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	
ECE120	BTPH103-18	Electromagnetism (Physics)	3	1	0	40	60	100	4
ECE121	BTPH113-18	Electromagnetism (Physics) (Lab)	0	0	3	30	20	50	1.5
ECE122	BTAM101-18	Maths-I	3	1	0	40	60	100	4
ECE123	BTEE101-18	Basic Electrical Engineering	3	1	0	40	60	100	4
ECE124	BTEE102-18	Basic Electrical Engineering (Lab)	0	0	2	30	20	50	1
ECE125	BTME101-18	Engineering Graphics & Design	1	0	4	60	40	100	3
ECE126	BMPD101-18	Mentoring and Professional Development	0	0	2	Satisfactory / Un-satisfactory			Non-Credit

Second Semester									
NAAC Code	Course Code	Course Name	Load Allocation			Marks Distribution			Credits
			L	T	P	Internal	External	Total	
ECE127	BTCH101-18	Chemistry-I	3	1	0	40	60	100	4
ECE128	BTCH102-18	Chemistry-I (Lab)	0	0	3	30	20	50	1.5
ECE129	BTAM203-18	Maths-II	3	1	0	40	60	100	4
ECE130	BTPS101-18	Programming for Problem Solving	3	0	0	40	60	100	3
ECE131	BTPS102-18	Programming for Problem Solving (Lab)	0	0	4	30	20	50	2
ECE132	BTMP101-18	Workshop / Manufacturing Practices	1	0	4	60	40	100	3
ECE133	BTHU101-18	English	2	0	0	40	60	100	2
ECE134	BTHU102-18	English (Lab)	0	0	2	30	20	50	1
ECE135	BMPD201-18	Mentoring and Professional Development	0	0	2	Satisfactory / Un-Satisfactory			Non-Credit

Third Semester										
NAAC Code	**Course code**	**Course Title**	**L**	**T**	**P**	**Hrs**	**Internal Marks**	**External Marks**	**Total**	**Credits**
ECE241	BTEC- 301-18	Electronic Devices	3	0	0	3	40	60	100	3
ECE242	BTEC- 302-18	Digital System Design	3	0	0	3	40	60	100	3
ECE243	BTEC- 303-18	Electromagnetic Waves	3	1	0	4	40	60	100	4
ECE244	BTEC-304-18	Network Theory	3	1	0	4	40	60	100	4
ECE245	BTAMXXX18	Mathematics III	3	1	0	4	40	60	100	4
ECE246	BTEC-311-18	Electronic Devices Laboratory	0	0	2	2	30	20	50	1
ECE247	BTEC-312-18	Digital System Design Laboratory	0	0	2	2	30	20	50	1
ECE248	HSMC101-18 /HSMC102-18*	Foundational Course in Humanities (Development of Societies or Philosophy)	3	0	0	3	40	60	100	3
ECE249	BTEC-321-18	4-Week Institutional Training	0	0	4	3	40	60	100	Non-credit
ECE250	BMPD-331-18	Mentoring and Professional Development	0	0	2	Satisfactory/Un-satisfactory				Non-credit
		Total	**18**	**3**	**10**	**25**	**360**	**440**	**800**	**23**

Fourth Semester										
NAAC Code	**Course code**	**Course Title**	**L**	**T**	**P**	**Hrs**	**Internal Marks**	**External Marks**	**Total Marks**	**Credits**
ECE251	BTEC-401-18	Analog Circuits	3	1	0	4	40	60	100	4
ECE252	BTEC-402-18	Microprocessors and Microcontrollers	3	0	0	3	40	60	100	3
ECE253	BTCS-301-18	Data Structures & Algorithms	3	0	0	3	40	60	100	3
ECE254	BTEC-403-18	Signals and Systems	3	1	0	4	40	60	100	4
ECE255	HSMC122-18	Universal Human Values – 2: Understanding Harmony	3	0	0	3	40	60	100	3
ECE256	EVS-101-18	Mandatory Course- Environmental Sciences	2	0	0	2	50	0	50	Non-credit
ECE257	BTEC-411-18	Analog Circuits Laboratory	0	0	2	2	30	20	50	1
ECE258	BTEC-412-18	Microprocessors and Microcontrollers Laboratory	0	0	2	2	30	20	50	1
ECE259	BMPD-341-18	Mentoring and Professional Development	0	0	2	Satisfactory/Un-satisfactory				Non-credit
		Total	**16**	**2**	**6**	**22**	**310**	**340**	**650**	**19**

Course Outcomes
Semester: 1st/2nd

Course: Electromagnetism (Physics); Semester: 1st/2nd		
Course Code:- BTPH 103-18		**NAAC Code:- ECE-120**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Apply the basic concepts of vector calculus to electric and magnetic fields.	
II	Describe static electric and magnetic fields, their behavior in different media, associated laws, boundary conditions and electromagnetic potentials.	
III	Understand the concepts related to Faraday's law, induced emf and analyze Maxwell's equations in differential and integral forms.	
IV	Understand the phenomena of wave propagation in different media and its interfaces and apply them to diverse engineering problems.	

Course: Electromagnetism Lab (Physics Lab); Semester: 1st/2nd		
Course Code:- BTPH113-18		**NAAC Code:- ECE-121**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Verify some of the theoretical concepts learnt in the theory courses.	
II	Carry out precise measurements and handling sensitive equipments.	
III	Understand the methods used for estimating and dealing with experimental uncertainties and systematic errors.	
IV	Learn to draw conclusions from data and write a technical report which communicates scientific information in a clear and concise manner.	

Course: Mathematics-I; Semester: 1st		
Course Code:- BTAM101-18		**NAAC Code:-ECE-122**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Determine the rank and inverse of the matrix, solve linear system of equations, determine the Eigen values and Eigen vectors and also apply Cayley Hamilton theorem.	
II	Determine the convergence and divergence conditions of various types of infinite series.	
III	Study the limit, continuity, differentiation and determine the optimal points of single variable and multivariable functions.	
IV	Integrate wrt multiple variables and also apply the same to determine the areas and volumes using double integration using change of order or change of variables, if needed.	

Course: Basic Electrical Engineering; Semester: 1st/2nd	
Course Code:- BTEE-101-18	**NAAC Code:- ECE-123**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	To understand and analyze basic electric and magnetic circuits.
II	To study the working principles, construction, applications of rotating electrical machines.
III	To study the working principle of power converters.
IV	To introduce the components of low voltage electrical installations.

Course: Basics of Electrical Engineering Laboratory; Semester: 1st/2nd	
Course Code:- BTEE-102-18	**NAAC Code:- ECE-124**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	The ability to use common electrical measuring instruments and understand the fundamentals of electrical engineering.
II	The ability to make electrical connections and measure power, power factor using appropriate equipments.
III	Have the knowledge of electrical machines, components and their ratings.
IV	Understand the operation of transformers and electrical machines.

Course: Engineering Graphics & Design; Semester: 1st/2nd	
Course Code: BMEE101-18	**NAAC Code:-ECE-125**
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: Mentoring and Professional Development; Semester: 1st/2nd	
Course Code: BMPD101-18	**NAAC Code:- ECE-126**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Students will enhance their Overall Personality.
II	Students will enhance their Technical and General Aptitude ability.
III	Students will enhance their General Awareness.
IV	Students will enhance their Communication Skills and Presentation Skills.

Course: Chemistry-I; Semester: 1st/2nd	
Course Code:- BTCH101-18	**NAAC Code:- ECE-127**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
II	Rationalise bulk properties and processes using thermodynamics, periodic properties such as ionization potential, electronaffinity etc.
III	Distinguish the ranges of the electromagnetic spectrum used in various spectroscopic techniques.
IV	Understand the stereochemistry of organic compounds and major chemical reactions that are used in the synthesis of molecules.

Course: Chemistry Lab-I ; Semester: 1st/2nd	
Course Code: BTCH102-18	**NAAC Code:- ECE-128**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Learn the techniques like conductometry and chromatography.
II	Learn the methods to determine Partition coefficient, Rate constant and adsorption isotherm.
III	Study the properties of lubricant to compare their quality.
IV	Analyze the different lattice structures and synthesize a polymer molecule.

Course: Mathematics-II; Semester: 2nd	
Course Code: BTAM203-18	**NAAC Code:-ECE-129**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	To find the solution of Ordinary differential equations (linear) in most of the dynamical systems of engineering.
II	Use the fundamental concepts of partial differential equations to study the vibration of a string, flow of heat in a rod and plate (steady state).
III	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.
IV	Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
V	To find the solution of Ordinary differential equations (linear) in most of the dynamical systems of engineering.

Course: Programming for Problem Solving; Semester: 1st/2nd	
Course Code:- BTPS101-18	**NAAC Code:- ECE-130**
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 solve mathematical and logical problems in 'C' language.
III	Implement programs related to simple numerical method problems, namely root finding of function, differentiation of function and simple integration in 'C' language.
IV	Identify the role of simple data structures, pointers, memory allocation and data handling for various applications through files in 'C'.
V	Decompose a problem into functions and synthesize a complete program using divide and conquer approach.
VI	Describe various file related operations.

Course: Programming for Problem Solving Lab; Semester: 1st/2nd	
Course Code:- BTPS102-18	**NAAC Code:- ECE-131**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Understand the various hardware and software parts of computer system and define the basic working of Operating System.
II	Describe syntax, semantics and different constructs to solve mathematical and logical problems in 'C' language
III	Implement a simple program by writing the code, testing the code and debugging the program in 'C' Language.
IV	Represent data in arrays, strings and structures and manipulate them through a program.
V	Declare pointers of different types and use them in defining self referential structures.
VI	Implement programs to create, read and write to and from simple text files.

Course: Manufacturing Practice; Semester: 1st/2nd	
Course Code:- BTMP101-18	**NAAC Code:-ECE-132**
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: English; Semester: 1st/2nd	
Course Code:- BTHU-101-18	**NAAC Code:- ECE-133**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Become the independent users of English language.
II	Acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
III	Understand spoken and written English language, particularly the language of their chosen technical field.
IV	Converse fluently.
V	Produce on their own clear and coherent texts.

Course: English-Lab; Semester: 1st/2nd	
Course Code:- BTHU-102-18	**NAAC Code:- ECE-134**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:
I	Become the independent users of English language.
II	Acquire basic proficiency in listening and speaking skills.
III	Understand spoken English language, particularly the language of their chosen technical field.
IV	Converse fluently
V	Produce on their own clear and coherent texts.

Course Outcomes
Semester: 3rd

Course: Electronic Devices		
Course Code:- BTEC-301-18		NAAC Code:-ECE-241
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Understand physics of semiconductors and behavior of charge carriers within semiconductors	
II	Understand the working of semiconductor diodes supported with mathematical explanation.	
III	Understand the working of BJT and MOSFET with their equivalent small signal models.	
IV	Understand the chemical processes used in fabrication of integrated circuits	

Course: Digital System Design		
Course Code:- BTEC-302-18		NAAC Code:-ECE-242
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Apply concepts of Boolean algebra for handling logical expressions	
II	Understand working and realization of combinational circuits.	
III	Understand working flip-flops and use them in designing of sequential circuits	
IV	Understand fundamental concepts of logic families and architectural of programmable devices.	
V	Use HDL programming tool for simulation of combinational & sequential circuits	

Course: Electromagnetic Waves		
Course Code:- BTEC-303-18		NAAC Code:-ECE-243
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Understand characteristics &wave propagation through transmission lines	
II	Understand Maxwell's equations for electromagnetic waves	
III	Characterize uniform plane wave.	
IV	Calculate reflection and transmission of waves at media interface	

Course: Network Theory		
Course Code:- BTEC-304-18		NAAC Code:-ECE-244
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Analyze linear networks using network theorems.	
II	Use Laplace transform to analyze transient & steady state response of linear networks.	
III	Comprehend network parameters to analyze two port networks.	
IV	Realize one port networks using Foster's and Cauer's methods	

Course: Mathematics III		
Course Code:- BTAM-303-18		NAAC Code:-ECE-245
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Solve the initial value and boundary value problems using Laplace transforms	
II	Use the fundamental concepts of fourier series	
III	Use the basic concept of Z transforms	
IV	Provide an overview of probability and statistics to engineers	
V	Find the correlation and regression	

Course: Electronic Devices Lab		
Course Code:- BTEC-311-18		NAAC Code:-ECE-246
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Realize use of diodes in circuits with proper understanding to their working	
II	Understand characteristics & working of BJT in different configurations.	
III	Understand characteristics & working of MOSFET in circuits.	
IV	Think and design working circuits based ondiodes, BJTs and MOSFETs.	

Course: Digital System Design Lab		
Course Code:- BTEC-311-18		NAAC Code:-ECE-247
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Realize combinational circuits using logic gates.	
II	Realize sequential circuits using logic gates	
III	Write & simulate VHDL programs for combinational & sequential circuits	
IV	Think and design working projects using digital 74XX ICs.	

Course: **Foundational Course in Humanities**		
Course Code:- HSMC101-18		**NAAC Code:-ECE-248**
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	To develop strong natural familiarity with humanities along with the right understanding enabling them to eliminate conflict and strife in the individual society.	
II	To describe political systems and different models of governing system.	
III	To analyze the idea of economic development in pre and post-independence period.	
IV	To interpret the idea of development in context to political, philosophical and spiritual study of economics.	

Course: **4-Week Institutional Training**		
Course Code:- BTEC-321-18		**NAAC Code:-ECE-249**
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: Analog Circuits		
Course Code:- BTEC-401-18		NAAC Code:-ECE-251
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Study and verify the characteristics of diodes in circuits with proper understanding to their working.	
II	Understand characteristics & working of BJT in different configurations.	
III	Understand characteristics & working of OP-AMPs in circuits.	
IV	Think and design working circuits based on diodes, BJTs and MOSFETs.	

Course: Microprocessors and Microcontrollers		
Course Code:- BTEC-402-18		NAAC Code:-ECE-252
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Understand architecture & functionalities of different building block of 8085 microprocessor.	
II	Understand working of different building blocks of 8051 microcontroller.	
III	Comprehend and apply programming aspects of 8051 microcontroller.	
IV	Interface & interact with different peripherals and devices	

Course: Data Structures and Algorithms		
Course Code:- BTCS-301-18		NAAC Code:-ECE-253
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Understand operations like searching, insertion, deletion, traversing on linear Data Structures and to determine their computational complexities	
II	Understand operations like searching, insertion, deletion, traversing on various nonlinear Data Structures and to determine their computational complexities	
III	Write algorithms for Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.	
IV	Apply appropriate Data Structure as per specific problem definition	

Course: Signals & Systems		
Course Code:- BTEC-403-18		NAAC Code:-ECE-254
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Understand the concept of continuous time and discrete time system.	
II	Analyse system in complex frequency domain.	
III	Apply the concepts of Fourier and Laplace transform to analyse continuous time signal and systems.	
IV	Investigate discrete time signals and systems using discrete time Fourier and Z transform and understand mathematical tools to be able to apply in state variable modeling.	
V	Understand sampling theorem and its implications	

Course: **Universal Human Values – 2: Understanding Harmony**		
Course Code:- HSMC122-18		NAAC Code:-ECE-255
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 Sciences		
Course Code:- EVS-101-18		NAAC Code:-ECE-256
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Students will enable to understand environmental problems at local and national level through literature and general awareness.	
II	The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues	
III	The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.	
IV	Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world	

Course: Analog Circuits Lab		
Course Code:- BTEC-411-18		NAAC Code:-ECE-257
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Study and verify the characteristics of diodes in circuits with proper understanding to their working.	
II	Understand characteristics & working of BJT in different configurations.	
III	Understand characteristics & working of OP-AMPs in circuits.	
IV	Think and design working circuits based on diodes, BJTs and MOSFETs.	

Course: Microprocessors and Microcontrollers Lab		
Course Code:- BTEC-411-18		NAAC Code:-ECE-258
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Realize combinational circuits using logic gates.	
II	Realize sequential circuits using logic gates.	
III	Write & simulate VHDL programs for combinational & sequential circuits.	
IV	Think and design working projects using digital 74XX ICs.	

Course: Microprocessors and Microcontrollers Lab		
Course Code:- BTEC-411-18		NAAC Code:-ECE-258
CO No.	**COs(Course Outcomes):** On the successful completion of course, students will be able to:	
I	Realize combinational circuits using logic gates.	
II	Realize sequential circuits using logic gates.	
III	Write & simulate VHDL programs for combinational & sequential circuits.	
IV	Think and design working projects using digital 74XX ICs.	