Lokmanya Tilak Jankalyan Shikshan Sanstha's
PRIYADARSHINI BHAGWATI COLLEGE OF ENGINEERING
Harpur Nagar, Umred Road (Near Bada Tajbagh), Nagpur-24
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COURSE OUTCOMES

B.Tech. V Sem

Course Name : Embedded System Design	
Code : BEETC-501T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Summarise and organise the requirements & Design issues of embedded systems design. To recognise the challenges construct while designing of embedded system and processor selection.
CO2	Summarise the technical aspects of embedded system in terms of architecture, operating modes and interrupt structure for development of simple applications.
CO3	Get the knowledge of programming instruction set and utilize it to perform specific task. Describe and demonstrate the interfacing of various peripherals with ARM Processor.
CO4	Explain the concept of Real Time Operating System for embedded system design. To summarise the kernel architecture and its uses.
CO5	Explore knowledge of Real Time Operating System in terms of Resource Management, Semaphore, Mailbox, Message queues, Pipes and Events.

Course Name : Electromagnetic Waves	
Code : BEETC-502T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Discuss different coordinate system and analyze theorems of electric field.
CO2	Explain theorems and laws of magnetic field and anayze Maxwe's equations to solve problems in electromagnetic field theory.
CO3	Analyze the propagation of wave in different transmission media.
CO4	Compare transmission line with waveguide and analyze various parameters and characteristics of rectangular waveguide.
CO5	Explain principle of radiation and define various antenna terminologies.

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COURSE OUTCOMES

B.Tech. V Sem

Course Name : Digital Signal Processing	
Code : BEETC-503T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Use the sampling theorem to discrete time signals, demonstrate the sampling process,reconstruct sampled data and study discrete time signals and systems.
CO2	Study discrete time systems in frequency domain, Compute the Discrete Fourier Transform (DFT),Inverse DFT, Circular convolution and FFT using radix-2 algorithm.
CO3	Process the signal in Z domain for various discrete time systems and design digital filters using different realization forms.
CO4	Design IIR digital filters using various transformations (Bilinear, Impulse Invariant) and to determine parameters affecting its response.
CO5	Design FIR filters using windowing techniques (Rectangular, Hann, Hamming, Blackmann, Bartlett, and Kaiser) and frequency sampling technique.

Course Name : Industrial Economics & Entrepreneurship Development	
Code : BEETC-504T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	To understand the process of central as well commercial banks
CO2	Comprehend the process to set startups with the help of entrepreneurship projects.
CO3	Identify the sources of finance
CO4	Describe the problems of small-scale industries and role of TCO.

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COURSE OUTCOMES

B.Tech. V Sem

Course Name : Sensors and Systems	
Code : BEETC-505PE (Program Elective-1)	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Explain fundamental physical and technical base of sensors ,Choose an appropriate sensor for various applications and evaluate performance characteristics of different types of sensors.
CO2	Describe basic laws and phenomena that define behavior of sensors used in automobile applications.
CO3	Analyze various approaches, procedures and results related to Sensors used in Automation Industries and Selection of appropriate model & types of sensors.
CO4	Create analytical design and development solutions for various sensors used in IoT smart city project.
CO5	Interpret the acquired data and measured results of various actuators and motors used in robotics field.

Course Name : Electronic Design Technique with HDL	
Code : BEETC-505PE(Program Elective-1)	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Summarize digital system design process with its basic elements and different level of abstraction
CO2	Design digital systems through HDL language by using Behavioural Modeling Technique.
CO3	Design digital systems through HDL language by using Data flow and Structural Modeling Technique.
CO4	Develop Finite State Machine and design VHDL representation.
CO5	Describe Synthesis process for dataflow and structural models.

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COURSE OUTCOMES

B.Tech. V Sem

Course Name : Embedded System Design Lab	
Code : BEETC-501P	
After completion of the practical students will be able to: –	
CO1	Apply the knowledge of Instruction skill for the Development of Simple and Complex Programs.
CO2	Apply the programming skill for the Development of Simple application.
CO3	Apply and Demonstrate the Concept of Interfacing for the Development of Embedded System

Course Name : Digital Signal Processing Lab	
Code : BEETC-503P	
After completion of the practical students will be able to: –	
CO1	Demonstrate the sampling and reconstruction of discrete time signal & perform different signal operation in developing discrete time system.
CO2	Analyze different properties of Z-transform.
CO3	Analyze different properties of discrete Time Fourier transform.
CO4	Analyze and process the signals in the discrete domain.
CO4	Design the filters to suit requirements of specific applications.
CO4	Apply the techniques, skills, and modern engineering tools like MATLAB

Course Name : Electronic Workshop II Lab	
Code : BEETC-507P	
After completion of the practical students will be able to: –	
CO1	Interface various sensors to arduino and raspberry-Pi
CO2	Implement and simulate various electronic circuits using simulation tool
CO3	Trace PCB layout for electronic circuits manually and using PCB design softwares.
CO4	Implement mini-project using Raspberry-Pi, Arduino or any other processor.

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COURSE OUTCOMES

B.Tech. VI Sem

Course Name : Computer Communication Networks	
Code : BEETC-601T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Describe the basics of Computer Network, Data Communication, Network topologies, transmission media and switching techniques.
CO2	Analyze the services and features of various protocols of Data Link Layer and MAC sub-layer
CO3	Apply the concept of IP Addressing techniques and its various protocols of Network Layer
CO4	Describe the transport layer, Application Layer services and its protocol Headers and analyze the congestion control protocols
CO5	Explain the function of Application Layer and Presentation layer paradigm and protocols

Course Name : Internet of Things	
Code : BEETC-602T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Describe the fundamentals of IoT and explore different design levels of IoT.
CO2	Study IoT architecture and review real-world design constraints and IoT reference model.
CO3	Compare M2M and IoT, summarize their concepts, value chains and connect M2M to IoT architecture and design principles.
CO4	Demonstrate network and communication aspect and assess IoT network issues, protocols, deployment and data management
CO5	Introduce IoT tools, Arduino and Raspberry Pi with basic programming ability and explore application of IoT in Real time scenario.

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COURSE OUTCOMES

B.Tech. VI Sem

Course Name : Wireless Sensor Networks	
Code : BEETC-603T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Summarize Commercial and Scientific Applications of Wireless Sensor Networks, Basic Wireless Sensor Technology.
CO2	Demonstrate Physical layer and Medium Access Control Protocols.
CO3	Outline Transport Control Protocols for Wireless Sensor Networks.
CO4	Explain Middleware ,its protocols and Network Management for Wireless Sensor Networks.
CO5	Illustrate Operating Systems and Hardware for Wireless Sensor Networks.

Course Name : Computer Architecture (Elective-II)	
Code : BEETC-604T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Demonstrate the basics of Computer Organization, concepts of program as sequences and operation of computers.
CO2	Illustrate various arithmetic and logical operations on different types of numbers to design an arithmetic and logic unit. Design arithmetic and logical operations with signed integer operands.
CO3	Demonstrate the organization of various parts of the hierarchical memory system
CO4	Compare the different I/O data transfer techniques, and describe the different ways of communication among I/O devices and standard I/O interfaces
CO5	Explain the basic processing unit and Pipelining

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COURSE OUTCOMES

B.Tech. VI Sem

Course Name : Antenna and Wave Propagation (Elective-II)	
Code : BEETC-604T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Describe the concept of transmission line characteristics, transmission line equation and standing wave ratio.
CO2	Calculate antenna parameters and analyse wire antennas like monopoles, dipoles, and loops.
CO3	Analyse and design all array antenna and Describe the operation of broadband and traveling wave antennas
CO4	Analyse and design the Microstrip antennas and Reflector antenna and Describe the operation of aperture and reflector antennas.
CO5	Recognise the concept of antenna measurement and Summarise the concept of wave propagation.

Course Name : Consumer Electronics (Open Elective-1)	
Code : BEETC-605T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Describe various audio gadgets used in domestic and commercial applications
CO2	Discuss various video gadgets used in domestic and commercial applications
CO3	Explain satellite communication technology along with DTH for day to day application
CO4	Categorize various types of home appliances used in domestic life like washing machine, oven RO plant, Mixer, grinder, vaccume cleaner etc
CO5	Recognize various types of home appliances used in domestic life like printers, food processors, Induction devices, scanner and fax machines etc.

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COURSE OUTCOMES

B.Tech. VI Sem

Course Name : Computer Communication Networks Lab	
Code : BEETC-601P	
After completion of the practical students will be able to: : –	
CO1	To analyze and select various cables and Connectors used for networking with computer network security.
CO2	To verify the implementation results on software like NS2 and simulate different networking models and implement different networking protocols.
CO3	To understand different data transmission techniques using TCP and UDP Protocol for evaluating the different IP addresses for various systems.

Course Name : Internet of Things Lab	
Code : BEETC-602P	
After completion of the practical students will be able to: –	
CO1	Demonstrate the usage of Arduino / Raspberry Pi and install the IDE.
CO2	Interface various sensors to Arduino/Raspberry-Pi
CO3	Configure Arduino and Raspberry-Pi
CO4	Implement Web Server using Node MCU and ESP module.

Course Name : : Wireless Sensor Networks Laboratory	
Code : BEETC-603P	
After completion of the practical students will be able to: –	
CO1	Simulate various wireless sensor network protocols.
CO2	Generate TCL script for various types of nodes.
CO3	Implement routing protocols in NS2
CO4	Work on various network simulators

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COURSE OUTCOMES
B.Tech. VII Sem

Course Name : Audio & Video Engineering (PEC-III)	
Code : BEETC701PE-T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	Recall the basic principle and fundamentals of Colour Television system.
CO2	Classify working of different colour Television Standard their transmission and reception with greater emphasis on PAL T.V. system.
CO3	Summarize working principle of Digital video broadcasting, MAC signal, and Basic principles of Digital Video compression.
CO4	Illustrate working principle of HDTV, Satellite TV, Set Top Box, CCTV CATV, IP TV Mobile TV 3G mobile systemand DTH.
CO5	Compare working principle of consumer application like TV Digital cameras, Video Display and video players.

Course Name : Web Technologies (PEC-III)	
Code : BEETC701PE-T	
Upon completion of this course, students will demonstrate the ability to: –	
CO1	To learn the various tags of HTML and CSS and able to implement web pages also able to summarise the concept of JavaScript and related validation.
CO2	To learn various methodologies of XML and its schema also able Identify the difference between XML, HTML and PHP.
CO3	To summarise the various concept of servlets, API's and life cycle of servlets.
CO4	To learn various methodologies of Java Database Connectivity and able to set JDBC Drivers.
CO5	To learn various concepts of Java Server Pages and able to summarise the java beans.