyze the processes that drive evolution, including natural selection, genetic drift, and gene flow.
- CO-5** Develop practical skills in zoological research and data analysis through laboratory experiments, fieldwork, and computer-based analyses.

- CO-6** Analyze and evaluate scientific literature in zoology, and be able to critically evaluate the methods and conclusions of research studies.
- CO-7** Develop effective communication skills for presenting scientific information and findings in written and oral formats using appropriate scientific terminology.
- CO-8** Develop team-working and collaboration skills through group projects and assignments.
- CO-9** Develop critical thinking and problem-solving skills through analysis of real-world examples of zoological phenomena.
- CO-10** Develop an understanding of the ethical and social implications of zoological research and be able to apply ethical principles in the design and conduct of zoological research.

By achieving these COs, students will be well-prepared for further studies in zoology and related fields, as well as for careers in areas such as wildlife conservation, environmental consultancy, animal behavior research, and veterinary science.



ENGLISH



COs for B.SC./B.COM. (ENGLISH) – Semester – I

The course outcomes for B.Sc./B.Com. (English) Semester I are designed to ensure that students have a strong foundation in English language and literature, and are able to apply their knowledge in practical situations. Some of the COs for this semester include:

- CO-1** Develop reading and critical thinking skills through close reading and analysis of literary texts from various genres and periods.
- CO-2** Enhance vocabulary and communication skills through various activities such as debates, group discussions, and presentations.
- CO-3** Acquire knowledge of different literary genres and movements, such as poetry, drama, and fiction.
- CO-4** Develop the ability to write essays, reports, and summaries in a clear and concise manner, and with proper grammar and punctuation.
- CO-5** Develop an understanding of the elements of language and their use in literary analysis, such as characterization, plot, setting, and themes.
- CO-6** Gain an awareness of the historical, cultural, and social contexts that inform literary texts.
- CO-7** Develop an appreciation for the diversity and complexity of literature and language, and for the ways in which they shape and reflect human experience.
- CO-8** Develop research skills and use appropriate resources to gather information for assignments and projects.

By achieving these COs, students will be well-prepared for more advanced courses in English language and literature, as well as for careers that require strong communication and critical thinking skills, such as teaching, writing, editing, and public relations.

COs for B.SC./B.COM. (ENGLISH) – Semester – II

The course outcomes for B.Sc./B.Com. (English) Semester II are designed to ensure that students have a strong understanding of language and literature, as well as the ability to analyze and communicate effectively in English. Some of the COs for this semester include:

- CO-1** Understand the concepts of literature and literary analysis, including different genres, literary devices, and critical theories.
- CO-2** Develop the ability to read, interpret, and analyze texts from different genres, including poetry, drama, and fiction.

- CO-3** Develop proficiency in written communication through the development of critical and analytical essays and research papers.
- CO-4** Develop oral communication skills through the preparation and delivery of presentations, debates, and discussions.
- CO-5** Develop proficiency in writing skills, including drafting, revising, and editing, and use of appropriate grammar, vocabulary, and punctuation.
- CO-6** Develop skills in research, including the ability to find, evaluate, and use sources effectively in written work.
- CO-7** Develop an understanding of the historical and cultural contexts of literature and the ways in which they shape literary works.
- CO-8** Develop an appreciation for literature as a form of artistic expression and a reflection of human experience.
- CO-9** Develop critical thinking skills and the ability to analyze texts from multiple perspectives.
- CO-10** Understand the nuances of language, including the use of figurative language, idioms, and other expressions.

By achieving these COs, students will be well-prepared for more advanced courses in literature and language, as well as for careers in fields that require strong communication and analytical skills, such as journalism, law, and education.

COs for B.COM. (ENGLISH) – Semester – III

The course outcomes for the third semester may vary depending on the institution. However, some common COs for this semester may include:

- CO-1** Develop advanced skills in English language proficiency, including reading, writing, speaking, and listening.
- CO-2** Understand the concepts of business communication and develop effective communication skills in a business environment.
- CO-3** Understand and analyze the role of ethics in business communication, including ethical issues related to communication.
- CO-4** Develop skills in business writing, including email writing, memos, business letters, and reports.
- CO-5** Understand the basics of financial accounting and apply these concepts to business communication situations.

- CO-6** Understand the principles of marketing and apply them in the development of marketing communication plans.
- CO-7** Develop skills in critical thinking, analysis, and problem-solving in a business context.
- CO-8** Develop teamwork and collaboration skills through group projects and assignments.
- CO-9** Develop an appreciation of diverse cultures and perspectives through the study of global business communication practices.

By achieving these COs, students will be well-prepared for advanced courses in business communication and related fields, as well as for careers in marketing, advertising, public relations, and business writing, among others.

COs for B.COM. (ENGLISH) – Semester – IV

The course outcomes for English Semester IV are designed to ensure that students have a strong understanding of core concepts of English language and literature, and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Develop advanced skills in critical analysis and interpretation of literary texts, including poetry, drama, and prose.
- CO-2** Develop an understanding of the history and development of English literature from the medieval period to the present.
- CO-3** Develop an understanding of the principles of effective communication, including both written and oral communication skills.
- CO-4** Develop research skills and the ability to critically evaluate sources to support arguments in written work.
- CO-5** Understand the principles of business communication, including writing effective memos, emails, and business letters.
- CO-6** Develop an understanding of the basics of technical writing, including writing reports, instructions, and proposals.
- CO-7** Develop an understanding of the principles of professional writing, including writing for a variety of audiences and purposes.
- CO-8** Develop an understanding of the principles of grammar, syntax, and usage, and the ability to apply them in writing.

CO-9 Develop an understanding of the principles of punctuation, and the ability to use punctuation effectively in writing.

CO-10 Develop the ability to work collaboratively in groups to complete assignments and projects.

By achieving these COs, students will be well-prepared for advanced courses in English literature and language, as well as for careers in writing, editing, communications, and related fields.

COs for B.COM. (ENGLISH) – Semester – V

The course outcomes for English Semester V are designed to enhance students' proficiency in the English language and provide them with a deeper understanding of various literary genres. Some of the COs for this semester include:

CO-1 Understand the nuances of various literary genres such as poetry, drama, and prose, and be able to critically analyze them.

CO-2 Develop an in-depth understanding of literary movements and their historical context.

CO-3 Develop an understanding of literary devices and techniques used by writers, such as figurative language, symbolism, and imagery.

CO-4 Enhance communication skills through various activities such as group discussions, debates, and presentations.

CO-5 Develop an understanding of the principles of effective academic writing, including research, organization, and citation.

CO-6 Develop creative writing skills and be able to produce original pieces of writing in various genres such as short stories, essays, and poetry.

CO-7 Develop an appreciation for diverse cultures and their literary traditions through the study of world literature.

CO-8 Develop critical thinking skills through the analysis of literary works and the application of critical theories.

CO-9 Enhance language skills, including grammar, vocabulary, and pronunciation, through various language learning activities.

CO-10 Use digital tools and resources to enhance language learning and research skills.

By achieving these COs, students will be able to enhance their language skills, develop critical thinking and communication skills, and gain a deeper appreciation for literature and the humanities. They will also be better prepared for careers in fields such as writing, publishing, media, and education.

COs for B.COM. (ENGLISH) – Semester – VI

The course outcomes for B.COM. (English) Semester VI are designed to ensure that students have a strong understanding of core English language concepts and are able to apply them in practical situations. Some of the COs for this semester include:

- CO-1** Understand the principles of literary criticism, including different approaches to analyzing literature, such as formalism, historicism, and post-colonialism.
- CO-2** Develop an understanding of the major literary movements in English literature, including the Romantic, Victorian, and Modernist periods.
- CO-3** Develop critical thinking and analytical skills by analyzing literary texts in depth and presenting their findings in written and oral formats.
- CO-4** Develop research skills by conducting a research project on a literary topic of their choice, including identifying research questions, conducting a literature review, and collecting and analyzing data.
- CO-5** Develop advanced writing skills by producing well-crafted essays, research papers, and other forms of academic writing, using appropriate formatting and citation styles.
- CO-6** Develop effective communication skills by participating in class discussions, group work, and presentations, and by providing constructive feedback to peers.
- CO-7** Apply the concepts learned in the course to real-world contexts, such as analyzing literary texts in relation to contemporary issues and events.

By achieving these COs, students will be well-prepared for further studies in English literature and related fields, as well as for careers in publishing, journalism, education, and other fields that require strong communication and critical thinking skills.



HINDI – हिंदी



COs for B.SC./B.COM. (HINDI) – Semester – I

B.SC./B.COM. () - 1 COs
 (COs) ,
 B.SC./B.COM. () - 1 COs:

- सीओ-1** छात्र को हिंदी व्याकरण, लेखन और भाषा के संरचनात्मक पहलुओं के साथ अवगत कराना।
- सीओ-2** छात्र को हिंदी भाषा के इतिहास, संस्कृति, और समाज में उसकी भूमिका के बारे में जानकारी प्रदान करना।
- सीओ-3** छात्र को हिंदी भाषा के सम्बन्ध में विभिन्न उदाहरणों का उपयोग करके संबंधित संदेशों को सही ढंग से संचालित करना सिखाना।
- सीओ-4** छात्र को हिंदी भाषा में संचार के लिए उच्च स्तर पर संयोजन, उत्तरदायित्व और भाषा का उपयोग करने के कौशल प्रदान करना।
- सीओ-5** समाचार पत्र, पत्रिका, विज्ञापन और रिपोर्ट आदि के लेखन में कौशल का विकास करना।
- सीओ-6** हिंदी साहित्य का इतिहास, संरचना, उनके लेखक और महत्वपूर्ण कृतियों की जानकारी प्रदान करना।
- सीओ-7** हिंदी साहित्य में भाषा, विषय, वाक्य रचना और विराम चिह्नों की विस्तृत अध्ययन करना।
- सीओ-8** विभिन्न विषयों पर उपयुक्त विषय-वस्तु और वाक्यांशों का उपयोग करके तकनीकी लेखन कौशल का विकास करना।

COs for B.SC./B.COM. (HINDI) – Semester – II

/ () - 2 COs
 (COs) ,
 B.SC./B.COM. () - 2 COs:

- सीओ-1** छात्र को हिंदी साहित्य में अपनी विचारधारा व्यक्त करने के लिए विभिन्न रचनात्मक कौशल प्रदान करना।
- सीओ-2** छात्र को हिंदी भाषा में निबंध, भाषण, वाद-विवाद, लेख, विवरण और संक्षेपण जैसे विभिन्न शैलियों में लिखने का कौशल प्रदान करना।
- सीओ-3** छात्र को हिंदी भाषा में अपने विचारों को सही ढंग से व्यक्त करने, अधिक संवेदनशील रूप से व्यक्त करने और व्यक्तिगत तरीके से लिखने के कौशल प्रदान करना।
- सीओ-4** छात्र को हिंदी भाषा में समाचार पत्र, पत्रिका, रिपोर्ट, विज्ञापन और अन्य जैसे विभिन्न शैलियों में लिखने के लिए कौशल प्रदान करना।
- सीओ-5** छात्र को हिंदी भाषा में अध्ययन सामग्री को समझने और उसे संस्कृत, अंग्रेज़ी या किसी अन्य भाषा में अनुवाद करने के लिए कौशल प्रदान करना।
- सीओ-6** छात्र को हिंदी भाषा में विभिन्न रचनात्मक लेखन शैलियों को समझने और उन्हें अपनाने के लिए कौशल प्रदान करना।
- सीओ-7** छात्र को हिंदी भाषा में निबंध लेखन और भाषा के उच्च स्तर के उपयोग के लिए कौशल प्रदान करना।
- सीओ-8** छात्र को हिंदी भाषा में लेखन, भाषा और व्याकरण के मौलिक सिद्धांतों को समझने और उन्हें सही ढंग से अपनाने के लिए कौशल प्रदान करना।
- सीओ-9** छात्र को हिंदी भाषा के लेखन और भाषा के माध्यम से सामाजिक और राजनीतिक मुद्दों को समझने और व्यक्त करने के लिए कौशल प्रदान करना।
- सीओ-10** छात्र को हिंदी भाषा में संचार के विभिन्न माध्यमों जैसे व्यक्तिगत और सार्वजनिक संचार, इलेक्ट्रॉनिक संचार, मीडिया आदि के लिए कौशल प्रदान करना।

COs for B.COM. (HINDI) – Semester – III

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- सीओ-1** हिंदी भाषा के मौलिक सिद्धांतों को समझना।
- सीओ-2** भाषा के स्वर, व्यंजन, मात्राएँ और विराम चिह्नों के साथ आवाज की गुणवत्ता को समझना।

- सीओ-3 हिंदी भाषा के विभिन्न भाषाई चरणों को समझना और संबोधन, सम्बोधित वाक्य और निबंध लेखन के लिए अच्छी भाषा योग्यता विकसित करना।
- सीओ-4 हिंदी भाषा की व्याकरण, वाक्य रचना और पाठ्यक्रम विश्लेषण की अवधारणाओं को समझना।
- सीओ-5 हिंदी साहित्य, संस्कृति और इतिहास के प्रमुख काव्य और नाटकों की अध्ययन करना।
- सीओ-6 भारतीय जनजातियों की भाषाओं के विकास और इतिहास को समझना।
- सीओ-7 सम्प्रेषण कौशल सुधारें जो अध्ययन के दौरान समाचार, रेडियो और टीवी प्रसारण, टेलीफोन और ईमेल जैसे विभिन्न माध्यमों के माध्यम से होते हैं।
- सीओ-8 हिंदी भाषा के इतिहास और संस्कृति के बारे में समझ।
- सीओ-9 लेखन कौशल सुधारें जिसमें समाचार लेखन, विज्ञापन लेखन, रिपोर्ट लेखन और पत्र लेखन शामिल हैं।
- सीओ-10 व्यावहारिक हिंदी वार्तालाप में सुधार करें और संभाषण विवेकशीलता का विकास करें।
- सीओ-11 समझें कि हिंदी भाषा का प्रभाव कैसे होता है और कैसे यह समाज को स्थायीता और एकता देता है।
- सीओ-12 हिंदी भाषा के विभिन्न पहलुओं के बारे में जानें, जैसे कि सामाजिक, आर्थिक और राजनीतिक पहलू।
- सीओ-13 नाटकों और कहानियों के माध्यम से हिंदी साहित्य के प्रसिद्ध लेखकों और उनके अंतर्गत विभिन्न कथाएं और चरित्रों को समझें।
- सीओ-14 भाषा शास्त्र, व्याकरण और सांस्कृतिक अध्ययन की बुनियादी जानकारी हासिल करें।

COs for B.COM. (HINDI) – Semester – IV

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- सीओ-1 हिंदी भाषा के इतिहास और संस्कृति के संबंध में विस्तृत ज्ञान का अध्ययन करना।
- सीओ-2 हिंदी भाषा के व्याकरण के अध्ययन से छात्रों को उच्च स्तर की व्याकरण की जानकारी प्राप्त होना चाहिए।
- सीओ-3 हिंदी साहित्य के विभिन्न युगों के लेखकों, काव्यों और नाटकों का अध्ययन करना।
- सीओ-4 छात्रों को हिंदी के विभिन्न रूपों में लेखन कौशल का विकास करना चाहिए।

- सीओ-5 भाषा उपयोग के माध्यम से छात्रों को उच्च स्तर की संचार की क्षमता विकसित करना चाहिए।
- सीओ-6 हिंदी भाषा में उच्च स्तर की विविध प्रशासनिक कौशल की जानकारी प्रदान करना।
- सीओ-7 भारतीय संस्कृति, भाषा और साहित्य को समझने में छात्रों की मदद करना।
- सीओ-8 विभिन्न संबोधन और भाषा प्रतीकों के उपयोग का ज्ञान देना और छात्रों को भाषा के विभिन्न रूपों में कैसे प्रभावी रूप से संचार करें, इसकी जानकारी प्रदान करना।
- सीओ-9 छात्र को हिंदी भाषा के बारे में गहन ज्ञान होना चाहिए जिसमें स्वर, व्यंजन, मात्रा, उच्चारण और वर्तनी शामिल होते हैं।
- सीओ-10 छात्र को विभिन्न भाषाओं में हिंदी भाषा का अनुवाद करने के लिए क्षमता प्राप्त होनी चाहिए।
- सीओ-11 छात्र को हिंदी साहित्य की महत्वपूर्ण कथाओं, कविताओं और नाटकों का अध्ययन करना चाहिए।
- सीओ-12 छात्र को विभिन्न विषयों के लिए हिंदी में लेखन करने की क्षमता होनी चाहिए।
- सीओ-13 छात्र को हिंदी भाषा में निबंधों, लेखों, पत्रों और अन्य संचार के रूपों में समाज में सक्रिय भूमिका निभाने की क्षमता प्राप्त होनी चाहिए।
- सीओ-14 छात्र को हिंदी भाषा में व्याकरण, शब्द विन्यास, वाक्य रचना और पाठ्य पुस्तकों के अध्ययन के माध्यम से स्वयं को सुधारने की क्षमता होनी चाहिए।

COs for B.COM. (HINDI) – Semester – V

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- सीओ-1 हिंदी भाषा के उच्च स्तर पर संवाद के लिए उचित शब्दावली का विकास करना।
- सीओ-2 अध्ययन करते हुए निरन्तर लेखन कौशल का विकास करना।
- सीओ-3 संबंधित बिजनेस संस्थानों में बोली जाने वाली हिंदी भाषा की विशेषताओं को समझना।
- सीओ-4 विभिन्न लेखन शैलियों का विस्तृत अध्ययन करना और उन्हें अपनाना।
- सीओ-5 लेखन और बोली जाने वाली हिंदी भाषा को समझना और उन्हें अपनाने की क्षमता विकसित करना।
- सीओ-6 व्यापक अध्ययन के दौरान हिंदी भाषा की संरचना, व्याकरण और वर्णमाला के बारे में विस्तृत ज्ञान प्राप्त करना।

- सीओ-7 उच्च स्तर के वाक्य रचना कौशल का विकास करना और पाठों में प्रयुक्त वाक्य संरचनाओं की जानकारी प्राप्त करना।
- सीओ-8 व्यापक अध्ययन के दौरान व्यापक शब्दावली का विस्तार करना और उचित शब्दों का चयन करने की क्षमता विकसित करना।
- सीओ-9 विविध विषयों से संबंधित हिंदी भाषा के प्रयोग के माध्यम से विशेष अर्थ निकालना और समझना।
- सीओ-10 भारतीय संस्कृति, इतिहास और राजनीति के बारे में हिंदी में लिखने की क्षमता विकसित करना।
- सीओ-11 अधिकृत वार्तालापों और संदेशों को हिंदी में लिखने की क्षमता विकसित करना।
- सीओ-12 व्यावसायिक वार्तालापों के लिए हिंदी भाषा का प्रयोग करने के लिए क्षमता विकसित करना।
- सीओ-13 विभिन्न विषयों की एकदिवसीय ट्रिप पर हिंदी भाषा में रिपोर्ट लिखने की क्षमता विकसित करना।
- सीओ-14 व्यावसायिक पत्रों और प्रकाशनों के लिए हिंदी भाषा में लेख लिखने की क्षमता विकसित करना।
- सीओ-15 व्यावसायिक और शैक्षणिक संदर्भों में हिंदी भाषा के लिए विशेष शब्दकोश तैयार करना।
- सीओ-16 हिंदी भाषा के अधिकृत विशेषताओं और विशेषताओं को समझने और उनका प्रयोग करने की क्षमता विकसित करना।

COs for B.COM. (HINDI) – Semester – VI

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- सीओ-1 हिंदी भाषा के विभिन्न पहलुओं के परिचय देना जैसे कि साहित्य, व्याकरण, अनुवाद, आदि।
- सीओ-2 हिंदी भाषा में लेखन कौशल का विकास करना जैसे कि निबंध लेखन, वार्तालाप, विज्ञापन लेखन, आदि।
- सीओ-3 हिंदी भाषा में समाचार पत्रों और पत्रिकाओं के लेखों का विश्लेषण करना जैसे कि संपादकीय, विशेष लेख, साक्षात्कार, आदि।

- सीओ-4** हिंदी भाषा में विविध प्रयोगों का अध्ययन करना जैसे कि वर्ण-माला, मुहावरे, लोकोक्तियाँ, आदि।
- सीओ-5** हिंदी भाषा में पाठ्यक्रमों, पुस्तकों और संदर्भ पुस्तकों का अध्ययन करना जैसे कि इतिहास, व्यवसाय, नौकरी, आदि।
- सीओ-6** हिंदी भाषा में बोली जाने वाली व्यावहारिक भाषा के प्रत्येक पहलू का अध्ययन करना जैसे कि संचार, प्रशासन, विज्ञान, आदि।
- सीओ-7** एक अध्ययन परियोजना के माध्यम से हिंदी भाषा में नवीनतम व्यापार और अर्थशास्त्र के विषयों का अध्ययन करने की क्षमता का विकास करना।
- सीओ-8** विभिन्न स्तरों पर संवाद करने के लिए विभिन्न प्रतिस्पर्धात्मक परीक्षणों का विकास करना और इसे समझना कि व्यवसाय विश्व में हिंदी भाषा का महत्व क्या है।
- सीओ-9** हिंदी भाषा में अर्थशास्त्र की विभिन्न शाखाओं में विशेषज्ञता विकसित करना, जैसे कि लेखा शास्त्र, वित्तीय बाजार विश्लेषण, और कारोबारी कानून।
- सीओ-10** व्यापार में हिंदी भाषा का उपयोग करने के लिए प्रैक्टिकल कौशल का विकास करना, जैसे कि अच्छे व्यवहार, संवाद कौशल, रिपोर्ट लेखन और प्रस्ताव तैयार करने की कला।
- सीओ-11** छात्र/छात्राओं को उच्च स्तरीय लेखन दक्षता का विकास करना सिखाया जाएगा।
- सीओ-12** छात्र/छात्राओं को व्यावसायिक और प्रभावी संचार कौशल विकसित करना सिखाया जाएगा।
- सीओ-13** छात्र/छात्राओं को विभिन्न क्षेत्रों में हिंदी के उपयोग के बारे में जानकारी प्रदान की जाएगी।
- सीओ-14** छात्र/छात्राओं को विभिन्न तकनीकी शब्दावली का उपयोग करना सिखाया जाएगा।
- सीओ-15** छात्र/छात्राओं को विभिन्न परिचय और समाचार पत्रों को समझने और उनके विभिन्न शैलियों का अध्ययन करने के लिए प्रोत्साहित किया जाएगा।
- सीओ-16** छात्र/छात्राओं को समाज में हिंदी की महत्ता और उसके लाभों के बारे में जागरूक किया जाएगा।



MARATHI – मराठी



- सीओ-3 मराठी भाषेच्या विभिन्न स्तरांचा अभ्यास करणे, जसे की वाचन, लेखन आणि भाषण आणि त्यांचे विभिन्न आवड आणि उद्देश अभ्यासणे.
- सीओ-4 वाचन, लेखन आणि भाषण यांसारखे मराठी संचाराचे उत्तम माध्यम निर्माण करणे.
- सीओ-5 वाचन, लेखन आणि भाषण यांसारखे अन्य भाषांमधील संचाराचे उत्तम माध्यम निर्माण करणे.
- सीओ-6 मराठी भाषेच्या विभिन्न प्रयोगांमध्ये वापरलेल्या उदाहरणांचे विश्लेषण करणे.
- सीओ-7 मराठी भाषेच्या विभिन्न साहित्यांचे अध्ययन करणे आणि त्यांचा समज करणे, जसे की काव्य, नाटक, कथा आणि लघुकथा.
- सीओ-8 मराठी भाषेची व्याकरणे आणि लेखन: या पाठातून विद्यार्थी समजून घेणार की, मराठी भाषेचे व्याकरण सर्वांगीण आणि सहज असते. विद्यार्थी समजून घेतील की, कसे मराठी भाषेचे वाक्य बनवायचे, काळ, शब्द, संधी, वाक्य परिवर्तन आणि निबंध लेखनाचे नियम.
- सीओ-9 मराठी साहित्य: या पाठातून विद्यार्थी मराठी साहित्याचा इतिहास, कालभार आणि महत्व जाणून घेतील. तसेच मराठी कादंबरी, कथा, उपन्यास आणि कविता वाचून विविध पारंपारिक व सामाजिक मुद्द्यांवर विचार करून समजून घेतील.
- सीओ-10 मराठी भाषेचा उपयोग: या पाठातून विद्यार्थी मराठी भाषेचा उपयोग विविध प्रवासात, उद्योगात आणि व्यावसायिक संवादात शिकणार आहेत. विद्यार्थी समजून घेतील की, कसे मराठी भाषेचे संवाद आणि लेखन विविध स्थानांवर वापरले जाऊ शकते.

COs for B.COM. (MARATHI) – Semester – III

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- सीओ-1 मराठी भाषेतील व्याकरण, लेखन आणि अनुवादाच्या अधिकृत पद्धतींचा समज व प्रयोग करणे.
- सीओ-2 मराठी साहित्यातील महत्त्वाच्या लेखकांचे अभ्यास आणि त्यांच्या ग्रंथांचे अध्ययन करणे.
- सीओ-3 मराठी भाषेतील कथा-संचय, कविता आणि नाटक विषयांचे विश्लेषण आणि अर्थसंग्रह करणे.
- सीओ-4 मराठी भाषेतील साहित्य आणि संस्कृतीच्या संबंधांचे समज व प्रयोग करणे.
- सीओ-5 मराठी संस्कृतीतील भक्तिकालीन कविता, अभंग, भावगीत आणि संगीताचे अध्ययन करणे.
- सीओ-6 मराठी भाषेतील लोकशाहीरी गीतांचे अध्ययन करणे.

- सीओ-3 लोकप्रिय मराठी वाङ्मय अभ्यास आणि अभिव्यक्ती करणे.
- सीओ-4 समाजशास्त्र, इतिहास आणि संस्कृती यांचे अध्ययन करणे.
- सीओ-5 मराठी भाषेच्या इतिहासाचे अध्ययन करणे आणि मराठी साहित्याचे पारंपरिक आणि समकालीन भागांचे अभ्यास करणे.
- सीओ-6 विविध विषयांवर मराठीत लेखन करणे आणि वाचन करणे.
- सीओ-7 अर्थशास्त्रातील विषयांचे वर्णन करणे आणि समजावणे.
- सीओ-8 बँकिंग आणि वित्तीय विषयांचे उल्लेख करणे आणि त्यावर विचार करणे.
- सीओ-9 वित्तीय संबंधांचे वर्गीकरण करणे आणि मूल्यांकन करणे.
- सीओ-10 स्टॉक बाजारा समजूण आणि त्यावर विचार करणे.
- सीओ-11 व्यवसाय आणि व्यापार संबंधी विषयांचे वर्णन करणे आणि समजावणे.
- सीओ-12 बँकिंग आणि वित्तीय संस्थांचे विवरण देणे आणि त्यांचे कार्य परिचय करणे.
- सीओ-13 मार्केटिंग संबंधी विषयांचे वर्णन करणे आणि समजावणे.
- सीओ-14 विदेशी मुद्रा संबंधी विषयांचे वर्णन करणे आणि समजावणे.
- सीओ-15 टॅक्स संबंधी विषयांचे वर्णन करणे आणि समजावणे.

COs for B.COM. (MARATHI) – Semester – VI

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- सीओ-1 व्याकरण, वर्तन, शब्दसंचयाचा बरोबर वापर करणे.
- सीओ-2 इंग्रजी भाषेचे समावेश करून मराठी वाक्य रचना करणे आणि मराठीत अनुवाद करणे.
- सीओ-3 विविधांगी मराठी बोलणे आणि लेखन योग्यतेची तपासणी करणे.
- सीओ-4 व्यावहारिक मराठी लेखन योग्यतेची तयारी करणे.
- सीओ-5 सामान्य मराठी वाक्य बनवणे आणि लिहाणे.
- सीओ-6 मराठी भाषेच्या इतिहासाचे विस्तृत अभ्यास आणि त्याची विशिष्टता समजणे.

- सीओ-7** विविध रूपांतरित वाचन आणि लेखनाची कला समजणे आणि विभिन्न प्रकारच्या लेखनांचे उत्तम लेखन विश्लेषण करणे.
- सीओ-8** अलंकार, छंद आणि रस विश्लेषण व प्रयोग करणे.
- सीओ-9** मराठी भाषेतील व्याकरणाच्या विषयांचे विस्तृत अभ्यास आणि उन्हाची अर्थ विश्लेषण करणे.
- सीओ-10** सुसंस्कृत मराठी वाक्यांचा विश्लेषण करणे आणि विविध विषयांवर आधारित निबंध लिहिणे.
- सीओ-11** लोकशाहीरांची कविता आणि लोकगीतांचा अभ्यास आणि त्यांच्या सामाजिक, सांस्कृतिक आणि राजकीय पायांचा अध्ययन.
- सीओ-12** विविध वैयक्तिक, व्यावसायिक आणि सामाजिक ठिकाणावरील भाषण आणि संवादात्मक कौशल्यांचा विकास.
- सीओ-13** संबोधनाची कला आणि संबोधन तयार करण्याची कला.



COMMERCE



COs for BACHELOR OF COMMERCE (B.COM.) – Semester – I

Sr. No.	Course	Subject	Course Outcomes
1	CO-1	Compulsory English	Students understood basic knowledge of prose & poetry and acquired skills & use of grammar like change the narration, articles, synonyms & Antonyms, tense and are able to write application for job, complaint, order, informal letters, personal letter and resume in English.
2	CO-2	Compulsory Marathi	Students understood basic knowledge of prose & poetry and are able to write for media and write summary and learning from unseen passage of Marathi.
3	CO-3	Compulsory Hindi	Students understood basic knowledge of prose & poetry and acquired skills & use of grammar and use of Hindi language in practical life and are able to write business and office letter in Hindi.
4	CO-4	Computer Fundamental and Operating System - I	Students imparted basic knowledge about Computer like: <ul style="list-style-type: none"> ❖ Fundamentals of computer, computer organization, Memory organization, input and output devices of computer ❖ Word processing
5	CO-5	Principals of Economics	Students are able to learn the principles of Economics through Introduction, Utility approach, Elasticity of demand, Production function and Cost & revenue.

6	CO-6	Advanced Accountancy	<p>Students imparted basic Accounting Knowledge as applicable to business like:</p> <ul style="list-style-type: none"> ❖ Meaning of Accounting ❖ Able to handle Accounting Transactions ❖ Rectify errors ❖ Maintaining Sub-sidiary Book and Cash Book ❖ Preparation of Final Accounts ❖ Calculations of Depreciation Methods ❖ Preparation of Bank Reconciliation statement
7	CO-7	Principles of Business Organization	<p>Students learned principles of business organization and gained knowledge of commerce and industry, business, new enterprises, merger & acquisitions and trade in India.</p>

COs for BACHELOR OF COMMERCE (B.COM.) – Semester – II

Sr. No.	Course	Subject	Course Outcomes
1	CO-8	Compulsory English	<p>Students understood the knowledge of prose & poetry and acquired skills and use of grammar like change the voice, idioms & phrases, one word substitute and prepositions and are able to write e-mail and prepare newspaper report in English.</p>
2	CO-9	Compulsory Marathi	<p>Students understood the language through prose & poetry and are able to write official letters & acquired knowledge of translation into Marathi.</p>
3	CO-10	Compulsory Hindi	<p>Students understood the knowledge of prose & poetry and acquired skills and use of language in practical life and learned designations & administrative vocabulary and able for writing essay in Hindi.</p>

4	CO-11	Computer Fundamental and Operating System - II	<p>Students imparted basic knowledge about computer and are able to work with MS-Word Processing and MS-PowerPoint on the computer.</p> <ul style="list-style-type: none"> ❖ Operating Systems ❖ Concepts of modern communications ❖ Word Processing working with Table and Graphics ❖ Working with MS-PowerPoint
5	CO-12	Business Economics	Students became familiar with Business Economics through Business and managerial Economics, Market structure, and Factors pricing.
6	CO-13	Financial Accounting	Developed conceptual understanding of fundamentals of financial accounting system and to impart skills in accounting for various kinds of business transaction of the students.
7	CO-14	Principles of Business Management	Students acquired the knowledge of principles of business management regarding management concepts, planning, organizing, directing and controlling.

COs for BACHELOR OF COMMERCE (B.COM.) – Semester – III

Sr. No.	Course	Subject	Course Outcomes
1	CO-15	Compulsory English	Students understood advanced knowledge of prose & poetry and acquired communication skills and are able to write notices, agendas & minutes and prepare presentation in English.
2	CO-16	Compulsory Marathi	Students understood advanced knowledge of prose & poetry and are able to write bio-data and application for job in Marathi.

3	CO-17	Compulsory Hindi	Students understood advanced knowledge of prose & poetry acquired skill to expand thoughts in Hindi.
4	CO-18	Information Technology & Business Data Processing-I	Students are familiarized with basics of Information Technology and use of Spreadsheet Package for Business Data Processing.
5	CO-19	Monetary System	Students learned the monetary system which includes term & value of money, price fluctuations and capital market.
6	CO-20	Company Accounts	Awareness about company accounting has increased amongst the students in following aspects : <ul style="list-style-type: none"> ❖ Issue, forfeiture and re issue of shares ❖ Final Accounts of the company ❖ Profit prior to incorporations of company ❖ Amalgamation and absorption of company
7	CO-21	Auditing	Students learned the term of auditing and understood Internal Check system, Audit programme, Routine checking & Vouching, Verification and Valuation of Assets & liabilities; knowledge gained regarding Appointment, Power, duties and Liabilities of company Auditor and became familiar with Audit of Banking, Insurance & Educational Institutions.
8	CO-22	Business Mathematics	The students are enabled to acquire minimum knowledge of Mathematics like Natural Numbers, Integers H.C.F. & L .C.M., Linear Equation with application, percentage, discount, commission & brokerage, average, simple & compound interest and ratio & proportion.

COs for BACHELOR OF COMMERCE (B.COM.) – Semester – IV

Sr. No.	Course	Subject	Course Outcome
1	CO-23	Compulsory English	Students understood advanced knowledge of prose & poetry and acquired interview & interview skills, meeting skills and are able to understand nonverbal communication in English.
2	CO-24	Compulsory Marathi	Students understood advanced knowledge of prose & poetry and are able to write advertisement in Marathi.
3	CO-25	Compulsory Hindi	Students understood advanced knowledge of prose & poetry and acquired skills in Hindi.
4	CO-26	Information Technology & Business Data Processing –II	Students are familiarized with basics of Database, Database management System and are able to handle the Accounting Package for Business Data Processing. Students can generate various accounting reports and handle advance feature through Tally software's latest version.
5	CO-27	Indian Financial System	Students acquired conceptual knowledge of Indian financial markets, Indian banks, Commercial banks, Reserve Bank of India and Stock Exchange.
6	CO-28	Corporate Accounts	Awareness about company accounting has increased amongst the students in following aspects : <ul style="list-style-type: none"> ❖ Issue, forfeiture and re issue of shares ❖ Final Accounts of the company ❖ Profit prior to incorporations of company ❖ Amalgamation and absorption of company
			Students learned the terms of Income Tax and are able to compute : <ul style="list-style-type: none"> ❖ Income from Salary & Income from House property

7	CO-29	Income Tax	<ul style="list-style-type: none"> ❖ Income from other sources, Deductions to be made from Gross Total Income, reading to resident Individual ❖ Income tax Authorities, Power of Income tax Officer & Commissioner and Assessment procedure ❖ Return of Income, e-filing procedure, filling of Form No .16 Form No. 10 E, Tax Planning, ❖ Advance tax , PAN and TDS
8	CO-30	Business Statistics	<p>The students are enabled to acquire minimum knowledge of Statistics like:</p> <ul style="list-style-type: none"> ❖ Types of data, Collection, Tabulation and presentation of statistical data ❖ Index Numbers and construction of Index Number ❖ Construction of a frequency of distribution, concept of central tendency & their measures, Mean , Median, Mode ❖ Concept of Dispersion and Absolute & Relative measures of dispersion Skewness ❖ Co-efficient of correlation, Pearson's formula, ❖ Calculation of Co-efficient of correlation, Probable error
9	CO-31	Environment Science	Awareness among students about environment has increased.

COs for BACHELOR OF COMMERCE (B.COM.) – Semester – V

Sr. No.	Course	Subject	Course Outcome
1	CO-32	Compulsory English	Students understood higher advanced knowledge of prose & poetry in English and acquired communication skills of public speaking and are able to understand the concept of paperless office, Video conferencing and E-Banking.

2	CO-33	Compulsory Marathi	Students understood higher advanced knowledge of prose & poetry and are able to write tender notice and proceedings of meeting in Marathi.
3	CO-34	Compulsory Hindi	Students understood higher advanced knowledge of prose & poetry and acquired the skill to prepare the format for advertisement of manufacturing in Hindi.
4	CO-35	Internet and World Wide Web – I	Students are familiarized with basic concepts and ground rules of Internet and the various services it offers including designing of website and how to access information from depositories in the world wide web.
5	CO-36	Business Environment	The ability of the students regarding understanding and interpreting sector wise business environment of India have developed.
6	CO-37	Cost Accounting	The students are exposed to the basic concepts and tools used in Cost Accounting and understood the applications of Cost Accounting.
7	CO-38	Business Regulatory Frame work	Students has understood the concept of business Laws and it's applications in business regulation for e.g. Indian Contract Act, Special Contracts, Sales of Goods Act, Consumer Protection Act, Negotiable Instrument Act and Goods and Services Tax Act.
8	CO-39	e-Commerce – I	Students get familiarized with the essentials of internet based e-commerce and to make them comprehend its

COs for BACHELOR OF COMMERCE (B.COM.) – Semester – VI

Sr. No.	Course	Subject	Course Outcome
1	CO-40	Compulsory English	Students understood higher advanced knowledge of prose & poetry in English and acquired employability skills like leadership & teamwork skills along with time and stress management and developed communication skills for effective advertising.
2	CO-41	Compulsory Marathi	Students understood higher advanced knowledge of prose & poetry and are able to write statement of advertisement and report writing in Marathi.
3	CO-42	Compulsory Hindi	Students understood higher advanced knowledge of prose & poetry and acquired skill to write summary with title for unseen passage in Hindi.
4	CO-43	Internet and World Wide Web – II	Students got familiarized with basic concepts and ground rules of Internet and the various services it offers including designing of website and how to access information from depositories in the world wide web e.g. Web browsing & directory, search engines; Google drive, forms & Classroom; Social networking, Mobile App and use of MS FrontPage Express.
5	CO-44	Economics of Development	The ability of the students regarding various economic growth models and their applicability in developing present scenario of India.
6	CO-45	Management Accounting	The students are exposed to the basic concepts and tools used in Management Accounting and understood the applications of Management Accounting e.g. Break-Even-Analysis, ratio analysis and budget & budgetary control.

7	CO-46	Company Law	Students understood the concept of Company laws and its applications in business regulation and working of company e.g. incorporation, share capital & meetings of the Company, Security market and Company Secretary related terms.
8	CO-47	e-Commerce - II	Students acquired the knowledge of the internet- based e-commerce business models, internet marketing and e-governance.