

ECE Department

3rd Semester	Course Outcomes
Mathematics III(BTAMXXX18):C205	
Year of study: 2021-22	
C205.1	The mathematical tools needed in evaluating multiple integrals and their usage.
C205.2	The effective mathematical tools for the solutions of differential equations that model physical processes.
C205.3	The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
C205.4	To introduce the solution methodologies for second order Partial Differential Equations with applications in engineering.
C205.5	To provide an overview of probability and statistics to engineers.

Electronic Devices(BTEC- 301 -18) :C201	
Year of study: 2021-22	
C201.1	Understand physics of semiconductors and behavior of charge carriers within semiconductors
C201.2	Understand the working of semiconductor diodes supported with mathematical explanation.
C201.3	Ability to design and analyze semiconductor diode circuits.
C201.4	Understand the working of BJT and MOSFET with their equivalent small signal models.
C201.5	Understand the chemical processes used in fabrication of integrated circuits.

Digital System Design(BTEC- 302 -18):C202	
Year of study: 2021-22	
C202.1	Apply concepts of Boolean algebra for handling logical expressions.
C202.2	Understand working and realization of combinational circuits.
C202.3	Understand working flip-flops and use them in designing of sequential circuits.
C202.4	Understand fundamental concepts of logic families and architectural of programmable devices.
C202.5	Use HDL programming tool for simulation of combinational & sequential circuits.

Electromagnetic Waves(BTEC- 303 -18):C203	
Year of study: 2021-22	
C203.1	Understand characteristics & wave propagation through transmission lines
C203.2	Understand Maxwell's equations for electromagnetic waves
C203.3	Characterize uniform plane wave and understanding the concept of wave Propagation in different types of mediums
C203.4	Calculate reflection and transmission of waves at media interface
C203.5	Propagation of wave in rectangular as well as parallel plane waveguide

Network Theory(BTEC- 304 -18):C204		Year of study: 2021-22
C204.1	Analyze linear networks using network theorems.	
C204.2	Use Laplace transform to analyze transient & steady state response of linear networks.	
C204.3	Comprehend network parameters to analyze two port networks.	
C204.4	Realize one port networks using Foster's and Cauer's methods.	
C204.5	Apply computer mathematical and simulation programs to solve various real life multi- disciplinary topics through circuit solution.	

Electronic Devices Laboratory (BTEC-311-18):C206*		Year of study: 2021-22
C206*.1	Realize use of diodes in circuits with proper understanding to their working.	
C206*.2	Understand characteristics & working of BJT in different configurations.	
C206*.3	Understand characteristics & working of MOSFET in circuits.	
C206*.4	Think and design working circuits based on diodes, BJTs and MOSFETs.	

Digital System Design Laboratory: BTEC-312-18:C207*		Year of study: 2021-22
C207*.1	Realize combinational circuits using logic gates.	
C207*.2	Realize sequential circuits using logic gates.	
C207*.3	Write & simulate VHDL programs for combinational & sequential circuits.	
C207*.4	Think and design working projects using digital 74XX ICs.	

Foundational Course in humanities :HSMC101-18:C209		Year of study: 2021-22
C209.1	This course is expected to relate philosophy to literature, culture, society and lived experience	
C209.2	This course is expected to trained students in already available philosophical systems.	
C209.3	This course is expected to bridge the gap between theory and practice.	
C209.4	This course is expected to develop strong natural familiarity with humanities among students.	
C209.5	This course is expected to enable students to have the knowledge of humanities in systematic manner.	

4-Week Institutional Training: C208*		Year of study: 2021-22
C208*.1	Understand basics of electronic fundamentals to enhance their skills for project design.	
C208*.2	Identify different work areas of electronic Industry through e- journals, magazines etc.	
C208*.3	Inculcate team work spirit and decision making through practical lab sessions during the training.	
C208*.4	Inculcate awareness about diverse culture, Identities and society.	
C208*.5	Design an application based minor project.	
C208*.6	Enhance the presentation skills and report writing skills through project demonstration and viva - voce.	

Mentoring and Professional Development*	
C210****.1	Empower themselves by setting and working towards individual goals.
C210****.2	Understand the importance of moral & ethical values that exemplify professionalism.
C210****.3	Accesses physical fitness, wellness & sports to promote healthy lifestyle.
C210****.4	Apply various analytical & training methods for their development.
C210****.5	Utilize physical activity as a tool to manage stress, pressure & work in life.

4th Semester	Course Outcomes
Analog Circuits(BTEC- 401 -18): C211	
Year of study: 2021-22	
C211.1	Understand the biasing of transistors and analyze BJT/FET amplifiers.
C211.2	Analyze various rectifier and amplifier circuits.
C211.3	Analyze sinusoidal and non-sinusoidal oscillators.
C211.4	Understand various types of Power Amplifiers.
Microprocessors and Microcontrollers(BTEC- 402 -18): C212	
C212.1	Understand architecture & functionalities of different building block of 8085 microprocessor.
C212.2	Understand working of different building blocks of 8051 microcontroller.
C212.3	Comprehend and apply programming aspects of 8051 microcontroller.
C212.4	Interface & interact with different peripherals and devices.
Data Structures & Algorithms(BTCS-301 -18): C213	
C213.1	Understand operations like searching, insertion, deletion, traversing on linear Data Structures and to determine their computational complexities
C213.2	Understand operations like searching, insertion, deletion, traversing on various non linear Data Structures and to determine their computational complexities
C213.3	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.
C213.4	Apply appropriate Data Structure as per specific problem definition
Signals and Systems (BTEC- 403 -18): C214	
C214.1	Mathematically characterize different types of signals and systems
C214.2	Analyze the behavior of linear-shift invariant systems.
C214.3	Apply concepts of Fourier and Laplace Transforms to analyze continuous-time signals and systems.
C214.4	Investigate discrete-time signals and systems using Discrete-Time Fourier and Z-Transforms and simple Probability concepts
Universal Human Values – 2: Understanding Harmony(HSMC122-18): C215	
C215.1	To ensure student's sustained happiness through identifying the essentials of human values and skills
C215.2	It yields a correct understanding between Self and Body to expedite happiness and harmony inside I.
C215.3	It helps students understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.
C215.4	Ability to develop appropriate technologies and management patterns to create harmony in personal life.

C215.5	Ability to develop holistic understanding via management models to create harmony in professional life.
Environmental Sciences(EVS-101-18): C216**	
C216**.1	Students will enable to understand environmental problems at local and national level through literature and general awareness.
C216**.2	The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
C216**.3	The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems
C216**.4	Explain the dynamic processes and features of earth's interior and surface
AC Lab(BTEC-411-18): C217*	
C217*.1	Study and verify the characteristics of diodes/BJTs in circuits with proper understanding to their working
C217*.2	Understanding Characteristics of Emitter follower circuits
C217*.3	Understand frequency response & working of various types of Oscillators.
C217*.4	Understand characteristics & working of Power amplifiers.
C217*.5	Think and design working circuits based on diodes, BJTs and MOSFETs.
MPMC Lab(BTEC-412-18): C218*	
C218*.1	Write programs for common arithmetic operations with 8-bit/16-bit numbers using 8085.
C218*.2	Write programs for transfer, sort block of data with 8085 processor.
C218*.3	Write programs for controlling stepper and DC motors using Microprocessor(s).
C218*.4	Write programs to generate waveforms and interface ADC and DAC using of 8051 Microcontroller.
C218*.5	Write a Program to interface Pheripherals like LED,LCD circuits with 8051 microcontroller
Mentoring and professional development:C210****	
C210****.1	Empower themselves by setting and working towards individual goals.
C210****.2	Understand the importance of moral & ethical values that exemplify professionalism.
C210****.3	Accesses physical fitness, wellness & sports to promote healthy lifestyle.
C210****.4	Apply various analytical & training methods for their development.
C210****.5	Utilize physical activity as a tool to manage stress, pressure & work in life.

5th Semester	Course Outcomes
Analog and Digital Communication(BTEC-501-18):C301 Year of study: 2021-22	
C301.1	Analyze and compare different analog modulation schemes for their efficiency and bandwidth
C301.2	Analyze and compare different digital schemes for transmitting analog data
C301.3	Analyze the behavior of a communication system in presence of noise
C301.4	Investigate pulsed modulation system and analyze their system performance
C301.5	Analyze different digital modulation schemes and can compute the bit error performance

Digital Signal Processing (BTEC-502-18):C302 Year of study: 2021-22	
C302.1	Analyze the different types of signals and systems.
C302.2	Familiarize with the fundamental concepts of convolution and sampling.
C302.3	Understand the concepts of Z transform, DFT and FFT techniques.
C302.4	Understand designing and realization concepts of FIR filters.
C302.5	Understand designing and realization concepts of IIR filters.
C302.6	Demonstrate various DSP processors along with their architectures.

Linear Integrated Circuits(BTEC-503-18):C303 Year of study: 2021-22	
C303.1	Understand Differential and Cascade Amplifiers
C303.2	Know the basics, working and characteristics of Op-Amps
C303.3	Investigate various applications of Op-amps
C303.4	Understand some specialized Op-Amps
C303.5	Interpretation of Data Sheets and their Applications thereof.

Control Systems (BTEC-504-18):C304 Year of study: 2021-22	
C304.1	Understand the fundamental concepts of control system and obtain models of dynamic systems in transfer function form.
C304.2	Understand the common control schemes.
C304.3	Analyze the system response and stability in both time-domain and frequency domain.
C304.4	Learn the features of different types of compensators and to design compensators.
C304.5	Analyze the system response and stability of systems represented in state space form.

C304.6	Acquire the knowledge of optimal and non-linear control.
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Programming in JAVA(BTEC-905D-18):C305	
Year of study: 2021-22	

C305.1	Apply the concepts and basics of JAVA
C305.2	Demonstrate the knowledge of operators and control statements
C305.3	Ability to learn about Inheritance, Interface, Applets.
C305.4	Learn about JAVA database connectivity.
C305.5	Should have the ability to extend his/her knowledge of Java programming further on his/her own.

Project Management(BTEC-505-18): C306	
Year of study: 2021-22	

C306.1	Study the basic concepts of project management.
C306.2	Learn about project selection and organization.
C306.3	Understand project planning and scheduling.
C306.4	Learn about project monitoring,control and performance.
C306.5	To implement various project management techniques for time bound completion of project.

Analog and Digital Communication Laboratory(BTEC-511-18):C307*	
Year of study: 2021-22	

C307*.1	study and verify the characteristics and output waveforms of AM, FM, PCM
C307*.2	study and compare noise in AM and FM systems
C307*.3	investigate the output responses of PAM, PCM, PSK, FSK, MSK.

Digital SignalProcessing Laboratory(BTEC-512-18):C308*	
Year of study: 2021-22	

C308*.1	Write programs to develop various signals.
C308*.2	Write programs to generate standard sequences
C308*.3	Develop programs to verify convolution
C308*.4	Develop programs to design various filters.

Linear Integrated Laboratory(BTEC-513-18):C309* Year of study: 2021-22	
C309*.1	study and investigate the configurations of Differential amplifiers.
C309*.2	Measure the performance parameters of an OP-Amp.
C309*.3	Use Op-Amps for various applications.
C309*.4	Develop programs to design various filters.

4-Week Institutional Training(BTEC-521-18):C310* Year of study: 2021-22	
C310*.1	Understand basics of electronic fundamentals to enhance their skills for project design.
C310*.2	Identify different work areas of electronic Industry through e- journals, magazines etc.
C310*.3	Inculcate team work spirit and decision making through practical lab sessions during the training.
C310*.4	Inculcate awareness about diverse culture, Identities and society.
C310*.5	Design an application based minor project.
C310*.6	Enhance the presentation skills and report writing skills through project demonstration and viva- voce.

Programming in JAVA Lab(BTEC-905D-18): C311** Year of study: 2021-22	
C311**.1	Understand the basics of object oriented JAVA.
C311**.2	Apply the concept of classes, JAVA, JDK components and develop simple JAVA programs.
C311**.3	Demonstrate the knowledge of operators and control statements.
C311**.4	Develop simple java programs using inheritance and exceptional handling.

Mentoring and Professional Development*	
C312****.1	Empower themselves by setting and working towards individual goals.
C312****.2	Understand the importance of moral & ethical values that exemplify professionalism.
C312****.3	Accesses physical fitness, wellness & sports to promote healthy lifestyle.
C312****.4	Apply various analytical & training methods for their development.
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6th Semester	Course Outcomes
PE-2 C Sharp(BTEC-906X-18): C313 Year of study: 2021-22	
C313.1	Write various applications using C# Language in the .NET Framework.
C313.2	Develop distributed applications using .NET Framework.
C313.3	Create mobile applications using .NET compact Framework.
C313.4	Learn other concepts of .NET approach towards problem solving
Operating System(BTOEC-01-18) :C314 Year of study: 2021-22	
C314.1	Explain basic operating system concepts such as overall architecture, system calls, user mode and kernel mode;
C314.2	Distinguish concepts related to processes, threads, process scheduling, race conditions and critical sections;
C314.3	Analyze and apply CPU scheduling algorithms, deadlock detection and prevention algorithms;
C314.4	Examine and categorize various memory management techniques like caching, paging, segmentation, virtual memory, and thrashing
C314.5	Design and implement file management system
C314.6	Appraise high-level operating systems concepts such as file systems, disk-scheduling algorithms and various file systems.
PE-2 C Sharp Lab(BTEC-90618):C315**	
C315**1	Examine C# syntax and semantics and be fluent in the use of C# flow control and functions.
C315**.2	Demonstrate proficiency in handling Strings and File Systems.
C315**.3	Create, run and manipulate C# Programs using core data structures like class , objects and use Regular Expressions.
C315**.4	Interpret the concepts of Object-Oriented Programming as used in C#.
Wireless communicationSystem(BTEC-601-18): C316	
C316.1	Understand the basic elements of Cellular Radio Systems and its design
C316.2	Learn about the concepts Digital communication through fading multipath channels
C316.3	Understand various Multiple Access techniques for Wireless communication
C316.4	Know about the Wireless standards and systems
Computer Network (BTCS-504-18):C317	
C317.1	Explain the functions of the different layer of the OSI Protocol
C317.2	Describe the function of each block o f wide - area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs)
C317.3	Develop the network programming for a given problem related TCP/IP protocol

C317.4	Learn about DNS, TELNET, EMAIL, File Transfer Protocol, WWW, HTTP, SNMP, Bluetooth using open source available tools and software
Optical Fibre Communication (BTEC-602-18): C318	
C318.1	Understand the basics of Optical Communication and Optical fibres
C318.2	Learn about the Optical Transmitters and Receivers
C318.3	Explain the Light wave Architecture and systems
C318.4	Ability to explain the manufacturing, modulation and wave mixing in Optical Communication
Microwave and Antenna Engineering (BTEC-603-18): C319	
C319.1	Understand the working and operation of various Microwave Tubes and Microwave Solid-state devices.
C319.2	Learn about various important Microwave Components and the Microwave measurements that can be carried out.
C319.3	Explain the basic concepts and types of Antennas and its regions.
C319.4	Describe the important concepts of Antenna Arrays and Antenna Aperture.
Optical Fibres and Communication Lab (BTEC-611-18): C320*	
C320*.1	To perform experiments based on optical communication in order to understand in depth concepts of latest communication system.
C320*.2	To study various types of optical sources and light detectors
C320*.3	To know methods of splicing and connecting techniques of optical fibres
C320*.4	To study different types of losses in optical fibres.
C320*.5	To Study of multiplexing technique
C320*.6	To know applications of optical fibres.
Microwave and Antenna lab (BTEC-612-18): C321	
C321*.1	Learn about general Microwave components and Microwave bench
C321*.2	Measure common parameters related to Microwave Oscillator(s).
C321*.3	Determine frequency and wavelength of waveguides.
C321*.4	Measure and plot radiation patterns of various types of Antennas
C321*.5	Determine the coupling factor and Isolation of couplers

7th Semester	Course Outcomes
Python Programming (BTEC-907D-18):C401 Year of study: 2021-22	
C401.1	Read and write simple Python programs.
C401.2	Develop Python programs with conditionals and loops.
C401.3	Define Python functions and to use Python data structures–lists, tuples, dictionaries.
C401.4	Perform input/output operations with files in Python.
C401.5	Execute Searching, sorting and merging in Python.
Soft Computing (BTEC-908D-18):C402 Year of study: 2021-22	
C402.1	Understand the concepts of Soft Computing and Algorithms involved there-in.
C402.2	Understand Genetic Algorithms with its operators and applications.
C402.3	Learn about the Neural Network models and its applications.
C402.4	Describe the Fuzzy systems and Neuro Fuzzy Modeling.
C402.5	Learn Swarm Intelligence techniques for optimization .
AI and Machine Learning (BTEC-909D-18):C403 Year of study: 2021-22	
C403.1	Learn the difference between optimal reasoning Vs human like reasoning
C403.2	Understand the notions of state space representation, exhaustive search, heuristic search along with the time and space complexities
C403.3	Learn different knowledge representation techniques
C403.4	Learn the concept of Expert System and Fuzzy logic
C403.5	Understand the applications of AI namely, Game Playing, Theorem Proving, Machine Learning and Natural Language Processing
Indian Constitution (BTMC-101-18):C406 Year of study: 2021-22	
C406.1	To Enable the student to understand the importance of constitution
C406.2	To understand philosophy of fundamental rights and duties
C406.3	To understand the structure of executive, legislature and judiciary of Union government, controller and auditor general of India and election commission of India.
C406.4	To understand the structure of executive, legislature, judiciary and autonomous nature of constitutional bodies of State like high court, Local Self Government etc.
C406.5	To understand the various challenges and amendments of the Constitutional Powers.

Essence of Indian Traditional Knowledge (BTMC-102-18):C407		Year of study: 2021-22
C407.1	Ability to understand connects up and explains basics of Indian traditional Knowledge in Modern scientific perspective.	
C407.2	Ability to understand connects up and explains basics of Yoga in Modern scientific perspective.	
C407.3	Ability to understand connects up and explains basics Holistic Health Care in Modern scientific perspective.	
C407.4	Ability to understand basics of Indian traditional Knowledge in Modern scientific perspective Focuses on Indian philosophical traditions.	
C407.5	Ability to understand Indian linguistic Tradition, and Indian artistic tradition.	

Database Management System Knowledge (BTCS-501-18):C404		Year of study: 2021-22
C404.1	Write relational algebra expression for the query and optimize the developed expression.	
C404.2	Design the database using ER method and normalisation.	
C404.3	Construct the SQL queries for open source and commercial DBMS-MYSQL,ORACLE and DB2.	
C404.4	Determine the transaction atomicity, consistency, isolation and durability.	
C404.5	Implement the isolation property, including locking, time stamping based on concurrency control and serializability of scheduling.	

Computer Organization & Architecture Knowledge (BTES-401-18):C405		Year of study: 2021-22
C405.1	Understand functional block diagram of microprocessor;	
C405.2	Apply instruction set for Writing assembly language programs	
C405.3	Design a memory module and analyze its operation by interfacing with the CPU	
C405.4	Classify hardwired and microprogrammed control units;	
C405.5	Understand the concept of pipelining and its performance metrics.	

Python Lab (BTEC-703):C408*		Year of study: 2020-21
C408*.1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	
C408*.2	Demonstrate proficiency in handling Strings and File Systems	
C408*.3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	
C408*.4	Interpret the concepts of Object-Oriented Programming as used in Python.	
C408*.5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.	

Project-II (BTEC-705):C409*		Year of study: 2021-22
C409*.1	Identify the needs of the society and undertake projects for the benefit of society.	
C409*.2	Form a team and apply engineering and basic scientific concepts to design Quality Projects.	
C409*.3	Design Projects taking into consideration recent technological advances.	
C409*.4	Analyze and develop core skills that give students the ability to successfully complete Hardware and Software related problems during project development.	

C409*.5	Produce a cost effective project as per market demand.
C409*.6	Prepare an effective report that includes a detailed theory of project development from problem formulation to implementation part.

Mentoring and Professional Development*	
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C410****.1	Empower themselves by setting and working towards individual goals.
C410****.2	Understand the importance of moral & ethical values that exemplify professionalism.
C410****.3	Accesses physical fitness, wellness & sports to promote healthy lifestyle.
C410****.4	Apply various analytical & training methods for their development.
C410****.5	Utilize physical activity as a tool to manage stress, pressure & work in life.

8th Semester	Course Outcomes
Software/Industry Oriented Training: C411* Year of study: 2021-22	
C411*.1	Explore different professional engineering practices.
C411*.2	Get acquainted with the industry and various professional tools and languages employed.
C411*.3	Learn industrial etiquette like punctuality and target oriented working where deadlines have to be met, even by working for stretched hours.
C411*.4	Develop themselves therefore require less training later, when students are hired and are assumed to be able to handle more responsibilities.
C411*.5	Learn specialized skills of the field; also learn soft skills like communication and interpersonal skills along with computer proficiency and team work, resulting in overall personality development of the student.
C411*.6	Analyze their concepts that student learned in the classroom to fill the gap between industry and academics.