



Bachelor of Technology (Bioinformatics)

Program Outcome

- PO-1) The graduates are able to develop an ability to apply knowledge of biology, mathematics, science and engineering appropriate to the discipline.
- PO-2) The graduates are able to apply biological foundation, mathematical foundations, and algorithmic principles in modeling, design and conduct of experiments as well as data interpretation and analysis.
- PO-3) The graduates are able to develop an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability and sustainability.
- PO-4) The graduates are able to develop an ability to identify, formulate and solve real engineering problems and understand the global impact of engineering solutions.
- PO-5) The graduates are able to develop an ability to function effectively on multidisciplinary teams to accomplish a common goal.
- PO-6) The graduates are able to develop an understanding of professional, ethical, legal, security and social issues as well as responsibilities.
- PO-7) The graduates have good knowledge of contemporary issues and are able to communicate effectively with a range of audiences.
- PO-8) The graduates are able to recognize the need for lifelong learning and are able to apply the techniques, skills and modern engineering tools necessary for engineering practice.
- PO-9) The graduates are able to compile the available Biological information in a systematic manner.
- PO-10) The graduates are able to develop databases, algorithms and tools for the analysis of Biological data.
- PO-11) The graduates are able to apply knowledge of mathematics, science and engineering.
- PO-12) The graduates are able to design and conduct experiments, as well as to analyze and interpret data.



Course Outcome

Sr. No.	Course Code	Course Name	Learning Outcomes
SEMESTER-I			
1.	BINF 111	Applied Mathematics	<p>CO1. To apply the essential tools of matrices including Eigen values, diagonalization in a comprehensive manner.</p> <p>CO2. To apply differential calculus to notions of curvature. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.</p> <p>CO3. To apply the effective mathematical tools for the solutions of differential equations.</p> <p>CO4. To apply integral calculus to notions to integrals. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.</p>
2.	BINF 112	Applied Physics	<p>After completion of the course the student will be able to learn:</p> <p>CO1. To impart knowledge on the concepts of electrostatics, electric potential, energy density and their applications. To impart knowledge on the concepts of magneto statics, magnetic flux density, scalar and vector potential and its applications.</p> <p>CO2. To understand the properties of light and its application i.e. polarization, reflection, refraction and scattering.</p> <p>CO3. To understand the meaning of polarization. Understand the property of optical activity of certain materials.</p> <p>CO4. To Understand the theory of relativity.</p> <p>CO5. To Know the Difference between Classical Mechanics to quantum mechanics also understand the ab time-dependent and time-independent Schrödinger equation for simple potentials like for instance the harmonic oscillator and hydrogen like atoms, as well as the interaction of an electron with the electromagnetic field quantum mechanical axioms and the matrix representation of quantum mechanics.</p>



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3.	BINF 113	Cell Biology	<p>CO1. This is the basic unit of basic electrical in which learner shall come to know about fundamental theorems of electrical which shall be useful throughout the course. Also, learner shall become aware of DC.</p> <p>CO2. This unit is dedicated to fundamentals of ac. Learners shall come to know about all the theorems of ac.</p> <p>CO3. This unit is dedicated to 3-phase ac. Learners shall come to know about industrial use of ac.</p> <p>CO4. This part of syllabus is associated analogy of electrical circuit i.e. magnetic circuit. Learner shall come to know about properties and applications of magnetic circuits.</p> <p>CO5. This unit is for basic measuring instruments of electrical engineering.</p>
4.	BINF 115	Fundamental of Information Technology	<p>CO1. Have a basic understanding of personal computers and their operations.</p> <p>CO2. Knows the terms of motherboard, CPU, RAM, ROM, BIOS, CMOS and can express with their own words.</p> <p>CO3. Understand basic concepts and terminology of information technology.</p> <p>CO4. Understand the concept of Internet, Basic Internet Terms Getting Connected to Internet, Web Browser E-mail, Gmail Account and Search Engines.</p> <p>CO5. Be able to identify issues related to information security.</p> <p>CO6. Understand the computer basics and principles of programming language design. Design flow-chart, algorithm and program logic.</p> <p>CO7. Acquire the knowledge of fundamentals, concepts and constructs of C programming.</p> <p>CO8. Understand the concept of data types, loops, functions, Array, pointers, string, structures and files.</p> <p>CO9. Analyze problems, errors and exceptions.</p> <p>CO10. Able to work with arrays of complex objects.</p> <p>CO11. Understanding a concept of functional hierarchical code organization.</p>



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SEMESTER-II			
5.	BINF 121	Biophysics	After completion of the course the student will be able to learn: CO1. To understand and apply the basic principles/ concepts of physics in Bio -system mechanisms/Bio-Molecules. CO2. To interpret and calculate the different physical parameters of the Bio Molecular/Cellular models. CO3. To design the instruments using principles of Biophysics for human welfare.
6.	BINF 122	Environmental Science and Engineering	CO1. Students will be able to understand About Whole Ecosystem and Its structure. CO2. Understanding about different types of pollution, Their sources, effects on both biotic and abiotic components and their remedies (management). Solid Waste Management. CO3. Learning about Biodiversity and its three levels i.e. Genetic, Species and Ecosystem Diversity .Major Hotspot of Biodiversity in India and world. Brief concept of Pollution. CO4. Students will learn and understand various Acts for Environment Protection. CO5. Learning about Biosensor for determining the type and concentration of contaminants present in an environment.
7.	BINF 123	Biochemistry-I	After completion of the course the student will be able to learn: CO1. To describe the importance/ regulation of Bio-molecules involved in Bio organelles and dynamics. CO2. To interpret the predetermination of genetic disorders. CO3. To explain the diversity on the basis of DNA sequences/ homology/ evolutionary history. CO4. To prepare the gene databank. CO5. To explain the regulation and modulation of the chemical mechanisms mediated by enzymes in the system biology.
8.	BINF 124	Basic Electronics Engineering	CO1. Basic concepts of components of Electronics shall be provided to Learners.



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			<p>CO2. This module is dedicated to most basic component of electronics-Diode. Learners shall come to know about its construction, working principles and associated mechanisms.</p> <p>CO3. This module is for various applications of p-n junction diode. Lerner shall become well aware of applications of diode.</p> <p>CO4. Learner shall come to know about all types of special types of diode which has attractive specific applications.</p> <p>CO5. This is one of the very important Module by which learner will come to know about very basic transistor-BJT.</p> <p>CO6. Learner shall come to know about other types of transistors- FET & MOSFET, their construction, working principle and characteristics.</p> <p>CO7. This module is for Amplifiers. Learner shall become aware of its basic concepts.</p> <p>CO8. This module is dedicated to ICs which is one of the revolutionary components of electronics. This component reduced the size of electronic circuit in a great extent. Learners</p> <p>CO9. In this module Oscillators shall be briefly explained for learners.</p>
9.	BINF 125	Molecular Biology	<p>After completion of the course the student will be able to learn:</p> <p>CO1. To describe and relate the various mechanisms involving DNA/RNA.</p> <p>CO2. To analyze the regulation/ modulation of the gene and their expression.</p> <p>CO3. To explain the molecular mechanisms in Bacteria.</p> <p>CO4. To recognize and identify the true parents of the new born.</p> <p>CO5. To identify the real culprit.</p> <p>CO6. To identify the genetic alterations and their repair mechanisms.</p>



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10.	BINF 126	Applied Chemistry	<p>CO1. Industrial Use of Water, issues related to.</p> <p>CO2. Electrochemistry is multidisciplinary science which can be applied to a variety of fields such as physical, chemical and biological sciences. The Understanding of fundamentals of Electrochemical reaction develops analytical thinking skills and empowers students for analyzing and solving environmental issues, Updation of knowledge in the field develop critical thinking aptitude, Current problems related to environment due to pollution and contamination can be better understood.</p> <p>CO3. Understand the terminology associated with engineering thermodynamics and have knowledge of contemporary issues related to chemical engineering thermodynamics. Development of Ability to apply fundamental concepts of thermodynamics to engineering applications, It enhance Ability to estimate thermodynamic properties of substances/compounds (and chemical reactions) in gas and liquid states.</p> <p>CO4. Organic chemistry is integral part of life sciences and chemical sciences. Intended Outcomes for the course upon complete concept understanding- the student will be able to: Demonstrate an intermediate ability to use effective written and/or oral communication through the application of organic chemistry concepts and solving reasoning based problems in reaction mechanism, using the language of chemistry. Understanding of its fundamentals helps in developing critical thinking and analyzing problems. Understanding of Polymers and its synthesis mechanism. Planning of experiments and analyze the experimental data for synthesis of different polymers.</p> <p>CO5. Ability to characterize the fuels, Understanding of thermodynamics and kinetics of combustion of various fuels, Understanding the ability to analyze the combustion.</p> <p>CO6. After the end of this course, the student will be able to interpret UV-Visible spectroscopy/IR/NMR/Microwave, Able to explain basic principles associate with them, Knowledge of relevant terms of these spectroscopic techniques, and can explain working principle, taking spectra and outline of spectroscopy device, The students will be able to interpret UV/IR/NMR spectroscopy.</p>



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11.	BINF 127	Communication Skill	<p>CO1. Grip on sentence framing while writing as well as speaking.</p> <p>CO2. How to avoid common mistakes while writing learning objectives.</p> <p>CO3. Participates in different events such as role play, debate, extempore.</p> <p>CO4. Locating main idea, sequence of events and correlating things.</p> <p>CO5. Ability to present thoughts in limited words.</p> <p>CO6. Creativity and Critical thinking.</p> <p>CO7. Communication in office.</p> <p>CO8. To describe skills, education, experience and achievements with proper grammar format.</p> <p>CO9. To learn to communicate effectively in business interaction, business documents with proper etiquette</p> <p>CO10. How to pronounce well and understand the transcript.</p>