AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
DEPARTMENT OF ELECTRONICS ENGINEERING
COURSE OUTCOMES (CO)

Electronic Circuits (204181), SE- Sem- III, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C281.1	**Describe** the physics, characteristics and parameters of MOSFET towards its application as amplifier.	2
C281.2	**Design** MOSFET amplifiers, with and without feedback & MOSFET oscillators for given specifications and **calculate** the various performance parameters.	3, 6
C281.3	**Examine** and **assess** the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.	4, 5
C281.4	**Explain** internal schematic of Op-Amp and **define** its performance parameters.	1, 2
C281.5	**Design**, **Build** and **test** Op-amp based analog signal processing and conditioning circuits towards various real time applications.	4, 6
C281.6	**Illustrate** and **compare** the principles of various data conversion techniques and PLL with their applications.	2, 3, 4

Digital Circuits (204182), SE-Sem-III, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C282.1	**Identify** and prevent various hazards and timing problems in a digital design.	2
C282.2	Use the basic logic gates and various reduction techniques of digital logic circuit.	1,2
C282.3	**Analyze**, **design** and implement combinational logic circuits.	4,6
C282.4	**Analyze**, **design** and implement sequential circuits.	4,6
C282.5	**Differentiate** between Mealy and Moore machines & **Design** ASM chart for sequential circuits.	2,6
C282.6	**Analyze** digital system **design** using PLD.	4,6

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COURSE OUTCOMES (CO)

Electrical Circuits (204183), SE-Sem-III, 2020-2021

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C283.1	**Analyze** the simple DC and AC circuit with circuit simplification techniques.	4
C283.2	**Formulate** and **analyze** driven and source free RL and RC circuits.	4,6
C283.3	**Formulate** & **determine** network parameters for given network and **analyze** the given network using Laplace Transform to find the network transfer function.	4,5,6
C283.4	**Explain** construction, working, types of DC Machines, **Analyze** and **Select** a suitable motor for different applications.	2,3,4
C283.5	**Explain** construction, working, types of Single Phase & Three Phase AC Motors, **Analyze** and **Select** a suitable motor for different applications.	2,3,4
C283.6	**Explain** construction, working of special purpose motors, **Analyze** and **Select** a suitable motor for different applications & **Understand** motors used in electrical vehicle	2,3,4

Data Structures (204184), SE- Sem- III, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C284.1	**Solve** mathematical problems using C programming language.	4
C284.2	**Implement** sorting and searching algorithms and **calculate** their complexity.	3
C284.3	**Develop** applications of stack and queue using array.	6
C284.4	**Demonstrate** applicability of Linked List.	2
C284.5	**Demonstrate** applicability of nonlinear data structures - Binary Tree with respect to its time complexity.	2
C284.6	**Apply** the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.	3

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COURSE OUTCOMES (CO)

Signals and Systems (204191), SE-Sem-IV, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C291.1	**Identify, classify** basic signals and perform operations on signals	1,2,3
C291.2	**Identify**, **Classify** the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.	1,2,3
C291.3	**Analyse** and resolve the signals in frequency domain using Fourier series and Fourier Transform.	1,2,3,4
C291.4	**Apply and analyse** LTI systems and signals in complex frequency domain using Laplace Transform.	1,2,3,4
C291.5	**Define and Describe** the probability, random variables and random signals. **Compute** the probability of a given event, model, compute the CDF and PDF.	1, 2,3
C291.6	**Compute** the mean, mean square, variance and standard deviation for given random variables using PDF.	1,2,3

Control System (204192), SE-Sem-IV, 2020-2021

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C292.1	**Determine** and **use** models of physical systems in forms suitable for use in the analysis and **design** of control systems.	1,3,6
C292.2	**Determine** the (absolute) stability of a closed-loop control system and **Perform** time domain analysis of control systems required for stability analysis.	1,4
C292.3	**Apply** root-locus, Frequency Plots technique to **analyze** control systems.	3,4
C292.4	**Perform** frequency domain analysis of control systems required for stability analysis.	4
C292.5	**Express** and **solve** system equations in state variable form.	2,3
C292.6	Differentiate between various digital controllers and **understand** the role of the controllers in Industrial automation	1,2

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COURSE OUTCOMES (CO)

Principles of Communication Systems(204193), SE- Sem-IV, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C293.1	To **compute & compare** the bandwidth and transmission power requirements by **analyzing** time and frequency domain spectra of signal required for modulation schemes under study.	2,3,4
C293.2	**Describe** and **analyze** the techniques of generation, transmission and reception of Amplitude Modulation Systems.	1,4
C293.3	**Explain** generation and detection of FM systems and **compare** with AM systems.	2,4
C293.4	**Exhibit** the importance of Sampling Theorem and **correlate** with Pulse Modulation Technique (PAM, PWM, and PPM).	3,5
C293.5	**Characterize** the quantization process and **elaborate** digital representation techniques (PCM, DPCM, DM and ADM).	2
C293.6	**Illustrate** waveform coding, multiplexing and synchronization techniques and **articulate** their importance in baseband digital transmission.	1,3

Object Oriented Programming (204194), SE - Sem-IV, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C294.1	**Describe** the principles of object oriented programming.	2
C294.2	**Apply** the concepts of data encapsulation, inheritance in C++.	3
C294.3	**Understand** operator overloading and friend functions in C++.	2
C294.4	**Apply** the concepts of classes, methods, inheritance and polymorphism to write programs in C++.	3
C294.5	**Apply** Templates, Namespaces and Exception Handling concepts to write programs in C++.	2
C294.6	**Describe** and use of file handling in C++.	2

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COURSE OUTCOMES (CO)

Employability Skills Development (204199), SE - Sem-IV, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C299.1	**Define** personal and career goals using introspective skills and SWOC assessment. **Identify** and **estimate** short-term and long-term goals.	1, 2, 5
C299.2	**Develop** effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.	6
C299.3	**Understand** a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.	2
C299.4	Comprehend the importance of professional ethics, etiquettes & morals and **demonstrate** sensitivity towards it throughout certified career.	2
C299.5	**Develop** practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.	6
C299.6	Have skills and preparedness to **solve** the arithmetic and mathematical aptitude & logical reasoning.	3,4

Power Electronics and Applications (304201), TE-Sem-V, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C301.1	**Explain** basic of power Electronics Engineering, **Describe** the VI and switching characteristics MOSFET, IGBT and its application in power circuits.	2
C301.2	**Design** triggering circuits for power devices. To **discuss** the importance of protection circuit and its use in power circuits.	2, 6
C301.3	**Compare** uncontrolled and controlled rectifiers**, Classify** the types of controlled rectifiers, Study **Examine** the working of three phase converter and its applications in regulated power supplies.	2, 3, 4
C301.4	**Explain** the working of single phase inverter, **Describe** the working of PWM inverter, and Study various voltage control methods in inverter.	1, 2
C301.5	**Understand** the concept of DC to DC converter, **Design** and **test** step down and step up chopper, **Explain** the concept of AC voltage controller.	2, 4, 6
C301.6	**Identify** the critical areas in power electronics application. **Recognize** the role of power electronics play in the improvement of energy usage efficiency and the applications in emerging areas. **Compare** AC and DC transmission system, **Describe** various methods of DC transmission, to study various applications of power electronics.	1, 2,

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COURSE OUTCOMES (CO)

Instrumentation Systems (304202), TE-Sem-V, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C302.1	**Classify** sensors/transducers and **describe** important performance measures, terminology of sensors/instrumentation systems.	2
C302.2	**Compare** various temperature sensors, **design** signal conditioning circuits for temperature sensors and describe working principles of chemical sensors.	4,6
C302.3	**Compare** various flow and level sensing techniques and **select** appropriate technique for a specific application.	4
C302.4	**Describe** working principles of motion, light and radiation detectors.	2
C302.5	**Describe** construction and working principle of MEMS and SMART sensors.	2
C302.6	**Select** appropriate Switches and final control elements for a specific application.	1,2

Electromagnetics and Wave Propagation (304203), TE-Sem-V, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C303.1	**Apply** the basics of Electrostatics in different applications	1,2,3
C303.2	**Apply** the basics of Electrostatics, Laplace and Poissons equations in different applications such as capacitor	1,2,3
C303.3	**Apply** the basics of Magnetostatics in different applications	1,2,3
C303.4	**Interpret** the given electromagnetic problem and solve it for different fields (Static, Time Varying, Free Space, conductor, Dielectric) using Maxwell's Equations	1,2,3,4
C303.5	**Formulate** the wave equation and solve it for uniform plane wave in different media.	1, 2,3,4
C303.6	**Explain** the **effect** of different parameters on wave propagation in wireless channel	1,2,3

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COURSE OUTCOMES (CO)

Microcontroller & Applications (304204), TE-Sem-V,2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C304.1	**Learn** importance of microcontroller in **designing** embedded application.	2
C304.2	**Describe** the 8051 microcontroller architectures and its feature.	1,2
C304.3	**Develop** interfacing to real world devices using 8051 microcontroller.	6
C304.4	**Describe** the PIC18FXX microcontroller architectures and its feature.	1,2
C304.5	**Develop** interfacing to real world devices using PIC18FXX microcontroller.	6
C304.6	**Learn** use of hardware & software tools.	2

Data Communication (304205), TE-Sem-V, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C305.1	**Define** and **explain** terminology of data transmission and OSI model.	1, 2
C305.2	**Identify** and **explain** error detection and correction using appropriate techniques.	1, 2, 3
C305.3	**Illustrate** the concept of Information and entropy coding techniques.	2, 3
C305.4	**Describe** the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).	1, 2
C305.5	**Illustrate** the impact and limitations of various modulation techniques.	2, 3
C305.6	**Identify** and **explain** the need and limitations of various multiple access techniques & spread spectrum schemes.	1, 2, 3

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COURSE OUTCOMES (CO)

DSP and Applications (304206), TE-Sem-VI, 2020-2021

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C306.1	**Analyze** the discrete time signals to resolve different frequency and **Design** and **implement** multistage sampling rate converter.	4,5,6
C306.2	**Understand** use of different transforms and **apply** DFT for the analysis of discrete time signals and systems	2,3
C306.3	**Analyze** and **resolve** the signals in frequency domain using Z Transform	4,5
C306.4	**Design** & **analyse** IIR Filter for filtering different real world signals.	4,6
C306.5	**Design** & **analyse** linear phase FIR Filter for filtering different real world signals.	4,6
C306.6	**Understand** architecture of DSP and **Select** a suitable DSP Processor for different applications.	2,5

Electronics system Design Practice (304213), TE-Sem-V,2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C313.1	I**nterpret** data sheet specification to **design** and simulate power supply .	2,6
C313.2	**Explain** selection criteria of component in data acquisition system and make use an EDA tool for circuit schematic and **simulation.**	2,4
C313.3	**Select** appropriate components for **design** of solar power system for own home .	1,6
C313.4	**Explain** PCB artwork components and **design** practices for high frequency signal PCB.	2,6
C313.5	**Understand** what is IoT and **develop** any applications.	2,6

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COURSE OUTCOMES (CO)

Embedded Processor (304207), TE-Sem-VI, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C307.1	**Describe** variants of MSP430 family and their targeted application, **Explain** low power aspects of MSP430, **illustrate** the instruction set and addressing modes of MSP430.	1,2,3
C307.2	**Design** real world interfacing for various devices of MSP430 Microcontroller.	6
C307.3	**Describe** ARM Processor and also **compare** ARM7,ARM9 and ARM11, **explain** suitability in Embedded Application.	1,2
C307.4	**Define** architecture of ARM7, **explain** data flow and Program flow model.	1,2
C307.5	**Design** real world interfacing for various devices of ARM7 based Microcontroller.	6
C307.6	**Describe** various ARM Cortex series and its applications, **Identify** need of Operating System and **Survey** of Cortex M3 based microcontroller and its **comparison.**	2,3

Business Management & Organization (304208), TE-Sem-VI, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C308.1	**Review** of Industry**, Find** out the trends of Business Industry.	2, 4
C308.2	**Identify** the idea about new developments in business and its management. **Classify** the business firms. **Understand** business forms, procedures.	2, 3, 4
C308.3	**Understand** the basic concepts in commerce, trade and industry. Students will be exposed to modern business world.	2
C308.4	To enable them to **analyze** and **understand** the environment of the organization.	2, 4
C308.5	**Understand** Basic principles of management - will **Describe** himself with management process, functions and principles	1, 2
C308.6	**Identify** modern business practice and functioning of various business organizations. **Demonstrate** the roles & responsibility of management.	1, 2

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COURSE OUTCOMES (CO)

Fundamentals of HDL (304209), TE-Sem-VI, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C309.1	**Understand** the role of HDL in digital system design using latest tools like VHDL & Verilog.	1
C309.2	**Describe & Test** digital logic circuit in data flow, structural & behavioural descriptions using VHDL.	1,4
C309.3	**Describe** the organization of various PLD & **compare** them.	1,4
C309.4	**Apply** advanced constructs like as Procedure, Task & functions to make model of digital logic system using VHDL & Verilog.	3
C309.5	**Describe** digital circuits utilizing various constructs of Verilog.	1
C309.6	**Develop** Verilog code to make model and simulate digital system design.	6

PLC & Applications (304210), TE-Sem-VI, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C310.1	**Identify** the main parts of a PLC and **describe** their functions, uses and applications, **construct** relation of digital gate logic to relay and PLC logic.	1, 2, 3, 6
C310.2	**Define** and **identify** the functions of a PLC memory map and ladder diagram instructions, **describe** the operation of electromagnetic control relays, switches, sensors and output control devices and **develop** PLC ladder program for control logic of basic industrial applications.	1, 2, 3, 6
C310.3	**Apply** the concept of PLC timers and counters for the control of industrial processes, **illustrate** the advanced PLC functions and **develop** PLC ladder program for control logic of advance level industrial applications.	2, 3, 6
C310.4	**Identify** and **describe** the knowledge of Installation, troubleshooting & maintenance of PLC to provide solution for industrial automation problems.	1, 2, 3
C310.5	**Describe** the concepts of Process control, SCADA and HMI and **develop** the PLC interfacing technique with HMI.	1, 2, 6
C310.6	**Classify** the different types of communication interface and Industrial networks.	3, 4

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COURSE OUTCOMES (CO)

Mini Project (304216) TE-Sem-VI, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C316.1	**Conduct** literature search to **identify** and **formulate** the engineering problem	1,3,5
C316.2	**Apply** mathematical ,science engineering concept to **solv**e the identified problem	3,6
C316.3	**Select** the proper engineering tools/components for **solving** the identified engineering problem	3,6
C316.4	**Prepare** the budget for hardware requirement	1
C316.5	**Demonstrate** the project with effective oral communication	2
C316.6	**Perform** in team, **contribute** to the team and lead the team	3

VLSI Design (404201), BE-Sem-VII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C401.1	**Describe** the Fundamentals of CMOS Technology in Digital Domain & **Implement** CMOS digital logic design for various functions.	1,3
C401.2	**Develop** HDL code to make model of digital circuit in Various Types of descriptions.	6
C401.3	**Describe** knowledge about Basics of memory chip Design and **Explain** knowledge about RAM and DRAM Design.	1,2
C401.4	**Describe** the concepts of Physical design Process such as floorplanning, placement and routing.	2
C401.5	**Develop** digital circuit using PLD & FPGA and **Understand** the importance of testability in chip design.	6,2
C401.6	**Apply** the Lambda based design rules for subsystem design.	3

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COURSE OUTCOMES (CO)

Advanced Power Electronics (404202), BE- Sem-VII, 2020-2021

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C402.1	**Understand** operation and **implementation** of dual converters and power factor improvement techniques for controlled rectifiers.	1,2
C402.2	**Understand** operation and **implementation** of Multilevel inverters, cycloconverters	1,2
C402.3	**Select and Design** a suitable power converter to meet the demand of DC drive system.	3,6
C402.4	**Select and Design** a suitable power converter to meet the demand of 3 phase inductor motor drive.	3,6
C402.5	**Understand** working of BLDC, Stepper, and Servo drive system. **Analyze** and **Select** a suitable motor for different applications	1,2,3
C402.6	**Understand** implementation of Solar and Wind Power System	1,2

Electronics System Design (404203), BE-Sem-VII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C403.1	**Explain** various stages of product design & **apply** various concept to **evaluat**e the product.	2,3,5
C403.2	**Describe** various signal conditioning circuit and **discuss** their error budget **analysis.**	1,2,4
C403.3	**Explain** interfacing of various peripheral to microcontroller & its selection criteria for particular application. Also **compare** buses/protocol used in electronic product.	1,2
C403.4	**Discuss** various approaches for development of application software for electronic product and various tools/techniques required for testing & debugging.	2
C403.5	**Discuss** PCB design practices for analog & mixed signal circuits. Also explain EMI/EMC testing standards and compliance for PCB design	2
C403.6	**Interpret** the need of environmental testing & propose different testing tools for fault finding in electronic products.	3

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COURSE OUTCOMES (CO)

Internet of Things (404204),BE-Sem-VII,2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C404.1	**Explain** the emerging trends in IoT , **Define** technical building blocks in IoT along with physical and Logical design of IoT, **Illustrate** IoT protocols, **Describe** IoT enabling technologies, **Diagnose** IoT security and Privacy, **Develop** application based on IoT.	1,2,3,6
C404.2	**Describe** SCADA, RFID, IEEE802.15.4, Bacnet, Modbus, HART, Zigbee Protocol, **discuss** the security requirements and **illustrate** secure model for IoT .	2,3
C404.3	**Explain** the basic components of WSN along with features and architecture of cloud computing with its types, **Develop** application based on WSN.	2,6
C404.4	**Explain** Arduino and Raspberry Pi along with its board and Programming Environment, **Compose** simple assignment using Arduino and Raspberry Pi, **Analyze** data using IoT Platform	2.4,6
C404.5	**Describe** Big Data , Data Analytics and Hadoop Technology ,**Estimate** prototyping with any development board.	2,3
C404.6	**Discuss** modern trends in IoT, **Explain** data management and API, **Develop** case studies based on Real life/Thematic areas.	2,6

Mobile Communication (404205), BE-Sem-VII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C405.1	Students can **summarize** various generations of mobile communications.	2
C405.2	**Illustrate** the fundamentals of cellular system & radio propagation.	3
C405.3	**Design** mobile communication system by appropriately selecting necessary techniques.	6
C405.4	**Compare** the GSM mobile communication standard, its architecture, logical channels, advantages and limitations.	4
C405.5	**Analyse** of 3G and 4G mobile standards and their **comparison**.	4
C405.6	**Define** different wireless networking & communication systems & standards.	1

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COURSE OUTCOMES (CO)

Project Stage I (404208) , BE- Sem- VII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
408.1	**Conduct** literature search to **identify** and **formulate** the engineering problem	2
408.2	**Engage** in independent study and **apply** the mathematical, science, engineering concepts and management principles necessary to **solve** the identified engineering problem	3,4
408.3	**Identify** the community that shall benefit through the solution to the identified engineering problem and also **demonstrate** concern for environment	2
408.4	**Select** the engineering tools/components for **solving** the identified engineering problem	3
408.5	**Engage** in effective written communication through the project report, engage in effective oral communication through presentation of the project work	6
408.6	**Perform** in the team, **contribute** to the team and mentor/lead the team	6

Computer Network & Security (404209), BE-Sem-VIII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C409.1	**Understanding** of Computer Fundamental, **Identify** Network Topology, **Figure & Explanation** of Network model	1, 2, 4,
C409.2	**Design**, implement, and **analyze** simple computer networks.	4,5,6
C409.3	**Identify**, formulate, and **solve** network engineering problems	1,3
C409.4	Use techniques, skills, and modern networking tools to **analyze** for engineering Practice.	4
C409.5	**Name** of Application & Protocol, **Illustrate** different services to network users	1, 3
C409.6	**Describe** a basic knowledge of cryptography and network security.	1

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COURSE OUTCOMES (CO)

Process Instrumentation (404210), BE-Sem-VIII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C410.1	**Describe** types of processes, **identify** time constant, dead time and dynamic elements for a given process control loop.	1,2,3
C410.2	**Design** PID Controllers to achieve desired performance for various processes.	6
C410.3	**Compare** different PID controller tuning methods, **estimate** tuning parameters and **examine** the system response.	2,4
C410.4	**Compare** advanced control schemes	2
C410.5	**Analyze** multivariable systems using block diagram analysis technique.	4
C410.6	**Define** the process control design problem and **understand** the steps in design process.	1,2

Audio Video Engineering (404211), BE- Sem- VIII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C411.1	**Understand** the concept of basic television signal processing and **Describe** the analysis and synthesis of TV Pictures & Composite Video Signal.	2,1
C411.2	**Identify** globally accepted colour TV standards and its compatibility.	2
C411.3	**Classify** various advanced Television systems & standards and **Describe** the working principles and applications of latest display like LCD, LED, OLED and Plasma.	2,1
C411.4	**Describe** the fundamentals of digital television systems (DTV) its signals, parameters and **Distinguish** them with High definition television systems (HDTV).	1,2
C411.5	**Describe** fundamentals of Studio acoustics, P.A. system and special types of Speakers/Microphones units used in audio video engineering.	1
C411.6	**Classify** audio-video recording and reproduction techniques and **Demonstrate** the need of audio and video compression techniques in real life.	2,2

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COURSE OUTCOMES (CO)

Optical & Microwave Communication (404211C), BE- Sem- VIII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
411C.1	**Describe** the fundamentals of fiber optic cables and Optical Communication.	1
411C.2	**Understand** advantages and applications of optical communication with optical sources and detectors..	2
411C.3	**Demonstrate** the knowledge to **identify** different optical devices with their operating principle.	1,2
411C.4	**Describe** the fundamentals of microwave communication and **analyze** microwave network.	1,4
411C.5	**Demonstrate** the knowledge to **formulate** microwave communication problem for synthesis and **design** Microwave sources with their operating principle..	2,3
411C.6	To **analyze** and **design** application of microwave communication system with their operating principle.	4,6

Wireless Sensor Network (404212), BE-Sem-VIII,2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
C412.1	**Explain** various concepts and terminologies used in WSN.	2
C412.2	**Describe** importance and use of radio communication and link management in WSN.	2
C412.3	**Describe** various wireless standards, **explain** protocols associated with WSN.	1,2
C412.4	**Describe** the importance of localization, **illustrate** routing techniques used in WSN.	2,3
C412.5	**Understand** techniques of data aggregation, **explain** importance of security in WSN.	2,
C412.6	Design and deploy WSN application, **identify** the issues involved in design and deployment of WSN.	2,6

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
DEPARTMENT OF ELECTRONICS ENGINEERING
COURSE OUTCOMES (CO)

Project Stage II (404215), BE- Sem- VIII, 2020-21

After successfully completing the course students will be able to,

Co. No.	Description	Bloom's Taxonomy Level
415.1	**Engage** in independent study and **apply** the mathematical, science, engineering concepts and management principles necessary to **solve** the identified engineering problem	3,4
415.2	**Apply** the identified concepts and engineering tools to arrive at **design** solution(s) for the identified engineering problem	6
415.3	**Analyze** and **interpret** results of experiments conducted on the designed solution(s) to arrive at valid conclusions	4
415.4	**Engage** in effective written communication through the project report, research paper, poster presentation and engage in effective oral communication through presentation of the project work.	6
415.5	**Perform** in the team, contribute to the team and mentor/lead the team	6
415.6	**Abide** by the norms of professional ethics	5