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Outcomes – <<Course ODD Semester 2020-21>>

S.No	Semester	Theory/Practical	Course Code / Course Name
1	3	Theory	MA8353- Transforms and Partial Differential Equations
2	3	Theory	EC8353- Electronic Devices and Circuits
3	3	Theory	EE8351- Digital Logic Circuits
4	3	Theory	EI8351- Electrical Measurements
5	3	Theory	CS8392- Object Oriented Programming
6	3	Theory	EI8352- Transducers Engineering
7	3	Practical	EI8361- Measurements and Transducers Lab
8	3	Practical	CS8383- Object Oriented Programming Laboratory
9	5	Theory	EI8551- Analytical Instruments
10	5	Theory	EI8552- Industrial Instrumentation - II
11	5	Theory	EI8553- Process Control
12	5	Theory	EE8551- Microprocessors and Microcontrollers
13	5	Theory	EE8591- Digital Signal Processing
14	5	Theory	OCE551- Air Pollution and Control Engineering
15	5	Practical	EI8561- Industrial Instrumentation Laboratory
16	5	Practical	EE8681- Microprocessors and Microcontrollers Laboratory
17	7	Theory	EI8751- Industrial Data Networks
18	7	Theory	EE8691- Embedded Systems
19	7	Theory	EC8093- Digital Image Processing
20	7	Theory	EI8075-Fibre Optics and Laser Instrumentation
21	7	Theory	GE8077-Total Quality Management
22	7	Theory	OME754-Industrial safety
23	7	Practical	EI8761-Industrial Automation Laboratory
24	7	Practical	EI8762-Instrumentation System Design Laboratory

THIRD SEMESTER

MA8353- Transforms and Partial Differential Equations

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand how to solve the given standard partial differential equations.
CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
CO4	Understand the mathematical principles on Fourier transforms would provide them the ability to formulate and solve some of the physical problems of engineering.
CO5	Construct z- transform and find inverse z-transform techniques for discrete time systems.
CO6	Use the effective mathematical tools for the solutions of difference equations by using Z transform techniques for discrete time systems.

EC8353- Electronic Devices and Circuits

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Explain the structure, characteristics and biasing of various PN junction diodes and its applications.
CO2	Explain the structure, characteristics and biasing of various types of transistors, thyristors and IGBT.
CO3	Analyze the BJT amplifier circuits using small signal and high frequency model.
CO4	Analyze the FET amplifier circuits using small signal and high frequency model.
CO5	Explain the differential amplifier and types of power amplifier and derive its efficiency.

EE8351- Digital Logic Circuits

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Explain the Concept of Number Systems
CO2	Construct the Combinational Logic Circuits
CO3	Develop the Synchronous Sequential Circuits
CO4	Develop the Asynchronous Sequential Circuits
CO5	Construct the Programmable Logic Devices
CO6	Develop VHDL programs for Digital Logic Circuits

EI8351- Electrical Measurements

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Classify the standard devices and galvanometers for the measurement of voltage and current
CO2	Construct the wattmeter and energy meter to measure power and energy
CO3	Construct instrumentation transformer to measure high values of current and voltage
CO4	Analyze the bridges for the measurement of low, medium and high resistance
CO5	Analyze the bridges for the measurement of inductance and capacitance measurement
CO6	Construct the potentiometers to measure AC and DC values of unknown voltage

CS8392- Object Oriented Programming

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Develop Java programs using OOP principles
CO2	Develop Java programs using the concepts of inheritance and interfaces
CO3	Build Java applications using exceptions and I/O streams

CO4	Develop Java applications with threads and generics classes
CO5	Develop interactive Java programs using swings
CO6	Develop an application based upon the concepts of Java.

EI8352- Transducers Engineering

COs	Course Outcome: The students, after the completion of the course, are expected to ...
CO1	Understand how physical quantities are measured and how they are converted to electrical or other forms.
CO2	Explain the static and dynamic characteristics of transducer, analysis of Zero, First and Second order transducer.
CO3	Explain the construction and operation of variable resistance transducer.
CO4	Demonstrate the knowledge of inductance and capacitance transducers.
CO5	Demonstrate the construction and operation of other transducers and sensors.
CO6	Understand smart traducer and its standard.

EI8361- Measurements and Transducers Lab

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand the concepts of measurement, error and uncertainty.
CO2	Understand the static and dynamic characteristics of measuring instruments.
CO3	Gain knowledge about the principle of operation and characteristics of different types of resistance, capacitance and inductance transducers.
CO4	Acquire knowledge of analyzing different stages of signal conditioning units.
CO5	Ability to interpret the results and draw meaningful conclusions.
CO6	Ability to work as a member of a team while carrying out experiments.

CS8383- Object Oriented Programming Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
CO2	Develop and implement Java programs with array list
CO3	Develop and implement Java programs with exception handling and multithreading.
CO4	Design applications using file processing and generic programming
CO5	Design applications using event handling.

FIFTH SEMESTER**EI8551- Analytical Instruments**

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Ability to understand the fundamental principles of selective analytical instruments used in medical diagnosis, quality assurance & control and research studies.
CO2	Ability to assess and suggest a suitable analytical method for a specific purpose, and evaluate sensitivity, important sources of interferences and errors, and also suggest alternative analytical methods for quality assurance.
CO3	Ability to critically evaluate the strengths and limitations of the various instrumental methods.
CO4	Ability to develop critical thinking for interpreting analytical data.
CO5	Ability to understand the working principle, types and applications of NMR and Mass spectroscopy
CO6	Illustrate the Microscopic, SEM and TEM techniques.

EI8552- Industrial Instrumentation - II

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Demonstrate variable head type flow meters
CO2	Illustrate quantity meters, air flow meters and mass flow meters
CO3	Explain electrical type flow meters
CO4	Identify techniques for level measurement
CO5	Explain various types of transmitters
CO6	Analyze a suitable instrumentation system for various industries

EI8553- Process Control

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Ability to understand technical terms and nomenclature associated with Process control domain.
CO2	Ability to build models using first principles approach as well as analyze models.
CO3	Ability to understand final control elements
CO4	Ability to Design, tune and implement PID Controllers to achieve desired performance for various processes
CO5	Ability to Analyze Systems and design & implement control Schemes for various Processes.
CO6	Ability to Identify, formulate and solve problems in the Process Control Domain

EE8551- Microprocessors and Microcontrollers

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Outline the functional blocks of 8085 microprocessor
CO2	Develop an assembly language program for 8085 microprocessor
CO3	Explain the architecture of 8051 microcontroller
CO4	Interpret the interrupt structure of 8085 and 8051
CO5	Illustrate how the different peripherals are interfaced with Microprocessor and microcontroller
CO6	Develop a program for automated system using 8051

EE8591- Digital Signal Processing

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Classify the different types of signals and systems
CO2	Apply z-transform and inverse Z transform in discrete systems
CO3	Explain the sampling process of continuous time signal.
CO4	Apply Radix-2 (DIT) and (DIF) FFT Algorithm using Discrete Fourier Transform
CO5	Compare (IIR) filters and (FIR) filters.

CO6	Explain various architectures of Digital signal processors
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OCE551- Air Pollution and Control Engineering

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand the atmospheric process and pollutant transport mechanism
CO2	Apply modelling techniques and to determine the fate of air pollutant with respect to time and space
CO3	Prevent and control air pollution by suitable air pollution control measures
CO4	Control and Monitoring of gaseous contaminants in air pollution
CO5	Prevent, control and measure of Indoor air quality management

EI8561- Industrial Instrumentation Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Ability to experimentally measure industrial process parameters such as flow and level,
CO2	Ability to experimentally measure industrial process parameters such as temperature and pressure
CO3	Ability to experimentally measure industrial process parameters such as viscosity.
CO4	Ability to measure and analyze pH, conductivity
CO5	Ability to measure and analyze UV absorbance and transmittance.
CO6	Ability to measure and analyze physiological parameters such as BP, ECG and pulse rate.

EE8681- Microprocessors and Microcontrollers Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Ability to understand and apply computing platform and software for engineering problems.
CO2	Ability to programming logics for code conversion
CO3	Ability to acquire knowledge on A/D and D/A.
CO4	Ability to understand basics of serial communication.
CO5	Ability to understand and impart knowledge in DC and AC motor interfacing.
CO6	Ability to understand basics of software simulators.

SEVENTH SEMESTER

EI8751-Industrial Data Networks

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understanding to define basic concepts of data communication and its importance.
CO2	Understanding to explain the various internetworking devices involved in industrial networks
CO3	Understanding to explain the various serial communication used in process industries.
CO4	Understanding to illustrate, compare & explain the working of HART and Field bus used in process digital communication.
CO5	Ability to summarize the operation of MODBUS, PROFIBUS protocol & its applications.
CO6	Understanding to explain and adopt the different Industrial Ethernet protocol and usage of wireless communication in process applications.

EE8691- Embedded Systems

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand and analyze Embedded systems.
CO2	Learning to suggest an embedded system for a given application.
CO3	Learn to operate various Embedded Development Strategies
CO4	Learn to study about the bus Communication in processors.
CO5	Understanding to acquire knowledge on various processor scheduling algorithms.
CO6	Understand basics of Real time operating system.

EC8093- Digital Image Processing

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
CO2	Operate on images using the techniques of smoothing, sharpening and enhancement.
CO3	Understand the restoration concepts and filtering techniques.
CO4	Learn the basics of segmentation features extraction.
CO5	Learn the basics of compression methods for color models.
CO6	Learn the recognition methods.

EI8075-Fibre Optics and Laser Instrumentation

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Classify the types of optical fibers and discuss the various losses and dispersion involved in optical fibers and discuss about various optical sources, optical detectors, optical connectors and splices.
CO2	Illustrate the various applications of lasers in industries.
CO3	Explain the characteristics and types of lasers.
CO4	Develop a thorough knowledge about applications of lasers in industries and material

	processing.
CO5	Explain the concept of holography using lasers.
CO6	Interpret the applications of lasers in medical field.

GE8077-Total Quality Management

COs	Course Outcome: The students, after the completion of the course, are expected to ...
CO1	Understand the quality philosophies and customer focused managerial system
CO2	Summarize the quality management principles
CO3	Apply six sigma concept in manufacturing and service sector
CO4	Determine the tools and techniques for quality improvement.
CO5	Analyze standards and auditing system on implementation of TQM.
CO6	Analyze standards for the operation of EMS.

COs	Course Outcome: The students, after the completion of the course, are expected to
CO1	Understand to identify and prevent chemical ,Environmental mechanical
CO2	Analysis of fire hazard
CO3	Apply proper safety techniques on safety engineering and management

OME754-Industrial Safety

EI8761-Industrial Automation Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ...
CO1	Understanding programming of PLC
CO2	Understanding programming of SCADA
CO3	Understanding programming of DCS
CO4	Working with Industrial automation system
CO5	Design and implement control schemes in PLC and DCS
CO6	Interface with PLC and DCS

EI8762-Instrumentation System Design Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ...
CO1	Design of signal conditioning systems
CO2	Design of Instrumentation systems
CO3	Design controller
CO4	Design control valve and Transmitter
CO5	Design and draw piping diagram for Industrial application projects
CO6	Design of Multi channel data acquisition and transmitter