



Government Dau Kalyan Arts and Commerce PG College Baloda Bazar

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Website-govtdkcollegebaloda.org

Phone & Fax No.- 07727-222549

## VISION


### ***"Rite Gyanan Murti"***

Means: - **There is no Salvation without Knowledge.**

Adhering to the dictum, following the instruction of the Higher Education the College is marking its combination in providing education to all.

## Mission

- To create a healthy academic environment for the promotion of over city education.
- To provide the education to all students in such a way that they may become part a economics society.
- To conduct research and training programming for increasing the level of knowledge in various field.
- To carry out need- based and value-based education for community development.
- To organize co-curricular and extra –curricular activities for the overall personality development of students.
- To inculcate heritage and local culture among the students.
- To promote judicious use of existing available resources.

  
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**Program Name B.A.**

**B.A. Hindi Literature**

**Program Outcomes:**

- PO 1: To prepare the students with skill to analyze the concept and different theories of Hindi Literature and Language.
- PO 2: To prepare the students for pursuing research or careers in Hindi Language and Literature and its allied fields.
- PO 3: To understand the basic concepts and origins of Hindi.
- PO 4: To introduce students to the real world situation with the help of poems and stories written by various poets and writers.

**Program Specific Outcomes:**

- PSO s 1: To understand the basic concepts and Subject Hindi. And evaluate in the concept of Hindi from past and making the society more closely through literature.
- PSO s 2: To able to understand Novels, stories, Essays and importance of Translation.
- PSO s 3: To able to understand various forms of Functional Hindi according to its area of application.
- PSO s 4: To able to understand identifying the dialects of Hindi Language.
- PSO s 5: To enable to understand the concept of history of literature.
- PSO s 6: To enable to understand the concepts of Linguistics.
- PSO s 7: To enable to understand the introductory concepts of Hindi Grammar.
- PSO s 8: To able to understand the importance and basis of the names given to each period of SHindi Literature.
- PSO s 9: To enable to understand the importance and basis of the Names given to each period of Hindi Literature. And students enable to understand the features of Adikal, Bhaktikal, Ritikal and Adhunik Kal in cultural and political condition of that period.
- PSO s 10: To prepare and motivate students for research students in Hindi language and literature and related fields.
- PSO s 11: To assist students preparing (personal guidance, books) for competitive exams, e.g. NET/SET, etc.

  
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## B.A. English Literature


### Program Outcomes:

- PO s 1:** Department of English will conduct online and offline classes according to the guidelines of the HE.
- PO s 2:** Use of English will be compulsorily 80% and 20% Hindi in teaching.
- PO s 3:** Each topic of each paper for short notes will be distributed to a small group of students. They will prepare the allotted topic in group and present it in the class individually. In this way Unit- One will be covered.
- PO s 4:** Rest II to V units will be covered by the subject teacher.
- PO s 5:** After each unit there would be group discussion chaired by the subject teacher.
- PO s 6:** Also after each unit there will be assignments given to students or test as a part of assessment of student's growth.
- PO s 7:** After each unit there will be internal examination conducted by the subject teacher.
- PO s 8:** One week before the beginning of Semester Exam students will be given study leave.

### Program Specific Outcomes:

By the end of the program, the students of English:

- PSO1:** Comprehend various forms of literature like prose, poetry, drama fiction found in American, British, Research Methodology, and Language Management and in Indian writing in English.
- PSO2:** Apprehend different cultures and cultural sensibilities around the world
- PSO3:** Perspectives of literary movements that existed in different ages.
- PSO4:** Develop the knowledge of grammatical system of English language.
- PSO5:** Define literary theory and terms in criticism.
- PSO6:** Develop four language skills LSRW.
- PSO7:** Write analytically in different formats like essays, reviews, research papers etc.
- PSO8:** Scope of employability and entrepreneurship in the field of Media and Journalism, Teaching, Public Relations, Human Resource, Civil Service, Creative Writing etc.

  
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PSO9: Critically interact with works from different contexts: social, political, economic, historical and national as subjects' conscious of their own socio-historic specificity and thus their level of critical thinking is enhanced.

PSO10: Become thorough with reading works with theoretical basis.

PSO11: Students become capable of interpreting and exploring relationships from the points of view of different people.

PSO12: Become inspired by fiction, open up their minds and stimulate the sympathetic/empathic imagination by allowing them to see the world through other's eyes as well to foster intercultural dialogue.

PSO13: Approach and appreciate Indian literature in English and explore its uniqueness and its place among the literatures in English.

PSO14: Learn what language is and what knowledge a language consist of. This is provided by basic examination of internal organization of sentences, words, and sound systems. The course assumes no prior training in linguistics.

PSO15: Get sensitized with the critical tools used in the reading of literature

PSO16: Form an idea of the complex nature of literary studies and how they are entangled with other aspects of the social body.

PSO17: Gain perceptive insights into the socio-political dynamics, the structuring points of view, the dominant ideology, hegemony, the prevailing common sense and communal underpinnings that mediate the writing, production, reception and survival of a work.


PSO18: Learn literary terms and the various streams in literary criticism, to make them aware of the inter-disciplinary nature of contemporary criticism and to develop in students, skills for literary criticism.

PSO19: Inculcate a literary, aesthetic and critical awareness of diverse cultures and literary creations and thus to arrive at a broader vision of the world.

PSO20: Come to know about the evolution of the Feminist movement and to familiarize them with the various issues addressed by Feminism.

PSO21: Become sensitized to issues like marginalization and subjugation of women.

PSO22: Develop sensible response to great classics in translation and fine tune analytical skills with a view to achieving a broad, wholesome vision of life.

  
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## **B.A. Economics**

### **Program Outcomes:**

**PO s 1:** Explain the function of market and prices as allocative mechanisms.

**PO s 2:** Apply the concept of equilibrium to both microeconomics and macroeconomics.

**PO s 3:** Identify key macroeconomic indicators and measures of economics change, growth, and development.

**PO s 4:** Identify and discuss the key concepts underlying comparative advantage.

**PO s 5:** Identify and explain major types of market failures.

## **B.A. Political Science**

### **Program Outcomes:**

**PO s 1:** Students come to know the political and ruling system of India through the study of Political Science together students acquiring general knowledge through Political Science.

**PO s 2:** Through it students come to know about parliamentary, federal system and unitary system of India, And to know about national, state and local bodies.

**PO s 3:** Students get information and understand the concept of the Rights of citizens, Independence and equality. And Come to know about Indian Constitution.

**PO s 4:** Come to know about How Executive Administration runs the administration of the country, Comparative study of constitution of different countries, understand international union and laws also.

**PO s 5:** To understand the India and Western Thinkers theory and principles, And to understand International politics and foreign policy.

**PO s 6:** To understand the real political world through research. Political Science gives the glimpse of theoretical and practical life of the world.

  
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## **B.A. Psychology**

### **Program Outcomes:**

- PO s 1:** Current running program are so design that help students to understand foundation of the scientific understanding of behavior and mental processes and promotes mental wellness.
- PO s 2:** Course broadly covered the sustainable introduction i.e. the basic psychological process includes learning, thinking, memory, perception, personality, attitude, aptitude, intelligence, personality, social influence on behavior (Social Psychology) and development of emotion, cognitive throughout life span( Developmental Psychology) and Psychometric.
- PO s 3:** The range of classes provide biological influences on behavior individual difference in many psychological processes like cognitive and non- cognitive processes.
- PO s 4:** An experimental approach is common to all students in their respective classes and psychological and statistical methods are studies in their own right.

### **Program Specific Outcomes**

- PSO s 1:** Base of knowledge: the domains of psychology in order to prepare for forthcoming programs like post programs in various disciplines of psychology like counseling psychology etc.
- PSO s 2:** Research discrimination: students interpret research methods used to examine and interpretation of human behavior both basic (theoretical) and applied (practical).
- PSO s 3:** Practical knowledge: practical knowledge in the field of psychology visiting and learning fields' goals like areas of organization, hospitals schools etc.

  
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## B. Com.

### Program Outcome

- This program in our institution could provide knowledge of Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc. well trained professionals to meet the requirements.
- After completing graduation, students can get skills regarding various aspects like Marketing Manager, field officer, Selling Manager, over all Administration abilities of the Company.
- Capability of the students to make decisions at personal & professional level will increase after completion of this course.
- Students can independently start up their own Business and new idea will comes in mind.
- Students can get thorough knowledge of finance and commerce.
- The knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization as well as build a carrier.

### Program Specific Outcome

- The students doing commerce degree course can get the knowledge, skills and attitudes during the end of the B.com degree course.
- By goodness of the preparation they can turn into a Manager, Accountant, businessman etc.
- Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on will help them.
- Students will prove themselves in different professional exams like C.A. ,
- The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.

Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer. in the field of finance and commerce.

  
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## **B. Sc. Mathematics**

### **Program Outcomes:**

- PO1: Scientific temper will be developed in Students.
- PO2: Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.
- PO3: Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.
- PO4: Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.
- PO5: Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues:-
- To inculcate and develop mathematical aptitude and the ability to think abstractly in the student.
  - To develop computational abilities and programming skills.
  - To develop in the student the ability to read, follow and appreciate mathematical text.
  - Train students to communicate mathematical ideas in a lucid and effective manner.
  - To train students to apply their theoretical knowledge to solve problems.

### **Program Specific Outcomes:**

- PSO s1: A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations , terminology
- PSO s2: A student should get adequate exposure to global and local concerns that explore them many aspects of mathematical sciences.
- PSO s3: Student is equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- PSOs4: Student should be able to apply their skills and knowledge that is translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
- PSOs5: Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.
- Have a strong foundation in core areas of Mathematics, both pure and applied.
  - Be able to apply mathematical skills and logical reasoning for problem solving.
  - Communicate mathematical ideas effectively, in writing as well as orally.
  - Have sound knowledge of mathematical modeling, programming and computational techniques as required for employment in industry.

  
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## B.Sc. Physics

### Core Papers

#### Program Outcomes

**DSC1: Mechanics:** The students would learn about the behaviour of physical bodies it provides the basic concepts related to the motion of all the objects around us in our daily life. The course builds a foundation of various applied field in science and technology; especially in the field of mechanical engineering. The course comprises of the study vectors, laws of motion, momentum, energy, rotational motion, gravitation, fluids, elasticity and special relativity.

**DSC1 LAB:** Students would perform basic experiments related to mechanics and also get familiar with various measuring instruments would learn the importance of accuracy of measurements.

**DSC2: Electricity and Magnetism:** It gives an opportunity for the students to learn about one of the fundamental interactions of electricity and magnetism, both as separate phenomena and as a singular electromagnetic force. The course contains vector analysis, electrostatics, magnetism, electromagnetic induction and Maxwell's equations. The course is very useful for the students in almost every branch of science and engineering.

**DSC2 LAB:** Students would gain practical knowledge about electricity and magnetism and measurements such as: Resistance, Voltage, current etc.

**DSC3: Thermal Physics and Statistical Mechanics:** The course makes the students able to understand the basic physics of heat and temperature and their relation with energy, work, radiation and matter. The students also learn how laws of thermodynamics are used in a heat engine to transform heat into work. The course contains the study of laws of thermodynamics, thermodynamic description of systems, thermodynamic potentials, kinetic theory of gases, theory of radiation and statistical mechanics.

**DSC3 LAB:** Students would gain practical knowledge about heat and radiation, thermodynamics, thermo emf, RTD etc. and perform various experiments.

**DSC4: Wave and Optics:** The course comprises of the study of superposition of harmonic oscillations, waves motion (general), oscillators, sound, wave optics, interference, diffraction, polarization. The course is important for the students to make their career in various branches of science and engineering, especially in the field of photonic engineering.

**DSC4 LAB:** The practical knowledge of wave motion doing experiments: Tuning fork, electric vibrations. They would also learn optical phenomena such as interference, diffraction and dispersion and do experiments related to optical devices: Prism, grating, spectrometers

  
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**Discipline Specific Elective papers (any two):**

**DSE1: Elements of Modern Physics:** Students would know about the basic principles in the development of modern physics. The topics covered in the course build a basic foundation of undergraduate physics students to study the advance branches: quantum physics, nuclear physics, particle physics and high energy physics. The course contains the study of Planck's hypothesis, photoelectric effect, Compton effect, matter waves, atomic models, Schrodinger wave equations, and brief idea of nuclear physics.

**DSE1 LAB-Elements of Modern Physics:** In this course students would be able to understand Basic experiments of modern physics such as: Determination of Planck's and Boltzmann's constants, Determination of ionization potential, Wavelength of H-spectrum, Single and double slit diffraction, Photo electric effect and determination of  $c/m$

**DSE1: Solid State Physics:** Students would be able to understand various types of crystal structures and symmetries and understand the relationship between the real and reciprocal space and learn the Bragg's X-ray diffraction in crystals. Would also learn about phonons and lattice.

**DSE1 LAB- Solid State Physics:** The course Provides practical knowledge of various physical phenomena such as: magnetism, dielectrics, ferroelectrics and semiconductors. Students would gain a hands-on learning experience by performing experiments on these properties of materials.

**DSE2: Quantum Mechanics:** Quantum mechanics provides a platform for the physicists to describe the behaviour of matter and energy at atomic and subatomic level. The course plays a fundamental role in explaining how things happen beyond our normal observations. The course includes the study of Schrodinger equations, particle in one dimension potential, quantum theory of H like atoms, atoms/molecules in electric and magnetic fields.

**DSE2 LAB- Quantum Mechanics:** Various practical problems solving methods related to Quantum Mechanics would be learned by students.

**DSE2: Mathematical Physics:** Would learn mathematical methods to solve the various problems in physics. The topics include the calculus of functions, Fourier transform, special functions and special integrals, partial differential equations, complex analysis and variables.

**DSE2 LAB- Mathematical Physics:** Various practical problems related to applications of mathematical tools to solve the problems in physics would be learned by students

  
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### Skill Enhancement Courses (any two):

**SEC1 - Electronics -I:** The students would gain the knowledge of Basic Electronics circuits, network theorems and measuring instruments: They would know about common solid state devices: Semiconductor diodes and transistors. The topics also include the Rectifiers, Filters and their applications, number systems and logic gates which are foundation blocks of digital electronics.

**SEC2- Computational Physics:** This course would introduce students with the basic knowledge of computers their applications in solving common and scientific problems, the course include scientific programming languages, scientific word processing and graphical analysis.


**SEC3-Electronics II:** Students would learn about electronic circuits such as Amplifiers and Oscillators. Various types of Amplifier and Oscillator circuits their working and applications in in domestic, industrial and scientific devices/equipments.

**SEC4: Radiation and Safety:** The students would gain the knowledge of different types of radiation and its interactions with matter, would also know about the photons, charged particles, neutrons, about radiation detection, monitoring and safety measures, and also learn about the applications of nuclear techniques.

### B. Sc. PHYSICS

**Program Specific Outcomes:** This undergraduate course in Physics would provide the opportunity to the students:

- To understand the basic laws and explore the fundamental concepts of physics
- To understand the concepts and significance of the various physical phenomena.
- To carry out experiments to understand the laws and concepts of Physics.
- To apply the theories learnt and the skills acquired to solve real time problems.
- To acquire a wide range of problem solving skills, both analytical and technical and to apply them.
- To enhance the student's academic abilities, personal qualities and transferable skills this will give them an opportunity to develop as responsible citizens.
- To produce graduates who excel in the competencies and values required for leadership to serve a rapidly evolving global community.
- To motivate the students to pursue PG courses in reputed institutions.
- This course introduces students to the methods of experimental physics. Emphasis will be given on laboratory techniques specially the importance of accuracy of measurements.
- Providing a hands-on learning experience such as in measuring the basic concepts in properties of matter, heat, optics, electricity and electronics.

  
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## M Sc. (Physics)

### **Program Outcomes (PO)**

**Phy-C001: Classical Mechanics:** In this course students would learn to apply the Newtonian laws using various mathematical formulations to describe the motions of macroscopic objects using generalized coordinates, momentum, forces and energy. The classical mechanics would be helpful in understanding of advanced branches of modern physics.

**Phy-C002: Mathematical Physics:** Students would be able to understand the mathematical methods essential for solving the advanced problems in physics. It would be helpful in the development of the ability to apply the mathematical concepts and techniques to solve the problems in theoretical and experimental physics. The knowledge of mathematical physics would be beneficial in further research and development as it serve as a tool in almost every branch of science and engineering.

**Phy-C003: Electrodynamics & Astrophysics:** The study of electromagnetic theory provides basic foundation for the students to understand advanced courses of physics. The astrophysics part of the course opens scope for students seeking research opportunities in space, atmospheric and planetary sciences etc. The course involves the study of electromagnetic theory, Maxwell's equations and electromagnetic waves, radiations from moving charges, solar and stellar systems.


**Phy-C004: Electronics:** This course comprises of basics understanding of power amplifiers, feedback amplifiers, operational amplifiers and optoelectronic devices. This course is helpful for the students seeking job opportunities in government, corporate and private sectors. It is also helpful for the students to find opportunities research & development (R & D). The in depth understanding of electronics at post graduate level opens scope for the students to work in private and public sector enterprises.

**PHY-005&006: Lab Course I&II:** Students would gain practical knowledge of basic electronic circuits and components by performing experiments in laboratory the experiments include: LCR, UJT MOSFET, Transistors, Amplifiers, and Oscillators.

**Phy-C007: Atomic and Molecular Physics:** The course structure includes atomic and molecular spectroscopy. As per the course structure, the students learn basics concepts of spectroscopic principles and rules. Students would learn technique in spectroscopy and know about their applications. The course is helpful for the students to explore R & D opportunities in various areas of science and technology such as biomedical, industrial and environmental fields.

**Phy-C008: Solid State Physics:** students will be able to develop an understanding of the lattice, different types of crystal structures, symmetries. The student would gain insight about the interior of the substances using X-ray diffraction in crystals. This course also includes elastic waves, phonons, and lattice vibrational properties. The course forms a theoretical basis of experimental material science and technology.

**Phy-C009: Statistical Physics:** The course includes the study of Basic postulates, application of classical distribution to ideal gases, imperfect gases, quantum statistics and black body radiation. The course is

  
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helpful for the students to understand the dynamics of the bulk material in macroscopic as well as microscopic levels. It is also useful to understand the relation between microscopic and macroscopic systems. Understand how statistics of the microscopic world can be

**Phy-C010: Quantum Mechanics:** The course provides an understanding of the behaviour of the systems at microscopic (atomic and nuclear) scale and even smaller. Students would learn basic postulates and formulations of quantum Mechanics. The course, in fact, plays an important role in explaining the behaviour of all physical systems in the universe. The course includes the study of a brief review of foundations of quantum mechanics, matrix formulation of quantum mechanics, symmetry in quantum mechanics and approximation methods for bound states.

**PHY-C011 & 012: Lab Course I & II:** Students would gain practical knowledge by performing various experiments of Electronics, Optics and Radiation.

**Phy-C013: Advanced Quantum Mechanics:** The course includes the study of scattering theory, identical particles, relativistic wave equations and quantization of wave fields. The course would describe the nature and behaviour of matter and energy at subatomic level. In particular, theory of scattering gives an understanding collision between a quantum mechanical particle and target. The study of relativistic quantum mechanics enables the students to understand the behaviour of objects moving with speeds comparable to that of light.

**Phy-C014: Nuclear Physics:** In this course students would know about the general properties of nuclei, nuclear forces and detectors, radioactive decay and nuclear reactions. The course expands the knowledge of students especially, the various applications of nuclear physics. The course builds a foundation for the students to carry out research in the field of nuclear physics, high energy physics, nuclear astrophysics, nuclear reactions and applied nuclear physics.

**Phy-C015: Lab Course I:** In This Course students would gain the practical knowledge by performing various experiments related to different field in physics and would also learn to design the experiments themselves under the supervision.

**Phy-E001: Condensed Matter Physics A:** The course includes the study of defects in crystals, magnetism, energy bands and dielectric and electrical properties of insulators. This course is of immense importance for the students seeking R & D opportunities in the field of theoretical condensed matter physics, material science, device fabrication, nanoscience and nanotechnology etc.

**Phy-E002: Electronics A:** This course helps the students to gain basic ideas of the construction and working of electronic devices and circuits and to understand the fundamentals of communication systems. The course includes the study of number systems, Boolean algebra, logic gates, combinational circuits, sequential circuits, memory devices and IC technology. The course is of much practical purpose for the students to learn basics of digital electronics. The digital electronics has wide applications in computing, process control, signal processing, communication systems, digital instruments etc.

  
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**Phy-E003: Laser Physics A:** In This course the students would gain the knowledge basic principles, would study the various types of lasers, Laser spectroscopy and their applications in science and technology.

**Phy-E004: High Energy Physics A:** Students would be able understand the complex properties and behaviour of high energy particles at the microscopic level. This course would encourage students to peruse higher study and research in particle and high energy Physics.

**PHY-E005: Astrophysics A:** The Course would be helpful in understanding our composition and universe, the dynamics of stars including our solar system and radiation. Students would also le **PHY-**

**E006: Lab Lab Course II (Circuit design):** Students to would physically experience about various electronic components and learn to design some basic electronic circuits and study their applications.

**Phy-C016: Computational Physics:** The course provides an opportunity to the students to learn about the fundamentals of computer applications in solving the problems in different branches of Physics and Mathematics. They would learn basics of C-programming and FORTRAN-90/95 programming languages and their applications which can useful in their future carrier in the field of research and technology.

**Phy-C017: Particle Physics:** The course is important for the students to learn about the most fundamental building blocks of matter and radiation, interaction among elementary particles and hence to understand their behaviour. The course provides a platform for the students seeking research opportunities in high energy physics.

**Phy-E007: Condensed Matter Physics B:** The course gives in depth understanding of condensed matter physics, including Dielectric and Ferroelectric, Piezoelectric properties, superconductivity, nanomaterials and nanoscience and technology. The students have the opportunity to use the basic principles of condensed matter physics in frontier areas of research and development in the field of material science, nanoscience and nanotechnology.

**Phy-E008: Electronics B:** The course is very important for the students to understand the broadcasting of a message signal from transmitter, its radiation mechanism (how modulated electrical signal is propagated in the form of radio waves) and its detection or demodulation (extraction of original message from modulated signal) at receiver. The course includes the study of modulation, demodulation, transmitters, receivers, TL, antenna, propagation of radio waves, TV, Radar systems. The course is gives the basic science of working of a wireless communications system. The course is also useful for the students to understand the basic function of Television and Radar systems.

**PHY-E009: Laser Physics B:** The students would learn about various optical sources and devices including lasers photo diodes, LED and applications, they would also have the understanding of optical fiber optics, different types of optical fibers, optical communication systems, digital modulation, optical fibers and importance of fiber optical communication in modern world.

  
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**PHY-E010: High Energy Physics B:** In this course provide advance knowledge of higher energy physics and particle physics. The topics include the Symmetries and conservation laws, Gauge theory, Gauge fields, Grand Unified theory and basic idea out the quark and Leptons.

**PHY-E011: Astrophysics B:** This Course provides an opportunity to students to know about various experimental techniques astronomical observations; these include Detectors, Photometry and spectroscopic observational instruments, radio astronomical telescope, interferometer etc. Students would also learn about the Galactic system, extragalactic systems, cosmology and gravitation.

**Phy-E012: Project:** This course is based on preliminary research oriented topics both in theory and experiments. The students are given particular research problems under the supervision of faculty members of the department. Students have the opportunity to work on theoretical as well as experimental topics in physics. The different research areas in which students can do projects are theoretical condensed matter physics, experimental material science, nuclear radiation detectors, radiation physics and environmental radioactivity. The knowledge gained during their project work play a key role in the students' career to pursue Ph. D degree and start their carrier in research in scientific institutions.

**Self Study (Any one of the following):**

**PHSS-006: - Environmental Physics:** Students would acquire basic knowledge about essentials of Environmental Physics , Environmental pollution & degradation, Environmental Changes and Remote Sensing, Global and regional Climate, Global warming, Greenhouse effect and methods and techniques to control these effects.

**PHSS-002: Physics Of Liquid Crystals:** The students would gain the theoretical understanding about the liquid crystals their structure, physical properties and their applications.

**PHSS-003: Atmospheric Physics:** This course would provide the knowledge of physical processes and physical laws used to discuss these processes and properties of atmosphere. The students would also understand various Mathematical and Statistical Methods, Observational Techniques leading to understanding of the atmosphere, Atmosphere and their role in the wave propagation, and Atmospheric Thermodynamics and radiation budget.

**PHSS-004: Bio Physics:** Course would provide the applications of physical laws in the understanding of biological processes, various methods in the Biophysical analysis including florescence spectroscopy, Raman spectroscopy and characterization of bio molecules would be studied.

  
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### M.Sc. Physics

#### **Program Specific Outcomes (PSO)**

- The Master of Science in Physics programme provides the candidate the required knowledge, general competence, and analytical skills on an advanced level, needed in industry, consultancy, education, research, or in public administration.
- The students would gain substantial knowledge in various branches of physics: Electronics, Quantum, classical, statistical mechanics, condensed matter physics, astrophysics, particle, nuclear and high energy Physics.
- Would learn use of mathematical tools in solving complex physical problems and have the solid background and experience required to model, analyze, and solve advanced problems in physics.
- Would able to apply advanced theoretical and/or experimental methods, including the use of numerical methods and simulations.
- This course would empower the student to acquire scientific and engineering skills and the required practical knowledge by performing experiments in general physics and electronics.
- Would also get some research oriented experience by doing theoretical and experimental projects in the last semester under the supervision of faculty.
- The course as a whole opens up several career doors for the students interested in various areas of science and technology in private, public and government sectors.
- Students may get job opportunities in higher education, research organizations, physics consultancy, radiology, radiation oncology and many others. Some of the institutions where physics students can start their carrier are: BARC, DRDO, NPTC, IISc, ISRO, ONGC, BHEL, PRL, NPL, SINP, VECC, IITs, NITs, IIPR etc.

### **B.Sc. Chemistry**

#### **Program Outcomes:**

  
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## **B. Sc- I Year**

**PO s1:** This paper provides basic information about chemistry such as Atomic structure, orbitals, periodic elements and their properties.

**PO s2:** From this question paper students get general information about the organic chemistry and experiments i.e., three dimensional structure, cycloaddition reaction, cycloalkanes, cycloalkenes, dienes, arenes, aromatic halides and aryl halides.

**PO s3:** This paper provides information about some physical and chemical states i.e., gaseous state, colloidal state, solid states and their chemical catalysis and kinetics. The concept of mathematics, and computers.

## **B.Sc- II Year**

**PO s1:** This paper provides information about the inorganic chemistry in d-block periodic properties and lanthanide, actinide elements, coordination compound, aqueous solvent, and general information about acid and basic.

**PO s 2:** This paper provide information about the concept of functional in organic chemistry like alcohol, phenol, ethers, carbohydrate, aldehyde, ketone, and nitrogen organic compound, heterocyclic compound and biochemistry.

**PO s3:** This paper provides information about the physical chemistry. The concepts of thermodynamic, and chemical equilibrium, phase equilibrium and electrochemistry.

## **B.Sc-III Year**

**PO s1:** This paper provides basic information about the coordination chemistry i.e., transition metal complex and their magnetic and electronic properties, organometallic compounds, hard and soft acid and base and biochemistry.

**PO s2:** This paper included basic information about synthesis of polymer, synthesis of dye. Organometallic compound, lipids emulsion and carbohydrates.

**PO s3:** This paper included basic information about quantum mechanics, spectroscopy, physical properties in atomic structure and photochemistry.

## **B.Sc. Chemistry**

### **Program Specific Outcomes:**

**PSO s1:** To educate students on topics: Periodic Classification of Elements and Chemical Bonding

  
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**PSO s2:** To educate students on basic organic chemistry of saturated and unsaturated hydrocarbons along with introduction to different types of reactions.

**PSO s3:** To impart knowledge on states of matter – Solid, Liquid and Gaseous states.

**PSO s4:** To provide laboratory experience to the students by performing volumetric analysis for determination of equivalent weight of acids and experiments based on organic compounds synthesis and their purification methods.

**PSO s5:** To impart understanding of coordination compounds and properties of 'd' and 'f' block elements.

## **M.Sc. Chemistry**

### **Program Outcomes:**

**PO s1: Creative Thinking:** Students will be able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems in chemistry. The skills of observations and drawing logical inferences from the scientific experiments will also be developed.

**PO s2: Interdisciplinary Approach:** Students will realize how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments. Also the knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc. can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.

**PO s3: Personality Development:** Students will imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality. They will also realize that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

**PO s4: Skills in research and industrial field:** Students will build a scientific temper and will be able to learn the necessary skills to succeed in research or industrial field. In addition they will acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

**PO s5: Communication Skills:** Students will develop various communication skills such as reading, listening, speaking, etc., which will help in expressing ideas and views clearly and effectively.

**PO s6: Environmental monitoring:** Students will be able to understand the environmental issues Global warming, Climate change, Acid rain, Ozone depletion and will create awareness in society.

## **M.Sc. Chemistry**

  
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## **Program Specific Outcomes**

### **Inorganic Chemistry**

**PSO s 1:** To educate on advanced topics of solid state chemistry, structure of inorganic compounds and consequences of defects.

**PSO s 2:** To educate on advanced topics of inorganic polymers, novel inorganic compounds and metal sensitizers.

### **Organic Chemistry**

**PSO s 3:** To impart knowledge on advanced stereo chemical aspects of organic compounds.

**PSO s 4:** To educate on advanced topics of organic synthesis

### **Physical Chemistry**

**PSO s 4:** To impart understanding on advanced topics of reaction dynamics and non-equilibrium thermodynamics.

**PSO s 5:** To provide advanced knowledge on Quantum Chemistry, Group Theory and Electrochemistry.

### **Analytical Chemistry**

**PSO s 5:** To provide knowledge on theory and applications of different Analytical Techniques used in Chemistry.

## **B.Sc. Botany**

### **Program Specific Outcomes:**


**PSO s 1:** The curriculum is designed in such a way that the students become aware of the social and environmental issues, significance of plants and their relevance to the national economy by completing the course here students become able to understand different branches of Botany.

**PSO s 2:** Knowledge of Botany is essential for applied science like agriculture horticultures, sericulture, forestry, medicine etc.

### **Program Outcomes: (B.Sc. Part I)**

#### **Paper I**

**PO s:** Here students are able to understand about virus, Bacteria, algae, fungus, Lichen, mycoplasma, Biotechnology, mushroom-culture.

  
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## **Paper II**

**PO s:** Students are able to understand the basic concept of Bryophytes, Pteridophytes, fossil Pteridophytes as well as living and fossil gymnosperms.

**PO s:** Student can clear the concept regarding Geological time scale and fossilization method.

## **Program outcomes: (B.Sc. Part II)**

### **Paper I**

**PO s 1:** Plant taxonomy helps in clearing the concept of plant identification and classification

**PO s 2:** It gives the knowledge of Botanical garden and Herbarium.

**PO s 3:** Students learn the systematic position and family decryption of different angiospermic

**PO s 4:** Plants along with its economic importance.

**PO s 5:** It clears the concept of anatomical study of plants root, shoot, leaf, embryo of angiosperms.

### **Paper II**

**PO s 1:** Students learn the importance of ecology.

**PO s 2:** Students clear the concept of population ecology and biogeochemical cycles.

**PO s 3:** Students learn the concept of Plant Physiology Regarding photosynthesis, respiration and hormone regulation in plants.

## **Program Outcomes: (B.Sc. Part III)**

### **Paper I**

**PO s 1:** Students learn knowledge about different analytical technical tools regarding chromatography and plant tissue culture.

**PO s 2:** Students clear their concept regarding bacterial, fungal, viral, disease along with their practical knowledge by using disease plants dissection.

**PO s 3:** Students will understand the factors leading to environmental pollution, and their impact on environment. This will help to form strategies for environmental conservation.

**PO s 4:** Students will clear their concept regarding elementary Biostatistics.

### **Paper II**

**PO s 1:** Students are helped by clearing their concept of cell & cellular organelles.

  
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PO s 2: They learn the techniques of DNA recombination and various application of biotechnology.

PO s 3: They get the knowledge of protein Carbohydrates fat enzymes biochemistry.

## **M.Sc. Botany**

### **Program Outcomes:**

#### **I - Semester**

- Cytology and Genetics helps in developing the Knowledge regarding cells, cellular organelles, cell cycle.
- It clears the concept of recombination and gene transfers .
- It helps students to develop understanding about the diversity identification classification and economical importance of lower plants.
- It helps the student to develop the basic understanding of important characteristic, anatomy, reproduction evolution of gymnosperms.

#### **II - Semester**

- Taxonomy helps in development of knowledge about plant nomenclature.
- Students earn the knowledge of systematic position of genera, species, families.
- Students have the knowledge of fossil angiosperms.
- Students have the knowledge of monocot and dicot families along with its systematic position and phylogeny.
- Students learn the role of plant cytoskeleton and accessory protein in major cellules process of plants.
- Plants physiology helps them to learn various life process of plants.
- Plants metabolism enable the students to learn knowledge about plant photosynthesis respiration, hormone regulation etc.

#### **III - Semester**

- Students are helped by developing the knowledge of plant growth and reproduction.
- Students learn the concept and function of various ecosystems.
- Students learn the concept of Biotechnology and it's application.
- Students are helped by learning the concept of disease cycle and various pathogens in plant pathology.
- Students are capable to perform short research projects.

#### **IV - Semester**

- Students learn the mechanism of plant reproduction and seed formation.
- It enhances the ethnobotanical knowledge of chhattisgarh flora.
- It gives knowledge of Biodiversity and its conservation.
- It helps in understanding the basic properties of plant tissue culture technique.
- Students learn the concept of disease forecasting and disease control

  
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**B.Sc. Zoology**

**B.Sc. IT**

**Program Name LL.B/LL.M**

**Program Outcomes: (PO s)**

- PO s 1:** Legal Knowledge: To acquire & apply legal knowledge to the complex Socio-legal problems.
- PO s 2:** Professional Practice: to make students eligible to practice in Courts, Industries, Companies as legal practitioner.
- PO s 3:** Professional Skills: To possess professional skills required for legal practice such as Argument, Pleading, drafting, conveyancing etc.
- PO s 4:** Professional Ethics: To understand and apply principles of professional ethics of legal profession.
- PO s 5:** Legal research & legal reasoning: to develop legal research skills & legal reasoning and apply it during programme & in Legal practice
- PO s 6:** Self-reflection & lifelong learning: To develop an attitude of self-reflection while learning & Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of changing legal contexts.
- PO s 7:** Self-employ-ability: To provide a platform of self-employ-ability by developing professional skills in legal industry.
- PO s 8:** Leadership skills: To develop leadership qualities amongst students.
- PO s 9:** Lifelong Learning: To make awareness about Constitutional legislative & societal transformation in society & to develop clinical abilities.
- PO s 10:** Lawyering skills: Every graduate will become skilled in legal research, written and oral communication, teamwork, advocacy, and problem-solving.

  
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**Program Name LL.B/LL.M**

**PROGRAM SPECIFIC OUTCOMES (PSO s)**

**At the end of the program, the student:**

- PSO1. Should be able to demonstrate understanding of substantive and procedural law sufficient to enter the legal profession and professions in which legal knowledge is an advantage.
- PSO2. Should be able to associate learning from the courses related to Law and Management.
- PSO3. Should be able to Gather and interpret relevant facts and conduct legal research.
- PSO4. Should have the capability to understand the laws at national level and global level and to solve the client's problem.
- PSO5. Should possess and the skills to communicate in both oral and written forms and ability to formulate legal problems and using appropriate concepts, and methods to solve them.
- PSO6 should use skills in specific areas (e.g. criminal, industrial-organizational, clinical, counseling, and social, community).
- PSO7 Should analyzing social problems and understanding social dynamics.

## **6 Department of B.Sc. (IT)**

**Program Outcomes**

1. To develop an understanding and knowledge of the basic theory of Computer Science and Information Technology with good foundation on theory, systems and applications such as algorithms, flow chart, data structure, data shortened, data handling, data communication and computation.
2. To develop the ability to use this knowledge to analyze new situations.

  
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3. To learn skills and tools like Mathematics, Physics, Chemistry electrons to find the solution, interpret the results and make predictions for the future development.

#### **Course Outcomes**

A graduate with a B.Sc. In Information technology will have the ability to:

1. Demonstrate mastery of CS, IT, Maths and Physics in the following core knowledge areas.
2. Development of computer hardware and architecture.
3. Data structure and programming language.
4. Networking and Micro processing 8085.
5. Apply problem-solution skill and the knowledge of Computer Science to solve real world problems.
6. Develop project files and present them orally.

#### **PGDCA**

##### **Program Outcomes:**

PO s 1: PGDCA equips the students with skills required for designing, developing application in Information Technology.

PO s 2: Students will able to learn the latest trends in various subjects of computer and Information Technology.

##### **Course Outcomes:**

CO s 1: To expose the students to open source technology so that they become familiar with it and can seek appropriate opportunity in trained and industry.

CO s 2: Able to provide Socially acceptable technical solution to real world problems with the application of modern and appropriate programming techniques .

Co s 3: Design applications for any desired needs with appropriate consideration for any specific need on societal and industrial aspects.

  
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