

VISION OF THE INSTITUTE

To evolve as an eminent Centre of Learning with total commitment to provide career-focused technical training aimed at excellence in inter-disciplinary education, research and innovation in order to produce socially responsible and synergetic leaders with a global profile.

MISSION OF THE INSTITUTE

The Baba Banda Singh Bahadur Engineering College seeks to enrich the academic experience of students to help them meet the evolving needs of society. We aspire to realise our Vision as follows:

- Conduct UG programs that integrate global awareness, communication skills and team building across the curriculum.
- Run Graduate education programs to prepare students for inter-disciplinary engineering research and advanced problem solving with focus on career advancement.
- Provide an atmosphere to facilitate personal commitment to the educational success of students in an environment that values diversity and community
- Inculcate a high regard for ethical principles and an understanding of human and environmental realities.
- Provide state-of-the-art facilities and effective delivery of high quality content by qualified faculty members to build the notion of lifelong learning.
- Conduct scholarly activities that create and transfer cutting-edge knowledge in the area of engineering and technology
- Create a highly successful alumni base that contributes to the global society.

Vision of The Department

To impart quality technical education in the field of electronics and communication engineering to produce innovative technocrats that are technically competent and professionally ethical to contribute towards Indian and global future industrial requirements.

Mission of The Department

- To provide high quality education to the students for a successful professional career in the field of electronics and communication engineering.
- To provide an environment for promoting innovation, team-work and leadership qualities among the students.
- To expose our students to the latest technologies in ECE so as to make them meet the growing challenges of the industry.
- To inculcate ethical and value-based perception among students so that they can provide holistic solutions to future challenges.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- To develop the technical skills and competence among our students to contribute towards sustainable development of electronics and communication engineering.
- To inculcate in our students the curiosity for lifelong learning so that they pursue higher studies and contribute to research and development in electronics and allied fields.
- To groom our students into ethical and socially responsible electronics engineers who can work as team members as well as leaders in multicultural and multidisciplinary groups.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- Able to understand the various software and hardware aspects of electronic systems
- Able to use techniques, skills and modern engineering tools to design, implement and evaluate electronic systems in your job and/or continued education.
- Able to apply mathematical concepts and algorithmic principles to solve computational and real-world problems in your job and/or continued education.

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

- Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
- Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
 - Life- long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technology.

STUDY SCHEME

First Semester									
NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Internal	External	Total	
ECE101	BPHY0-101	Applied Physics	3	1	0	40	60	100	4
ECE102	BMAT0-102	Applied Mathematics-I	4	1	0	40	60	100	5
ECE103	BHUM0-101	Communicative English	2	1	0	40	60	100	3
ECE104	BELE0-101	Basics of Electrical Engineering	2	0	0	40	60	100	2
ECE105	BHUM0-103	Human Values & Professional Ethics	2	0	0	40	60	100	2
ECE106	BESE0-101	Environmental Science	2	0	0	40	60	100	2
ECE107	BPHY0-102	Applied Physics Lab.	0	0	2	60	40	100	1
ECE108	BHUM0-102	Communicative English Lab.	0	0	2	60	40	100	1
ECE109	BELE0-102	Basics of Electrical Engineering Lab.	0	0	2	60	40	100	1
ECE110	BMFP0-101	Manufacturing Practice	1	0	6	60	40	100	4
Total 6 Theory & 4 Lab. Courses			16	3	12	480	520	1000	25
Second Semester									
NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Internal	External	Total	
ECE111	BCHM0-101	Applied Chemistry	3	1	0	40	60	100	4
ECE112	BMAT0-201	Applied Mathematics-II	4	1	0	40	60	100	5
ECE113	BMEE0-101	Elements of Mechanical Engineering	3	1	0	40	60	100	4
ECE114	BECE0-101	Basics of Electronics Engineering	2	0	0	40	60	100	2
ECE115	BCSE0-101	Computer Programming	3	0	0	40	60	100	3
ECE116	BMEE0-102	Engineering Drawing	1	0	4	40	60	100	3
ECE117	BCHM0-102	Applied Chemistry Lab.	0	0	2	60	40	100	1
ECE118	BECE0-102	Basics of Electronics Engineering Lab.	0	0	2	60	40	100	1
ECE119	BCSE0-102	Basics of Computer Programming Lab.	0	0	4	60	40	100	2
Total 6 Theory & 3 Lab. Courses			16	3	12	420	480	900	25
Third Semester									
NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Int.	Ext.	Total	
ECE220	BECE1-301	Object Oriented Programming	3	1	0	40	60	100	4
ECE221	BECE1-302	Electronic Devices and Circuits - I	3	1	0	40	60	100	4
ECE222	BECE1-303	Network Analysis and Synthesis	3	1	0	40	60	100	4
ECE223	BECE1-304	Electronic Instrumentation	3	1	0	40	60	100	4
ECE224	BECE1-305	Signals and Systems	3	1	0	40	40	100	1
ECE225	BECE1-306	Electronic Devices and Circuits - I Lab.	0	0	2	60	40	100	1
ECE226	BECE1-307	Object Oriented Programming Lab	0	0	2	60	40	100	4
ECE227	BHUM0-91	Soft Skills-I	0	0	2	60	40	100	1
ECE228	BECE1-308	Training – I#	0	0	4	60	40	100	2
Total			15	5	10	440	460	900	25
Theory = 5 Labs = 4									

Fourth Semester

NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Int.	Ext.	Total	
ECE-229	BECE1-409	Electronic Devices and Circuits –II	3	1	0	40	60	100	4
ECE-230	BECE1-410	Analog Communication Systems	3	1	0	40	60	100	4
ECE-231	BECE1-411	Digital Electronics	3	1	0	40	60	100	4
ECE-232	BECE1-412	Electromagnetic Field Theory	3	1	0	40	60	100	4
ECE-233	BECE1-413	Electronic Devices and Circuits –II Lab.	0	0	2	60	40	100	1
ECE-234	BECE1-414	Analog Communication Systems Lab.	0	0	2	60	40	100	1
ECE-235	BECE1-415	Digital Electronics Lab.	0	0	2	60	40	100	1
ECE-236	BHUM0-F92	Soft Skills –II	0	0	2	60	40	100	1
	Department Elective – I		3	0	0	40	60	100	3
ECE-237	BECE1-456	Neural Networks and Fuzzy Logic							
ECE-238	BECE1-457	Data Structures and Algorithms							
ECE-239	BECE1-458	RADAR and SONAR Engineering							
ECE-240	BECE1-459	Web Technologies							
	Total	Theory = 5 Labs = 4	15	4	8	440	460	900	23

Fifth Semester

NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Int.	Ext.	Total	
ECE-341	BECE1-516	Linear Integrated Circuits	3	1	0	40	60	100	4
ECE-342	BECE1-517	Microprocessor and Interfacing	3	1	0	40	60	100	4
ECE-343	BECE1-518	Digital Communication Systems	3	1	0	40	60	100	4
ECE-344	BECE1-519	Linear Integrated Circuits Lab.	0	0	2	60	40	100	1
ECE-345	BECE1-520	Microprocessor Lab.	0	0	2	60	40	100	1
ECE-346	BECE1-521	Digital Communication Systems Lab.	0	0	2	60	40	100	1
ECE-347	BECE1-522	Training –II#	0	0	4	60	40	100	2
ECE-348	BHUM0-93	Soft Skills –III	0	0	2	60	40	100	1
		Department Elective – II	3	0	0	40	60	100	3
ECE-349	BECE1-560	Data Communication Networks							
ECE-350	BECE1-561	Human Resource Management							
ECE-351	BECE1-562	Digital System Design							
ECE-352	BECE1-563	Biomedical Electronics and Instrumentation							
ECE-353	BECE1-564	Micro-electronics							
ECE-354	BBAD0-F92	Open Elective – I	3	0	0	40	60	100	3
	Total	Theory = 5 Labs = 5	15	3	12	500	500	1000	24

Sixth Semester

NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Int.	Ext.	Total	
ECE-355	BECE1-623	Microwave and Antenna Theory	3	1	0	40	60	100	4
ECE-356	BECE1-624	Microcontroller and Embedded System	3	1	0	40	60	100	4
ECE-357	BECE1-625	Linear Control System	3	1	0	40	60	100	4
ECE-358	BECE1-626	Microwave Engineering lab	0	0	2	60	40	100	1
ECE-359	BECE1-627	Microcontroller Lab.	0	0	2	60	40	100	1
ECE-360	BHUM0-94	Soft Skills-IV	0	0	2	60	40	100	1
		Department Elective – III	3	0	0	40	60	100	3
ECE-361	BECE1-665	Nano Science and Nano-Technology							
ECE-362	BECE1-666	Advanced Microprocessor							
ECE-363	BECE1-667	Image and Speech Processing							
ECE-364	BECE1-668	Optical Fibre Communication							
ECE-365	BECE1-669	Operation Research							
ECE-366	BBAD0-F92	Open Elective – II	3	0	0	40	60	100	3
	Total	Theory = 5 Labs = 3	15	3	6	380	420	800	21

Seventh Semester									
NAAC Code	Subject Code	Course Name	Contact Hrs			Marks			Credits
			Code	T	P	Int.	Ext.	Total	
ECE-467	BECE1- 728	Wireless Communication Systems	3	1	0	40	60	100	4
ECE-468	BECE1- 729	Digital Signal Processing	3	1	0	40	60	100	4
ECE-469	BECE1- 730	Digital Signal Processing Lab	0	0	2	60	40	100	1
ECE-470	BECE1- 731	Minor Project	0	0	4	60	40	100	4
ECE-471	BECE1- 732	Training-III#	0	0	8	60	40	100	4
	Department Elective – IV (Select any one)		3	0	0	40	60	100	3
ECE-472	BECE1-770	Cognitive Radio							
ECE-473	BECE1-771	Relational Data Base Management System							
ECE-474	BECE1-772	Computer Architecture and Organization							
ECE-475	BECE1-773	Soft Computing							
ECE-476		Open Elective – III	3	0	0	40	60	100	3
	Total	Theory = 4 Labs = 3	12	2	14	340	360	700	23

Eighth Semester									
NAAC Code	Subject Code	Course Name	Contact Hrs			Marks			Credits
			Code	T	P	Int.	Ext.	Total	
ECE-477	BECE1- 833	VLSI Design	3	1	0	40	60	100	4
ECE-478	BECE1- 834	VLSI Design Lab	0	0	2	60	40	100	1
ECE-479	BECE1- 835	Major Project	0	0	12	60	40	100	6
	Department Elective – V (Select any one)		3	0	0	40	60	100	3
ECE-480	BECE1-874	Cellular and Mobile Communication							
ECE-481	BECE1-875	Wireless Sensor Networks							
ECE-482	BECE1-876	Information Theory and Coding							
ECE-483	BECE1-877	Operating Systems							
ECE-484	BECE1-878	Satellite Communication							
	Total	Theory = 2 Labs = 2	6	1	14	200	200	400	14

Course Outcomes

Semester: 1st/2nd

Course: Applied Physics; Semester: 1st/2 nd	
Course Code:- BPHY0-101	NAAC Code:-ECE-101
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Understand the basics of crystallography, magnetic materials, superconductivity and its applications
II	Comprehend and apply the concepts of quantum and classical problems for different physical problems.
III	Understand basics of vector calculus, formation and conduction of wave in different medium with the awareness of medium with the awareness of importance of dielectrics in electrical phenomenon.
IV	Acquire comprehensive knowledge of lasers and optical fibres and their role in communication system.
V	Gain basic understanding of theory of relativity to apply in relativistic and non relativistic fields.
VI	Acquaint themselves with the applications of nano science and technology and study of drastic changes in the properties of nano sized particles.

Course: Applied Mathematics-I; Semester: 1 st	
Course Code:- BMAT0-102	NAAC Code:- ECE-102
CO No.	COs (Course Outcomes): On the successful completion of course, students will be able to:
I	Apply the basic concepts of linear algebra including linear transformations.
II	To find the solution of Ordinary differential equations (linear) in most of the dynamical systems of engineering.
III	Apply the theory of elementary functions of complex variables for the summation of trigonometric series.
IV	Investigate the convergence behaviour of power series arising in various engineering applications.

Course: COMMUNICATIVE ENGLISH Semester: 1st/2 nd	
Course Code:- BHUMO-101	NAAC Code:-ECE-103
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Understand and appreciate the need of communication training.
II	Use different strategies of effective communication and select the most appropriate mode of communication for a given situation.
III	Speak effectively and assertively
IV	Correspond effectively through different modes of written communication.
V	Present himself/herself professionally through effective resumes and interviews.

Course: Basics of Electrical Engineering; Semester: 1st/2nd	
Course Code:- BELE0-101	NAAC Code:-ECE-104
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Solve DC and AC circuits using various laws.
II	Understand concepts of magnetic circuits and working of transformers.
III	Understand the construction and working of electrical machines.
IV	Have knowledge of semiconductor devices, transducers and digital circuits

Course: Human Values and Professional Ethics ;Semester: 1st/2nd	
Course Code:- BHUM0-103	NAAC Code:-ECE-105
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Students understanding 'VALUES' and 'SKILLS' as complimentary would mould themselves into engineers, who would enjoy their work and become more efficient.
II	Current problem of students of not to withstand the pressure due to work load would be solved.
III	Student would work with team spirit rather than in competition in professional as well as in personal life.
IV	While designing and applying technology, nurture and protection of nature would become the key parameter of the student.
V	Holistic understanding would lead student to become more sensitive towards societal and environmental issues.

Course: Environmental Science; Semester: 1st/2nd	
Course Code:- BESE0-101	NAAC Code:-ECE-106
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	To measure environmental variables and interpret results.
II	To interpret the results of scientific studies of environmental problems.
III	Ability to define threats to global biodiversity, their implications and potential solutions.
IV	Ability to evaluate local, regional and global environmental topics related to resource use and management.

Course: Applied Physics Lab; Semester 1st/2nd	
Course Code:- BPHY0-102	NAAC Code:-ECE-107
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Acquire measurement skills, observational skills and understand limits of precision in measurements.
II	Verify fundamental laws, theoretical ideas and concepts.
III	Apply practical based knowledge, scientific methods and reasoning in solving daily life problems.
IV	Correlate the knowledge gained with other engineering disciplines.

Course: COMMUNICATIVE ENGLISH LAB Semester: 1st/2nd	
Course Code:- BHUMO-102	
NAAC Code:-ECE-108	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Understand and appreciate the need of communication skills in personal and professional life.
II	Use different medias/channels of communication and select the most appropriate for a given situation.
III	Speak and present himself/herself professionally and socially effectively through effective talks, resumes, interviews etc.

Course: Basics of Electrical Engineering Lab; Semester: 1st/2nd	
Course Code:- BELE0-102	
NAAC Code:-ECE-109	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Various laws of AC and DC circuits.
II	Verify the characteristics of semiconductor devices and digital circuits.
III	To test and verify the characteristics of various electromagnetic devices.
IV	Understand the uses of various measuring instruments.

Course: Manufacturing Practice Semester: 1st/2nd	
Course Code:- BTMP-101	
NAAC Code:-ECE-110	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Student will develop skills for welding on arc welding and gas welding.
II	Students will learn about safety precautions while handling tool and machinery.
III	Acquire skill for machining on lathe machines.
IV	Acquire skills for marking, cutting, fitting practices in fitting shops and learn about various materials used for making moulds, cores and casting.
V	Students will acquire skills to fabricate projects involving operations of carpentry shop, welding shop, fitting and foundry shops.
VI	Student will develop skills for welding on arc welding and gas welding.

Course: Applied Chemistry; Semester: 1st/2nd	
Course Code:- BCHM0-101	
NAAC Code:- ECE-111	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will be able to understand the best use of the techniques to protect the instruments from corrosion.
II	The students will be able to design new product by using different polymeric techniques
III	The students after studying spectroscopic techniques and coordination chemistry will be able to interpret the structure of molecules.
IV	The students will learn the chemical composition, separation techniques and modifications through chemical processes to enhance the quality of petrochemicals and will understand the merits and demerits of different methods applied to purify the water, to make it fit for domestic as well as industrial use.

V	The students will learn to develop the new techniques used for the synthesis of chemical products in an eco- friendly way.
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Course: Applied Mathematics –II; Semester: 2 nd	
Course Code:- BMAT0-201	NAAC Code:- ECE-112
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Use the fundamentals of differential and integral calculus to analyse existing and developing new mathematical models in engineering.
II	Apply the concept of partial differentiation in different engineering problems.
III	To evaluate the parameters, like area, volume, mass, centre of gravity, moment of inertia etc, of planer and solid structures.
IV	Use vector (calculus) to study the paths, velocities and accelerations of moving bodies and fluids.

Course: Element of Mechanical Engineering -I; Semester: 1 st	
Course Code:- BMEE0-101	NAAC Code:- ECE-113
CO No.	COs (Course Outcomes): On the successful completion of course, students will be able to:
I	The students will be able to identify types of thermodynamic systems and understand the concepts of transient energies.
II	The students will be able to understand the first law of thermodynamics applicable to the closed system and its applications(non-flow thermodynamic processes), open systems and its applications (Flow processes); understanding of the second law of thermodynamics, concepts of entropy, able to identify real and ideal gas power cycles and processes, concepts of irreversibility.
III	The students will be able to solve engineering problems using macroscopic approach related to various systems and processes.
IV	The students will be able to determine centroid, centers of gravity, moments of inertia, polar moment of inertia, radius of gyration, mass moment of inertia of various symmetrical and non-symmetrical shapes and figures; understanding the mechanical properties of materials and ability to select engineering materials for different applications.

Course: Basics of Electronics Engineering; Semester: 1 st	
Course Code:- BECE0-101	NAAC Code:- ECE-114
CO No.	COs (Course Outcomes): On the successful completion of course, students will be able to:
I	To understand behaviour of semiconductor materials that includes diodes, LEDs, rectifiers and power regulators.
II	To learn basic principle of transistor, working of its different configurations and applications in electronic circuits.
III	To impart knowledge of Boolean expressions and their implementation using universal gates.
IV	To learn applications of the transducers in measurements of various physical parameters.

Course: Basics of Computer Programming; Semester: 1st/2nd	
Course Code:- BCSE0-101	NAAC Code:- ECE-115
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Describe algorithm, pseudo codes and programming structures.
II	Use syntax, semantics and different constructs to develop a program in 'C' language.
III	Implement programs related to mathematical and logical problems in 'C' language.
IV	Use of simple data structures, pointers, memory allocation and data handling for various applications through files in 'C'.
V	Identify the role of functions, arrays, storage classes in programming.
VI	Implementation of various file related operations.

Course: Engineering Drawing; Semester: 1st/2nd	
Course Code: BMEE0-102	NAAC Code:-ECE-116
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will be able to understand various concepts of engineering drawing like dimensioning, conventions and scales.
II	The students will be able to understand orthographic projections in first and third angles.
III	The students will be able to understand interior details and surface layout of various objects.
IV	The students will be able to understand and acquire knowledge of projection of 3D objects.
V	The students will be able to understand the various concepts of interpretation of joints.

Course: Applied Chemistry Lab; Semester: 1st/2nd	
Course Code: BCHM0-102	NAAC Code:- ECE-117
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will learn the methods to determine the hardness, amount of Chlorine and dissolved oxygen in water.
II	The students will be able to study the properties of lubricant to compare their quality.
III	The students will learn advanced instrumental techniques used to determine the chemical composition.
IV	The students will learn the different steps involved in the synthesis of chemical products.

Course: Basics of Electronics Engineering Lab; Semester: 1st/2nd	
Course Code: BECE0-102	NAAC Code:- ECE-118
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Become familiar with the functionality of a diode in circuits and their applications in rectifiers and regulators.
II	Basic principle of BJT transistor, working of different configurations and applications of JFET.
III	Implement various gates NOT, AND, OR, NAND, NOR using universal gates.
IV	To learn measurements of various physical parameters like temperature, movement using different transducers.

Course: Basics of Computer Programming Lab; Semester: 1st/2nd	
Course Code:- BCSE0-102	NAAC Code:- ECE-119
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Identify the various hardware and software parts of computer system and define the basic working of operating system.
II	Describe the working of control panel, Command prompt & Run command.
III	Understand the menace of viruses and antivirus software and recognize the terms related to internet i.e. IP addresses, URL, Protocols and Domains.
IV	Use the package of MS Office for documentation, power point presentations and creating graphs.
V	Understanding the fundamentals of C Programming.
VI	Implement a simple program by writing the code, testing the code and debugging the program in C language.

Course Outcomes

Semester: 3rd

Course: Object Oriented Programming; Semester: 3rd	
Course Code: BECE1-301	NAAC Code:-ECE-220
CO No.	COs(Course Outcomes): After the completion of the course, students will be able to:
I	After undergoing the course students will be able to develop various programs and flow charts using C++.
II	Apply the basic concepts of data encapsulation, inheritance, and polymorphism to large-scale software
III	Enable students to develop their skills in programming with C++.
IV	Design and develop object-oriented computer programs with file data storage and handling.

Course: Electronic Devices and Circuit-1; Semester: 3rd	
Course Code: BECE1-302	NAAC Code:-ECE-221
CO No.	COs(Course Outcomes): After the completion of the course, students will be able to:
I	Understand the concepts of junction diodes and their applications.
II	Analyze BJT characteristics and determine their behavior under low and high frequencies
III	Analyze various concepts of FETs and their characteristics.
IV	Design low and high frequency models and observe and various characteristics.

Course: Network Analysis & Synthesis; Semester: 3rd	
Course Code:BECE1-303	NAAC Code:-ECE-222
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Evaluate the performance of control system and analyse their steady state and transient response of the system
II	Analysis of control systems in the time and frequency domains and using transfer function
III	Study of the stability tests, such as the Routh Hurwitz, Nyquist criterion, root locus and Bode plot and system stability with them.
IV	Express and solve system equations in state variable form (state variable models)

Course: Electronic Instrumentation; Semester: 3rd	
Course Code: BECE1-304	NAAC Code:-ECE-223
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Analyze operation of different instruments and able to describe different terminology related to measurements.
II	Recognize and understand various analog measuring instruments.
III	Measure resistance using various methods.
IV	Find various measurements using CRO.

Course: Signal & Systems; Semester: 3rd	
Course Code: BECE1-305	NAAC Code:-ECE-224
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Ability to analyze various types of signals in communication system
II	Developing skills to understand random signals.
III	To understand various types of noises.
IV	Understand signal transmission through linear networks.

Course: Electronics Devices and Circuits-1 Lab Semester: 3rd	
Course Code:BECE1-306	NAAC Code:-ECE-225
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	An ability to understand all types of electronics devices and circuits
II	An ability to conduct experiments, as well as to analyze and interpret various data sheets.

Course: OOP Lab.; Semester: 3rd	
Course Code: BECE1-307	NAAC Code:-ECE-226
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Enable students to develop their skills in programming with C++.
II	To describe functions of creating constructors, destructor, inheritance, polymorphism and file handling programs
III	Formulate problems as steps so as to be solved systematically.
IV	Integrate robustness, reusability, and portability into large-scale software development

Course: Soft Skill-I Lab; Semester: 3rd	
Course Code: BHUMOF-91	NAAC Code:-ECE-227
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	At the end of the course, the student will be able to develop his/her personal traits and expose their personality effectively

Course: Workshop Training-1; Semester: 3rd	
Course Code: BECE1-308	NAAC Code:-ECE-228
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	To impart knowledge and skills to use tools, machines, equipment and measuring instruments.
II	Explain the safety rules in workshop and to educate students of safe handling of machines and tools.
III	Students will be able to understand the practical difficulties encountered at workplaces / industries during practical work while handling tools and equipment.
IV	Students will be able to use their skills during their project and practical work.

Course Outcomes

Semester: 4th

Course: Electronic Devices and Circuits-II; Semester: 4 th	
Course Code: BECE1-409	
NAAC Code:-ECE-229	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	After the completion of the course, the students could have learnt about the basic Electronic Circuits, their operational characteristics and their applications.
II	To generate ability to understand various amplifiers including push pull and complementary symmetry.
III	Design different types of feedback amplifiers and oscillator circuits.
IV	To understand and analyze a stable multivibrators.

Course: Analog Communication Systems; Semester: 4 th	
Course Code: BECE1-410	
NAAC Code:-230	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Learn analog communication system and modulation techniques
II	Understand design of useful circuits required in analog communication system.
III	Explore working of transmitter and receiver circuits used in communication.
IV	Performance of AM/FM transmission and reception.

Course: Digital Electronics; Semester: 4 th	
Course Code: BECE1-411	
NAAC Code:-231	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Students will simplify a digital design problem as part of the systematic approach to solve a problem.
II	To analyze and understand various sequential circuits & various Digital Logic families.
III	To design Analog to Digital and Digital to Analog converters and finite state machines.

Course: Electromagnetic field Theory; Semester: 4th	
Course Code: BECE1-412 NAAC Code:-ECE-232	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Define and recognize different coordinate systems to describe the spatial variations of the physical quantities dealt in electromagnetic field theory as they are functions of space and time
II	Explain fundamental laws governing electromagnetic fields and evaluate the physical quantities of electromagnetic fields in different media using different fundamental laws.
III	Determine the electromagnetic force exerted on charged particles, current elements, working principle of various electric and electromagnetic energy conversion devices are based on this force.
IV	Examine the phenomena of wave propagation in different media and its interfaces and in applications of microwave engineering.
V	Analyze Maxwell's equation in different forms (differential and integral) and apply them to diverse engineering problems
VI	To understand transmission lines and smith chart

Course: Neural Networks and Fuzzy Logic; Semester: 4th	
Course Code: BECE1-456 NAAC Code:-ECE-237	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Apply various soft computing frame works.
II	Design of various neural networks.
III	Use fuzzy logic and Fuzzy rules.
IV	Learn and understand various optimization techniques.

Course: Electronics and Devices and Circuits-II Lab; Semester: 4th	
Course Code: BECE1-413 NAAC Code:- ECE-233	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Learn about the basic Electronic Circuits, their operational characteristics and their applications.
II	To generate ability to understand various amplifiers including push pull and complementary symmetry.
III	Design different types of feedback amplifiers and oscillator circuits.
IV	To understand and analyze a stable multivibrators.

Course: Analog Communication System Lab; Semester: 4th	
Course Code: BECE1-414 NAAC Code:- ECE-234	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	To familiarize with modulation & demodulation techniques and study their waveforms on oscilloscope.
II	To impart working knowledge of Voltage Controlled Oscillator.
III	To familiarize students with the functions of oscillators, filters, amplifiers, LC networks, modulators, limiters, mixers, and detectors in AM, FM, PM, SSB, and PLL circuits. Course

Course: Digital Electronics Lab; Semester: 4 th	
Course Code: BECE1-415	NAAC Code:- ECE-235
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	An ability to test and verify working and truth tables of combinational and sequential circuits.
II	Working knowledge of different converters.
III	To perform multiplexer and demultiplexer.

Course: Soft Skills-II Lab; Semester: 4 th	
Course Code: H-F92	NAAC Code:- ECE-236
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Understand the importance of goal setting.
II	Handle stress in their lives and future in a better way.

Course Outcomes

Semester: 5th

Course: Linear Integrated Circuit; Semester: 5 th	
Course Code: BECE1-516	
NAAC Code:- ECE-341	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Design linear and nonlinear applications of op – amps.
II	Design applications using analog multiplier and PLL.
III	Design ADC and DAC using op – amps.
IV	Generate waveforms using op – amp circuits.
V	Analyze special function ICs.

Course: Microprocessor Programing &Interfacing Semester: 5 th	
Course Code: BECE1-517	
NAAC Code:- ECE342	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will able to write program to run on 8085 microprocessor-based systems.
II	Design system using memory chips and peripheral chips.
III	Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
IV	Understanding the architecture of different processors.

Course: Digital Communication System: 5 th	
Course Code: BECE1-518	
NAAC Code:- ECE-343	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	To understand the various blocks/stages in a digital communication system.
II	Analyze the performance of a baseband and pass band digital communication system.
III	Perform the time and frequency domain analysis of the signals in a digital communication system.
IV	Analyze the performance of various multiplexing techniques

Course: Data Computers networks; Semester: 5th	
Course Code: BECE1-560	
NAAC Code:- ECE-350	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Independently understand basic computer networking technology, Understand and explain Network System and its components and identify the different types of network topologies and protocols.
II	Enumerate the layers of the OSI model and TCP/IP along with explaining the function of each layer and identify different types of network devices and their functions within a network.
III	Understand switching and routing in networks and understand the basics of sub-netting and routing mechanisms.
IV	Identifying Network congestion and its control algorithms.
V	Design and implement the subnet masks and addresses to fulfil networking requirements in IPv4 and IPv6.

Course: Personal & Industrial Management; Semester: 5th	
Course Code: BBAD0-F92	
NAAC Code:- ECE-354	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	To Understand the concepts, principles and processes of HRM, HRP And Job Analysis.
II	Know about the Processes and Methods of Recruitment, Selection, Training and Development.
III	Analyze Wage and Salary Systems followed globally.
IV	To understand the importance of Industrial Relations.

Course: LIC Lab ; Semester: 5th	
Course Code: BECE1-519	
NAAC Code:- ECE-344	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Design oscillators and amplifiers using operational amplifiers.
II	Design filters using Opamp and perform experiment on frequency response.
III	Analyze the working of voltage control oscillator.

Course: MPI Lab ; Semester: 5th	
Course Code: BECE1-520	
NAAC Code:- ECE-345	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Write assembling language programme for fixed and Floating Point and Arithmetic
II	Interface different I/O's with processor.
III	Generate waveforms using Microprocessors.
IV	Execute Programs in 8085.

Course: DCS Lab ; Semester: 5 th	
<div>Course Code: BECE1-521</div> <div>NAAC Code:- ECE-346</div>	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Design PCM systems.
II	Design and implement base band transmission schemes.
III	Design and implement band pass signaling schemes.
IV	Analyze the spectral characteristics of band pass signaling schemes and their noise performance.

Course: Soft Skill-III lab ; Semester: 5 th	
<div>Course Code: BHUMO-F93</div> <div>NAAC Code:- ECE-348</div>	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	At the completion of the course, the student will become well –versed with the behavioral skills.
II	They will also understand the role of body language and non-verbal communication during the interview process.

Course: Industrial Training-II ; Semester: 5 th	
<div>Course Code: BECE1-522</div> <div>NAAC Code:- ECE-347</div>	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will be able to apply prior acquired knowledge of engineering, science and mathematics to solve practical mechanical engineering problems.
II	The students will acquire ability to work in teams, take initiatives and handle industrial assignments.
III	The students will be able to understand industrial hazards, environmental issues and their ethical responsibilities.
IV	The students will be able to apply prior acquired knowledge of engineering, science and mathematics to solve practical mechanical engineering problems.

Course Outcomes

Semester: 6th

Course: Microwave and Antenna Theory; Semester: 6 th	
Course Code: BECE1-623	
NAAC Code:- ECE-355	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Explain the active & passive microwave devices.
II	To understand the oscillators and amplifiers used in microwaves communication systems.
III	To analyze the waveguides and various Microwave tubes.
IV	To understand various antenna parameters and different kinds of antennas.
V	To analyze different types of antenna arrays.

Course: Microcontroller and Embedded System; Semester: 6 th	
Course Code: BECE1-624	
NAAC Code:- ECE-356	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Design and implement 8051 microcontroller based systems.
II	Serial communication Of 8051
III	Interfacing with 8051.

Course: Linear Control System; Semester: 6 th	
Course Code: BECE1-625	
NAAC Code:- ECE-357	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Evaluate the performance of control system and analyse their steady state and transient response of the system
II	Analysis of control systems in the time and frequency domains and using transfer function
III	Study of the stability tests, such as the Routh Hurwitz, Nyquist criterion, root locus and Bode plot and system stability with them
IV	Express and solve system equations in state variable form (state variable models)

Course: Microwave Engineering Lab Semester: 6 th	
Course Code: BECE1-626	
NAAC Code:- ECE-358	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Test and analyze various microwave components.
II	Analyze the radiation pattern of antenna.

Course: Microcontroller Lab.; Semester: 6th	
Course Code: BECE1-627	NAAC Code:- ECE-369
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Design and implement 8051 microcontroller based systems.
II	Serial communication Of 8051.
III	Interfacing with 8051.

Course: Soft Skills-IV Lab Semester: 6th	
Course Code: BHUM0-F94	NAAC Code:- ECE-360
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Demonstrate soft skills required for business situations.
II	Analyze the value of soft skills for career enhancement.
III	Apply soft skills to workplace environment.
IV	Confidently participate in GD and interview process.

Course: Non-Conventional Energy Resources Semester: 6th	
Course Code: BEEE0-F94	NAAC Code:- ECE-366
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Students would become aware about non-conventional Energy sources and Solar energy, different types of collectors, their uses, wind energy, tidal energy, geothermal energy, Thermo Nuclear Fusion, Cold Fusion.
II	Students will develop the use of wind energy and Biomass energy
III	Students would become aware about potential of energy present under earth surface and about energy of oceanic water tides.

Course: Optical Fibre Communication; Semester: 6th	
Course Code: BECE1-668	NAAC Code:- ECE-364
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Discuss the various optical fiber modes, configurations and various signal degradation factors associated with optical fiber
II	Explain the various optical sources and optical detectors and their use in the optical communication system.
III	Analyze the digital transmission and its associated parameters on system performance

Course Outcomes

Semester: 7th

Course: WIRELESS COMMUNICATION SYSTEMS; Semester: 7 th	
Course Code: BECE1-728 NAAC Code:- ECE-467	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Characterize wireless channels.
II	Design and implement various signaling schemes for fading channels.
III	Compare multipath mitigation techniques and analyze their performance.
IV	Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance

Course: DIGITAL SIGNAL PROCESSING; Semester: 7 th	
Course Code: BECE1-729 NAAC Code:- ECE-468	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Apply DFT for the analysis of digital signals & systems. 2
II	Design IIR and FIR filters.
III	Characterize finite Word length effect on filters.

Course: DSP LAB Semester: 7 th	
Course Code: BECE1-730 NAAC Code:- ECE-469	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Carry out simulation of DSP systems.
II	Demonstrate their abilities towards DSP processor based implementation of DSP systems.
III	Analyze Finite word length effect on DSP systems.
IV	Demonstrate the applications of FFT to DSP.

Course: Minor Project; Semester: 7 th	
Course Code: BECE1- 731 NAAC Code:- ECE-470	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Student will be able to work with team spirit rather than in competition in professional as well as in personal life.
II	Students will be able to apply the knowledge gained through various basic subjects.
III	The students will be able to go through the developments and breakthroughs efficiently in technology.

Course: Training-III .; Semester: 7th	
Course Code: BECE1- 732	NAAC Code:- ECE-471
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	The students will be able to apply prior acquired knowledge of engineering, science and mathematics to solve practical mechanical engineering problems.
II	The students will acquire ability to work in teams, take initiatives and handle industrial assignments and projects.
III	The students will be able to use the software relevant to mechanical engineering.
IV	The students will be able to understand industrial hazards, environmental issues and their ethical responsibilities.

ENERGY MANAGEMENT ; Course: Semester: 7th	
Course Code: BELE0-F97	NAAC Code:- ECE-476
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Students will become aware of growing energy needs, effects on environment and energy conservation.
II	Students will get knowledge about various types of losses occurring in electrical systems, various types of energy dissipating systems and about Energy and load management.
III	Students will understand the importance of energy management and audit, maximizing system Efficiencies, fuel and energy substitutions.
IV	Students will get knowledge about Financial analysis techniques and role of ESCOs (Energy Service Company).
	Students will become aware of growing energy needs, effects on environment and energy conservation.

Course Outcomes Semester: 8th

Course: VLSI DESIGN Semester: 8th	
Course Code: BECE1-833	NAAC Code:- ECE-477
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Explain the basic CMOS circuits and the CMOS process technology.
II	Discuss the techniques of chip design using programmable devices.
III	Model the digital system using Hardware Description Language.

Course: VLSI LAB ; Semester: 8 th	
Course Code: BMEE1-839	NAAC Code:- ECE-478
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Write HDL code for basic as well as advanced digital integrated circuits
II	Import the logic modules into FPGA Boards. 3. Synthesize Place and Route the digital IPs
III	Synthesize Place and Route the digital IPs.
IV	Design, Simulate and Extract the layouts of Analog IC Blocks using EDA tools.

Course: Information Theory and Coding; Semester: 8 th	
Course Code: BECE1-876	NAAC Code:- ECE-482
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Understand concepts of entropy, mutual information and divergence.
II	Apply and analyze the principles of channel capacity.
III	Use various types of check metrics, linear and cyclic codes.
IV	Understand working principle of convolution codes.

Course: SATELLITE COMMUNICATION; Semester: 8 th	
Course Code: BECE1-878	NAAC Code:- ECE-484
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Learn the dynamics of the satellite.
II	Understand the communication satellite design.
III	Understand how analog and digital technologies are used for satellite communication networks
IV	Learn the design of satellite links.
V	Study the design of Earth station and tracking of the satellites.

Course: Major Project; Semester: 8 th	
Course Code: BECE1- 835	NAAC Code:- ECE-479
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	Student will be able to work with team spirit rather than in competition in professional as well as in personal life.
II	Students will be able to apply the knowledge gained through various basic subjects.
III	The students will be able to go through the developments and breakthroughs efficiently in technology.

Course: Wireless Sensor Networks; Semester: 8 th	
Course Code: BECE1- 875	
NAAC Code:- ECE-481	
CO No.	COs(Course Outcomes): On the successful completion of course, students will be able to:
I	This course introduces advances in wireless, sensor networks.
II	Wireless Sensor Networks provide opportunities even outside their usual application domain of environmental monitoring.
III	To track all activities, and check for errors that might occur in the process of handling and distributing goods.
IV	Student will be able to work with team spirit rather than in competition in professional as well as in personal life.