JIS GROUP
Educational Initiatives

CURRICULUM ESSENTIALS

Department of
Electronics and Instrumentation Engineering

Departmental Vision

The vision of the department is to uniquely position the graduate as a leader in innovation and excellence in Instrumentation, Control and measurements and to recognize professional framework reflecting social responsibility.

Departmental Mission

The Mission of the department is to develop the next generation of Engineers in the instrumentation sector by teaching them problem solving, leadership, ethical behaviour and teamwork skills and to create and disseminate knowledge through research and to transfer our intellectuality for the enhancement of society in meaningful and sustainable ways.

Program EducationalObjectives (PEO)

1. To provide students with a strong foundation in Mathematical, Scientific and Engineering fundamentals.

2. To acquaint students with necessary knowledge to formulate, solve and analyse engineering problems related to industry and research.

3. To impart the state of the art technology to the students in the field of Electronics and Instrumentation Engineering.

4. To foster innovation, invention and entrepreneurship by enabling the students totransform their ideas to proof-of- concepts for high-tech applications.

5. To provide opportunity for the students to work as part of teams on multi-disciplinary projects.

6. To incorporate professional and ethical attitude, communication skills and the life-long learning skills in the students which are needed for the successful professional career.

7. To inculcate to skills to Work in core Instrumentation and allied industries and software companies and/or become successful entrepreneurs.

8. To encourage pursuing their higher studies at the institutes of repute in India and abroad and working with educational institutions, research organizations and engineering consultancy companies.

9. Have the highest integrity, social responsibility, teamwork skills and leadership capabilities in their professional career.

Program Outcome (PO)

1. Apply knowledge of mathematics, science, engineering fundamentals and an instrumentation engineering specialization to arrive solution for complex engineering problems.

2. Identify, formulate and analyze complex engineering problems using first principles of mathematics, management and engineering.

3. Design solutions for instrumentation engineering problems and develop Instrumentation and related system components or processes that meet specified needs with appropriate consideration for public health, safety, cultural, societal and environmental issues.

4. Conduct investigation of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

5. Create, select and apply appropriate state-of-the-art techniques, resources and modern engineering and computing tools with an understanding of the limitations.

6. Apply reasoning informed by contextual knowledge to access societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7. Understand the impact of professional engineering solutions in the societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

8. Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9. Function effectively as an individual, and as a member or leader in multidisciplinary teams.

10. 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.

11. Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

12. Demonstrate knowledge and understanding of 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.

Departmental Curriculum Structure

First Year First Semester

THEORY							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics - I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	CH 191/	Chemistry Lab (Gr. A) /	0	0	3	3	2

	PH191	Physics -I Lab(Gr. B)					
8	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
9	ME 191/ME192	Engg Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
C. SESSIONAL							
10	HU181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total of Practical & Sessional						13	08

First Year Second Semester

THEORY							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. B) / Physics -I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4

4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab(Gr. A)	0	0	3	3	2
8	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics Engineering Lab(Gr. A)	0	0	3	3	2
9	ME 291/ME 292	Engg Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						12	08
SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

Second Year, Third semester

THEORY								
	Field	Code	Subjects	Contacthours/week				Credit Points
				L	T	P	Total	
1	**BS**	**M 301**	Mathematics– III	3	1	0	4	4
2	**BS**	**M(CS)301**	NumericalMethods	3	0	0	3	3
3	**PC**	**EI301**	AnalogElectronicCircuits	3	0	0	3	3
4	**PC**	**EI302**	Digital ElectronicCircuits	3	0	0	3	3
5	**PC**	**EI303**	CircuitTheoryandNetworks	3	1	0	4	4
6	**PC**	**EI304**	Electrical & Electronic Measurement&Instrumentation	3	1	0	4	4
TotalTheory							21	21

PRACTICAL								
	Field	Code	Subjects	Contacthours/week				Credit Points
				L	T	P	Total	
1	BS	M(CS)391 391	Numerical Methods Lab	0	0	3	3	2
2	PC	EI 391	Analog Electronic Circuits Lab	0	0	3	3	2
3	PC	EI 392	Digital Electronic Circuits Lab	0	0	3	3	2
4	PC	EI 393	Circuits and Networks Lab	0	0	3	3	2
SESSIONAL								
6	MC	MC381	Technical Skill development-I	2	0	0	2	0
Total practical							14	8
Total 3rd Semester							35	29

Second Year, Fourth semester

THEORY								
	Field	Code	Subjects	Contacthours/week				Credit points
				L	T	P	Total	
1	BS	PH(EI)401	Physics – II	3	0	0	3	3
2	PC	EI 401	Sensors and Transducers	3	0	0	3	3
3	PC	EI 402	Microprocessors and Microcontrollers	3	0	0	3	3
5	PC	EI403	Electromagnetic Theory and Transmission Line	3	0	0	3	3
6	PC	EI404	Signals and Systems	3	0	0	3	3
Total Theory							14	15

PRACTICAL							
	Field	Code	Subjects	Contacthours/week			
				L	T	P	Total
1	BS	PH(EI)491	Physics –II Lab	0	0	3	3
2	PC	EI 491	Sensors and Transducers Lab	0	0	3	3
3	PC	EI 492	Microprocessor and Microcontrollers Lab	0	0	3	3
4	PC	EI493	Electrical & Electronic Measurement & Instrumentation Lab	0	0	3	3
SESSIONAL							
4	HU	HU 481	Technical report writing & language practice laboratoryPractice	0	0	2	2
Total practical							14
Total 4th semester							29

Third Year, Fifth semester

THEORY								
	Field	Code	Subjects	Contacthours/week				Credit Points
				L	T	P	Total	
1	HS	HU501	Environmental Science	2	0	0	2	2
2	PC	EI 501	Industrial Instrumentation	3	0	0	3	3
3	PC	EI 502	Analog& Digital Communication Theory	3	0	0	3	3
4	PC	EI 503	Control Engineering	3	0	0	4	3
5	PE	EI 504A / EI 504B/ EI 504C	Digital Signal Processing/ Microwave Engineering/ Antenna Theory & Propagation	3	0	0	3	3

PRACTICAL								
Sl. no.	Field	Code	Subjects	Contacthours/week				Credit Points
				L	T	P	Total	
1	PC	EI 591	Industrial Instrumentation Lab	0	0	3	3	2
2	PC	EI 592	Analog& Digital Communication Lab	0	0	3	3	2
3	PC	EI 593	Control Engineering Lab	0	0	3	3	2
4	PE	EI 594A / EI594B/EI 594C	Digital Signal Processing Lab / Microwave Engineering Lab/ Antenna & Propagation Lab	0	0	3	3	2
SESSIONAL								
5	**MC**	MC581	Technical Skill development-II	2	0	0	2	0
Total practical							14	8
Total 5th Semester							28	22
Total Theory							14	14

Third Year, Sixth semester

THEORY								
Sl. no	Field	Code	Subjects	Contacthours/week				Credit points
				L	T	P	Total	
1	PC	EI 601	Process Control-I	3	0	0	3	3
2	PC	EI 602	Bio Medical Instrumentation	3	0	0	3	3
3	PE	EI 603A / EI 603B/ EI 603C	Power Electronics / Industrial Drives/ Advanced Sensors	3	0	0	3	3
4	PE	EI604A / EI 604B	Optoelectronics & Fibre Optic Sensors/ Soft Computing	3	0	0	3	3
5	OE	EI605A / EI605B/ EI605C	Data Structures & Algorithms / Database Management System / Software Engineering(IT)	3	0	0	3	3
Total Theory							15	15

PRACTICAL								
Sl. no.	Field	Code	Subjects	Contacthours/week				Credit points
				L	T	P	Total	
1	PC	EI 691	Process Control Lab	0	0	3	3	2
2	PE	EI 693A/ EI 693B/ EI 693C	Power Electronics Lab / Industrial Drives Lab/ Advanced Sensors Lab	0	0	3	3	2
3	OE	EI 695A / EI 695B / EI 695C	Data Structures & Algorithms Lab /Database Management System Lab/ Software Engineering(IT) Lab	0	0	3	3	2
SESSIONAL								
4		EI 681	GD & Seminar	0	0	3	3	3
5		EI 682	Mini Project	0	0	3	3	3
Total practical							15	12
Total 6th semester							30	27

Fourth Year Seventh semester

THEORY								
Sl. no.	Field	Code	Subjects	Contacthours/week				Credit points
				L	T	P	Total	
1	HS	HU701	Organisational behaviour,Values & Ethics	2	0	0	2	2
2	PC	EI 701	Telemetry and Remote Control	3	0	0	3	3
3	PC	EI 702	Process Control-II	3	0	0	3	3
4	PE	EI703A/ EI703B/ EI703C	Digital Image Processing/ Non-Conventional Energy Sources/ Analytical Instrumentation	3	0	0	3	3
5	OE	EI704A / EI704B /EI704C	Computer Networking/ Multimedia/ Object Oriented Programming					
Total Theory							14	14

PRACTICAL								
Sl.	Field	Code	Subjects	Contacthours/week				Creditpoints
				L	T	P	Total	
1	PC	EI 791	Telemetry and Remote Control Lab	0	0	3	3	2
2	OE	EI794A EI794B EI794C	Computer Networking Lab/Multimedia Lab /Object Oriented Programming Lab	0	0	3	3	2
3		EI 793	Project-1	0	0	6	6	2
SESSIONAL								
4		EI 781	Industrial Training Evaluation	4 wks during 6th -7th Sem-break				2
5	MC	MC781	Foreign Language	2	0	0	2	0
Total practical and sessional							14	8
Total 7th Semester							28	22

Fourth Year, EightSemester

THEORY								
Sl. no.	Field	Code	Subjects	Contacthours/week				Credit points
				L	T	P	Total	
1	HS	HU801	Industrial &Financial Management	2	0	0	2	2
2	PE	EI801A/ EI801B/ EI801C	Plant Automation/ Embedded System Design/ Virtual Instrumentation	3	0	0	3	3
3	PE	EI 802A/ EI802B/ EI802C	Mobile Communication/ VLSI & Microelectronics/ Mechatronics	3	0	0	3	3
Total Theory							8	8

PRACTICAL								
Sl. no.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	PC	EI 891	Instrumentation & Control Lab	0	0	3	3	2
2		EI 892	Project-2	0	0	12	12	6
3		EI893	General Viva-voce					4
Total sessional							15	12
Total 8th semester							23	20

Course Educational Objective (CEO)

&

Course Outcome (CO)

FIRST YEAR FIRST SEMESTER

MATHEMATICS-I

PAPER CODE: M 101

COURSE OUTCOME:

1. Able to explain the applicability of determinant and matrix in the different types of engineering problem.
2. Able to apply Mean value theorems & expansion of function in engineering field.
3. Able to apply the area & volume integrals in different engineering problems.
4. Able to apply vector concepts in numerous engineering experiments and problems.
5. Application of improper integral in engineering field.

CHEMISTRY

PAPER CODE: CH 101

COURSE OUTCOME:

1. Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries. Majors to be certified by the American Chemical Society will have extensive laboratory work and knowledge of Biological Chemistry.

2. Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.

3. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

4. Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

5. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

6. Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

7. Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.

8. Students will be able to function as a member of an interdisciplinary problem solving team.

BASIC ELECTRICAL ENGINEERING

PAPER CODE: EE 101

COURSE OUTCOME:

1. Ability to analyze circuits using Kirchhoff's voltage & current laws, and node analysis

2. Ability to use small-signal analysis on circuits containing op-amps, diodes, and transistors

3. Ability to compute transient responses of simple circuits with capacitors and inductor

4. Ability to compute frequency responses of circuits containing capacitors and inductors

5. Ability to compute power dissipation, power factor, and maximum power transfer

6. Ability to use digital oscilloscopes, meters, and waveform generators in laboratory

COMMUNICATIVE ENGLISH

PAPER CODE: HU 101

COURSE OUTCOME:

1. To acquire proficiency in speaking grammatically correct English.
2. To enhance their perception in comprehending English passages.
3. To develop their writing skills in business communication.
4. To get that accuracy in solving English Aptitude Questions.
5. To make them Industry Ready to accept

ENGINEERING MECHANICS

PAPER CODE: ME 101

COURSE OUTCOME:

1. Determine the resultant force and moment for a given force system.

2. Analyze planar and spatial systems to determine the forces in members of trusses, frames and problems related to friction.

3. Calculate the motion parameters for a body subjected to a given force system.

4. Determine the deformation of a shaft and understand the relationship between material constants.

5. Determine the centroid and second moment of area.

LANG. LAB. AND SEMINAR PRESENTATION

PAPER CODE: HU 191

COURSE OUTCOME:

1. To be efficient in using basic grammar of English Language.

2. To be able to read and comprehend any given passage in English.

3. Build confidence in speaking, reading and writing English professionally.

4. Understanding communication techniques and learning the method of technical writing.

5. To be able to employ writing skills proficiently.

6. To be prompt in speaking/presenting spontaneously on given subjects.

CHEMISTRY LAB

PAPER CODE: CH 191

COURSE OUTCOME:

After the completion of the course, the learner will be able to:

1. Analyze the need, design and perform a set of experiments.

2. Identify the structure of unknown/new compounds with the help of spectroscopy.

3. Differentiate hard and soft water, solve the related numerical problems on water purification and its significance in industry and daily life.

4. Apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.

5. Understand the causes of corrosion, its consequences and methods to minimize corrosion to improve industrial designs.

6. Explain the properties, separation techniques of natural gas and crude oil along with potential applications and role of petrochemicals in national economy.

7. Acquire Basic knowledge of Nan chemistry to appreciate its applications in the field of Medicine, data storage devices and electronics.

8. Equipped with basic knowledge of polymer reinforced composites, applications of semiconductor photochemistry in energy

harnessing and optical sensors.

BASIC ELECTRICAL ENGINEERING LAB

PAPER CODE: EE 191

COURSE OUTCOME:

The combination of lecture and laboratory sessions provides learning opportunities that shouldenable the student to do the following upon completion of this course:

1. Set up a bias point in a transistor.
2. Verify the working of diodes, transistors and their applications.
3. Build a common emitter/base/collector amplifier and measure its voltage gain.
4. Understand the use of RPS and CRT.
5. Explore the operation and advantages of operational amplifiers.
6. Learn to design different types of filters and apply the same to oscillators and amplifiers.
7. Exploring the circuitry which converts an analog signal to digital signal.

ENGG. DRAWING & GRAPHICS

PAPER CODE: ME 191

COURSE OUTCOME:

1. Draw orthographic projections of lines, planes and solids.
2. Construct isometric scale, isometric projections and views.
3. Draw sections of solids including cylinders, cones, prisms and pyramids.
4. Draw projections of lines, planes, solids, isometric projections and sections of solids including cylinders, cones, prisms and pyramids using AutoCAD

EXTRA CURRICULUR ACTIVITY (NSS/NCC)

PAPER CODE: HU 181

COURSE OUTCOME:

1. Recognize strategies to that promote a healthy focus on academic pursuits.

2. Identify both interpersonal and technical skills

3. that provide opportunities for growth and mastery

4. Demonstrate an understanding of impact of behavior on academic performance

5. Locate the appropriate networks and resources to understand how to be academically successful at Mercy.

6. Identify appropriate campus resources and opportunities that contribute to their educational success and engagement to the campus

7. Articulate their own knowledge of their degree requirements and their role in the advising process.

8. Recognize the need for positive individual participation as a contribution to communal etiquette

9. Demonstrate better decision-making skills

10. Demonstrate action steps to identify, seek out and participate in co- and extra-curricular activities

FIRST YEAR SECOND SEMESTER

MATHEMATICS-II

PAPER CODE: M 201

COURSE OUTCOME:

After the completion of the course, the learner will be able to:

1. Apply the knowledge of first order differentiation in engineering field.

2. Analyse type of higher order equations and apply in numerous engineering application.

3. Analyze graph theory concepts in explaining the behaviour of electrical, communication and electromagnetic field.

4. Understand the application of Laplace Transform for solving various engineering problems.

PHYSICS-I

PAPER CODE: PH 201

COURSE OUTCOME:

1. Student solves the time-independent Schrodinger equation as an intermediate step to solve thetime-dependent Schrodinger equation.

2. Student applies boundary conditions to constraint the set of possible states.

3. Student applies boundary conditions to obtain the spectra of the Hamiltonian and identifies itas the set of allowed values of the energy.

BASIC ELECTRONICS ENGINEERING

PAPER CODE: EC 201

COURSE OUTCOME:

1. Characterize semiconductors, diodes, transistors and operational amplifiers

2. Design simple analog circuits

3. Design simple combinational and sequential

4. Identify functions of digital multimeter, cathode ray oscilloscope andtransducers in the measurement of physical variables

5. Understand fundamental principles of radio communication

COMPUTER FUNDAMENTALS & PRINCIPLE OF COMPUTER PROGRAMMING

PAPER CODE: CS 201

COURSE OUTCOME:

1. Learn the concept of fundamentals of Computer, Arithmetic & logic gates, Assembly language, high level language, compiler and assembler and operating systems, Algorithm & flow chart.

2. Adopt programming ability.

3. Learn the concept of Arithmetic operators, relational and logical operators, type, conversion, Standard input and output, formatted output and input.

4. Learn the concept of Arrays, Pointers, Structures

Union and Files.

5. Learn how these principles are implemented in the C programming language, thus emphasizing for higher studies.

ENGINEERING THERMODYNAMICS & FLUID MECHANICS

PAPER CODE: ME 201

COURSE OUTCOME:

1. Apply conservation laws to fluid flow problems in engineering applications.
2. Design experimental procedure for physical model studies.
3. Design the working proportions of hydraulic machines.

COMPUTER FUNDAMENTALS & PRINCIPLE OF COMPUTER PROGRAMMING LAB

PAPER CODE: CS 291

COURSE OUTCOME:

1. Learn the concept of DOS system commands and editor.

2. Learn the concept of simple programs with decision taking concept.

3. Learn the concepts of programs with loop control structure.

4. Learn the concept of programs with Arrays, Pointers, Structures, Union and Files.

PHYSICS-I LAB

PAPER CODE: PH 291

COURSE OUTCOME:

1. Students can use a best fit to create a graph from a series of data points.

2. Students can extrapolate and interpolate.

3. Students can use error bars to demonstrate the uncertainty in data points.

4. Students can correctly identify whether or not two measurements are statistically the same.

BASIC ELECTRONICS ENGINEERING LAB

PAPER CODE: EC 291

COURSE OUTCOME:

1. Students will learn the concept of Calibration of ammeter and voltmeter.
2. Students will learn the concept of Open circuit and Short circuit test of a single phase Transformer.
3. Students will learn the concept of No load characteristics of D.C shunt Generators.
4. Students will learn the concept of Starting and reversing of speed of a D.C. shunt.
5. Students will learn the concept of Speed control of DC shunt motor.
6. Students will learn the concept of Measurement of power in a three phase circuit by two wattmeter method.

WORKSHOP PRACTICE

PAPER CODE: ME 292

COURSE OUTCOME:

1. Study and practice on machine tools and their operations
2. Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding
3. Identify and apply suitable tools for machining processes including turning, facing, thread cutting and tapping
4. Apply basic electrical engineering knowledge for house wiring practice

SOFT SKILL DEVELOPMENT

PAPER CODE: MC 281

COURSE OUTCOME:

1. Resilience – learning to keep going when things don't go according to plan, coping with the

   unfamiliar, managing disappointment and dealing with conflict

2. Teamwork – learning to connect and work with others to achieve a set task

3. Leadership – assessing the requirements of a task, identifying the strengths within the team, utilising the diverse skills of the group to achieve the set objective, awareness of risk/safety

4. Communication – demonstrating clear briefing and listening skills, not being afraid to ask for help and support when necessary

SECOND YEAR THIRD SEMESTER

MATHEMATICS-III

PAPER CODE: M 301

COURSE OUTCOME:

1. Able to apply the knowledge of first order differentiation in engineering field.

2. Able to analyse type of higher order equations and apply in numerous engineering application.

3. Able to analyze graph theory concepts in explaining the behaviour of electrical, communication and electromagnetic field.

4. Able for application of Laplace Transform for solving various engineering problems.

NUMERICAL METHODS

PAPER CODE: M(CS) 301

COURSE OUTCOME:

1. Able to numerically approximate functions with polynomials.

2. Able to understand basics of finite precision arithmetic, conditioning of problems and stability of numerical algorithms.

3. Able to solve numerically a scalar nonlinear equation.

4. Able to solve dense systems of linear equations and have a working knowledge of LU factorizations for these problems.

5. Able to use the method of lines to solve basic partial differential equations.

ANALOG ELECTRONIC CIRCUITS

PAPER CODE: EI 301

COURSE OUTCOME:

1. Define significance of Op Amps and their importance.

2. Circuit building using Analog IC's.

3. In-depth knowledge of applying the concepts in real time applications.

4. Ability to use OP Amp as Summer, Subtractor, Multiplier and Divider.

5. Able to use OP Amp to generate sine waveform, Square wave form, Triangular wave forms.

6. Able to use OP Amp to as analog to digital and digital to analog converter.

7. Design and explain the Analog to Digital conversion operation and vice versa.

DIGITAL ELECTRONIC CIRCUITS

PAPER CODE: EI 302

COURSE OUTCOME:

1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.

2. To understand and examine the structure of various number systems and its application in digital design.

3. The ability to understand, analyze and design various combinational and sequential circuits.

4. Ability to identify basic requirements for a design application and propose a cost effective solution.

5. The ability to identify and prevent various

hazards and timing problems in a digital design.

6. To develop skill to build, and troubleshoot digital circuits.

CIRCUIT THEORY AND NETWORKS

PAPER CODE: EI 303

COURSE OUTCOME:

Upon successful completion of the learning sessions of Circuit Theory & Networks (Code: EI303) the learner should be able to:

1. Solve complex circuit problem by applying knowledge of circuit theorems.
2. Analyze dynamic performance of the networks using Laplace Transform.
3. Find out resonance of different circuit.
4. Analyze two port networks using A, B, C, D and Z, Y Parameter Model.
5. To design different types of filters.

ELECTRICAL & ELECTRONIC MEASUREMENT &INSTRUMENTATION

PAPER CODE: EI 304

COURSE OUTCOME:

Upon successful completion of this course, the students should have the basic understanding of the following topics:

1. Use instruments measuring instruments according to the need of specific application.

2. Calibrate and standardize the instruments.

3. Design measuring instruments on requirement basis.

4. To measure different parameters from the simulated instrumentation systems using virtual instrumentation.

5. Measure various electrical parameters with accuracy, precision, resolution.

6. Use AC and DC bridges for relevant parameter

measurement.

7. Select appropriate passive or active transducers for measurement of physical phenomenon.

8. Use Signal Generator, frequency counter, CRO and digital IC tester for appropriate measurement.

9. Test and troubleshoot electronic circuits using various measuring instruments.
10. Maintain various types of test and measuring instruments.

NUMERICAL METHODS LAB

PAPER CODE: M(CS) 391

COURSE OUTCOME:

On completion of the course students will be able to

1. Understand mathematical and statistical tools to solve problems

2. Understand how to solve numerical problem using computer

3. Implement several methods in terms of

programming

4. Apply the knowledge of algorithm in computer based system

5. Find the numerical solution and compare with other existing methods

ANALOG ELECTRONIC CIRCUITS LAB

PAPER CODE: EI 391

COURSE OUTCOME:

1. Verify the working of diodes, transistors and their applications.

2. Build a common emitter/base/collector amplifier and measure its voltage gain.

3. Explore the operation and advantages of operational amplifiers.

4. To design different types of filters and apply the same to oscillators and amplifiers.

5. Exploring the circuitry which converts an analog

signal to digital signal.

DIGITAL ELECTRONIC CIRCUITS LAB

PAPER CODE: EI 392

COURSE OUTCOME:

On completion of this course, students will be able to

1. Design digital based circuits.
2. Provide any logic based solutions of real life problems
3. Use storage elements such as registers, counters.
4. Can use ADC and DAC.
5. Can learn about hazards.

CIRCUITS AND NETWORKS LAB

PAPER CODE: EI 393

COURSE OUTCOME:

1. Analyze simple DC circuits.

2. Find Thevenin and Norton equivalents of circuits.

3. Analyze AC steady-state responses and transient response of resistance, inductanceand capacitance in terms of impedance.

4. Analyze two port networks.

TECHNICAL SKILL DEVELOPMENT-I

PAPER CODE: EI 381

COURSE OUTCOME:

1. Characterize and analyze the properties of CT and DT signals and systems

2. Analyze CT and DT systems in Time domain using convolution

3. Represent CT and DT systems in the Frequency domain using Fourier Analysis tools like CTFS, CTFT, DTFS and DTFT.

4. Conceptualize the effects of sampling a CT signal

SECOND YEAR FOURTH SEMESTER

PHYSICS-II

PAPER CODE: PH(EI) 401

COURSE OUTCOME:

1. A working knowledge of fundamental physics and basic electrical and/or mechanical engineering principles to include advanced knowledge in one or more engineering disciplines;

2. The ability to identify, formulate, and solve engineering physics problems;

3. The ability to apply the design process to engineering problems;

4. The ability to formulate, conduct, analyze and interpret experiments in engineering physics; and

5. The ability to use modern engineering physics techniques and tools, including software and laboratory instrumentation.

SENSORS AND TRANSDUCERS

PAPER CODE: EI 401

COURSE OUTCOME:

1. Students should be able to understand the fundamental principles of various types of sensors including, mechanical, electrical, electromechanical, optical, and miscellaneous sensors. Understand their general characteristics, terminologies, and sensing and transduction principles.

2. Students should be able to differentiate between the types of transducers available.

3. Students should be familiar with criteria for sensors and transducers selection and choose appropriate sensors for engineering tasks and scientific researches.

4. Students should possess a reasonable level of competence in the design, construction, and execution of a sensor based project.

MICROPROCESSORS & MICROCONTROLLERS

PAPER CODE: EI 402

COURSE OUTCOME:

On completion of this course, students will be capable of understanding the history and need of 8085/8086 microprocessors and 8051 microcontroller with their internal architecture, instruction sets, their timing diagram and various addressing modes. They will also learn to communicate with the real time applications with the help of these microprocessors. It is also expected that students will be able to design systems based on above mentioned processors and controller by means of efficient assembly language program

ELECTROMAGNETIC THEORY AND TRANSMISSION LINE

PAPER CODE: EI 403

COURSE OUTCOME:

1. Ability to solve the problems in different EM fields and for transmission line

2. Applications of EM Waves in different domains and to find the time average power density

3. Ability to Solve Electromagnetic Relation using Maxwell's Equations

4. Ability to Solve Electro Static and Magnetic to Static circuits using Basic relations

SIGNALS AND SYSTEMS

PAPER CODE: EI 404

COURSE OUTCOME:

1. Realization of continuous and discrete time signals and systems

2. Realize continuous and discrete time systems in Time domain using convolution method

3. Utilization of frequency domain analysis.

4. Sampling, Quantization, encoding of an continuous signals.

5. Analyze CT and DT systems using Laplace transforms and Z Transforms

PHYSICS-II LAB

PAPER CODE: PH(EI) 491

COURSE OUTCOME:

1. Applying mathematical and computational techniques,using experimental, computational, and/or theoretical methods, and

2. Evaluating the limitations of their solutions.

SENSORS AND TRANSDUCERS LAB

PAPER CODE: EI 491

COURSE OUTCOME:

1. Analyze the performance characteristics of various transducers and infer the reasons for the behavior.

2. Critically analyze any measurement application and suggest suitable measurement methods.

3. Classify and describe resistive, inductive and capacitive transducers which are used for measuring various parameters like displacement, temperature, humidity etc.

4. Define units and standards, their conversions, characteristics and error analysis of measurement systems.

5. To identify the various transducers used for various application.

MICROPROCESSORS & MICROCONTROLLERS LAB
PAPER CODE: EI 492

COURSE OUTCOME:

1. Understand Microprocessor types and programming of them.

2. Understand various interfacing circuits necessary for various applications.

3. Understand various interfacing concepts.

ELECTRICAL & ELECTRONIC MEASUREMENT & INSTRUMENTATION LAB

PAPER CODE: EI 493

COURSE OUTCOME:

1. Describe working principle of audio signal generator.
2. Describe working principle of function generator.
3. Describe working principle of Sweep frequency generator.
4. Explain working of digital IC tester.
5. Explain working of Logic analyzer
6. Explain working function of Spectrum analyzer.
7. Explain working function of Harmonic distortion analyzer.

TECHNICAL REPORT WRITING & LANGUAGE PRACTICE LABORATORY PRACTICE

PAPER CODE: HU 481

COURSE OUTCOME:

1. Build confidence in speaking, reading and writing English professionally

2. Understanding communication techniques and learning the method of technical writing.

3. To be prompt in public speaking spontaneously on given subjects.

4. To preserve proper body language.

5. To have confidence to participate in any kind of given conversation and deliver presentations.

THIRD YEAR FIFTH SEMESTER

ENVIRONMENTAL SCIENCE

PAPER CODE: HU 501

COURSE OUTCOME:

1. Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.

2. Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.

3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

4. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.

5. Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.

6. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

7. Demonstrate proficiency in quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high-level work as interdisciplinary scholars and/or practitioners.

INDUSTRIAL INSTRUMENTATION

PAPER CODE: EI 501

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Understand the construction and working principle of various type of transducers/sensor to measure physical quantities.

2. Ability to analyze, formulate and select suitable sensor for the given applications.

3. Understand technical terms and nomenclature used in industrial measurement and industrial process control

4. Understand the principles of industrial processes, process measurement , and process control

5. Demonstrate a working knowledge of safety practices used in the measurement and control of industrial processes.

6. Demonstrate skills in trouble shooting problems with the measurement and control of industrial processes.

ANALOG& DIGITAL COMMUNICATION THEORY

PAPER CODE: EI 502

COURSE OUTCOME:

1. Analyze the performance of a baseband and pass band communication system in terms of error rate and spectral efficiency.

2. Perform the time and frequency domain analysis of the signals in a communication system.

3. Select the blocks in a design of communication system.

4. Analyze Performance of spread spectrum communication system

CONTROL ENGINEERING

PAPER CODE: EI 503

COURSE OUTCOME:

Students who successfully complete the course will be able to:

1. demonstrate an understanding of the fundamentals of (feedback) control systems.

2. determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.

3. express and solve system equations in state-variable form (state variable models).
4. determine the time and frequency-domain responses of first and second-order systems to step and

5. sinusoidal (and to some extent, ramp) inputs.

6. determine the (absolute) stability of a closed-loop control system

7. apply root-locus technique to analyze and design control systems.

8. communicate design results in written reports.

DIGITAL SIGNAL PROCESSING

PAPER CODE: EI 504A

COURSE OUTCOME:

1. The student will be in position to understand use of different transforms and analyze the discrete time signals and systems.

2. The student will realize the use of LTI filters for filtering different real world signals.

3. The student will be capable of calibrating and resolving different frequencies existing in any signal.

4. The student will be in a position to design and implement multistage sampling rate converter.

MICROWAVE ENGINEERING

PAPER CODE: EI 504B

COURSE OUTCOME:

1. Knowledge about Microwave Solid State Devices.
2. Ability to identify and study the performance of Wave Guides and Resonators
3. Study the performance of Microwave Components.
4. Study the comparative performance analysis of Microwave Tubes and Circuits.
5. Knowledge about Microwave Measurements.
6. Study the measurement of impedance using smith chart.

INDUSTRIAL INSTRUMENTATION LAB

PAPER CODE: EI 591

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. To get an adequate knowledge about selecting particular sensing elements for the measurement of physical parameters.

2. Analyze the measured value for displaying or controlling the physical variables

3. Design a signal conditioning circuit for interfacing sensor with controller

4. Demonstrate a working knowledge of safety practices used in the measurement and control of real time processes

5. Demonstrate skills in trouble shooting problems with the measurement and control of industrial processes.

ANALOG& DIGITAL COMMUNICATION LAB

PAPER CODE: EI 592

COURSE OUTCOME:

1. Study signal and linear time invariant system properties.

2. Study, design, and build amplitude modulation systems examining tradeoffs in different communication systems.

3. Study, design, and build angle modulation systems examining tradeoffs in different communication systems.

4. Perform experiments in converting analog information into digital data via sampling, quantization, and coding

CONTROL ENGINEERING LAB

PAPER CODE: EI 593

COURSE OUTCOME:

1. Represent the mathematical model of a system
2. Determine the response of different order systems for various step inputs
3. Analyze the stability of the system

DIGITAL SIGNAL PROCESSING LAB

PAPER CODE: EI 594A

COURSE OUTCOME:

1. Introduced discrete time signal processing and characterization of random signals, filter design techniques, and imperfections caused by finite word length.
2. Learn how to estimate the spectra of random signals that are to be processed by a discrete time filter, and to appreciate the performance of a

variety of modern and classical spectrum estimation techniques.

3. Learn the theory of modern digital signal processing and digital filter design, including hands-on experience with important techniques involving digital filter design and digital simulation experiments.

4. Introduce the fundamental principles and techniques of digital signal processing for understanding and designing new digital signal processing systems and for continued learning.

MICROWAVE ENGINEERING LAB

PAPER CODE: EI 594B

COURSE OUTCOME:

1. Understand important and unique engineering issues at microwave and millimeter wave frequencies

2. Learn microwave network theory and the use of scattering matrix

3. Learn design criteria for waveguide and coaxial microwave components

4. Learn the application of these components in the design of useful systems such as radars, receivers, etc.

5. Work in small teams and design, fabricate and test a useful microwave component or device, which may be designed using microstripline technology.

THIRD YEAR SIXTH SEMESTER

PROCESS CONTROL-I

PAPER CODE: EI 601

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Identify the basic components of a Process Control.

2. Distinguish between the servo and regulatory operations &Self-Regulation and Integrating process

3. Compute the Mathematical Model for different process.

4. Distinguish the characteristics of different types of Control Strategies.

5. Analyze the behavior of different control loops.

6. Identify the basic components of a final control element and distinguish the different characteristics of control valve.

BIO MEDICAL INSTRUMENTATION

PAPER CODE: EI 602

COURSE OUTCOME:

1. Develop a foundational knowledge of medical terminology relevant to commonly measured human biometric signals.

2. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

3. To understand the mathematical and physical foundations of biomedical engineering and how these are applied to the design of biomedical instruments, the analysis of biological systems, and the technological advancement for health care. An understanding that engineering knowledge should be applied in an ethically responsible manner for the good of society.

4. Design a variety of electronic and/or computer-based devices and software for applications including biomedical instrumentation, medical imaging, physiological measurement, biomedical signal processing, rehabilitation engineering and medical informatics.

5. To lead a small team of student engineers performing a laboratory exercise or design project; to participate in the various roles in a team and understand how they contribute to accomplishing the task at hand.

POWER ELECTRONICS

PAPER CODE: EI 603A

COURSE OUTCOME:

1. Articulate the basics of power electronic devices

2. Express the design and control of rectifiers, inverters.

3. Ability design AC voltage controller and Cyclo-Converter.

4. Ability to design Chopper circuits.

ADVANCED SENSORS

PAPER CODE: EI 603C

COURSE OUTCOME:

1. Integrated MEMS Applications: Microsensors, Microactuators, RF, and Biomedical

2. Integrated MEMS Processes and schemes: System-On-Chip, and System-On/In-Package

3. Bulk Micromachining Processes (low and high temperature)

OPTOELECTRONICS & FIBRE OPTICS

PAPER CODE: EI 604A

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Describe the characteristics of Optical Emission with reference to LED and LASER.

2. Identify different types of LEDs /lasers and their junction physics.

3. Describe the construction of different types of Optical fibers and their relative characteristics.

4. Identify the relevance of optical fiber in Instrumentation Engineering.

5. Composes different types of Fiber-optic sensors.

6. Design various fiber optic sensors for Industrial applications like temperature, displacement, pressure and liquid level.

SOFT COMPUTING

PAPER CODE: EI 604B

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Identify and describe soft computing techniques.
2. Recognize the feasibility of applying a soft computing methodology for a particular problem.
3. Apply NN to pattern recognition and regression problems.
4. Apply FL and reasoning to handle uncertainty and solve engineering problems.
5. Apply GA to optimization problems.

DATA STRUCTURES & ALGORITHMS

PAPER CODE: EI 605A

COURSE OUTCOME:

On completion of the course students will be able to

1. Able to access how the choices of data structure & algorithm methods impact the performance of program.
2. Able to Solve problems based upon different data structure & also write programs.
3. Able to Choose an appropriate data structure for a particular problem.

DATABASE MANAGEMENT SYSTEM

PAPER CODE: EI 605B

COURSE OUTCOME

On completion of the course students will be able to

1. Construct an Entity Relationship (E-R)
2. Diagram for an application.
3. Create a normalized relational database model
4. Answer real world queries to generate reports from it.
5. Determine whether the transaction satisfies the ACID properties.
6. Organize and maintain the database of an organization.

PROCESS CONTROL LAB

PAPER CODE: EI 691

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Infer the effect of different control modes on different processes.
2. Evaluate the different controller parameters using different tuning process.

3. Analyze the different complex control systems in process industries.

POWER ELECTRONICS LAB

PAPER CODE: EI 693A

COURSE OUTCOME:

1. Ability to express characteristics of SCR, BJT, MOSFET and IGBT.
2. Ability to express communication methods.
3. Design of power electronic converters in power control applications.
4. Design of SMPS and UPS.

ADVANCED SENSORS LAB

PAPER CODE: EI 693C

COURSE OUTCOME:

1. Surface Micromachining Processes (low and high temperature)

2. Mixed-Mode Micromachining Processes

3. Integrated MEMS-CMOS Processes

4. MEMS Packaging Techniques

DATA STRUCTURES & ALGORITHMS LAB

PAPER CODE: EI 695A

COURSE OUTCOME:

On completion of the course students will be able to

1. Choose appropriate data structure as applied to specified problem definition.

2. Handle operations like searching, insertion, deletion, traversing mechanism on various data structures.

3. Have practical knowledge on the applications of data structures.

DATABASE MANAGEMENT SYSTEM LAB

PAPER CODE: EI 695B

COURSE OUTCOME:

On completion of the course students will be able to

1. To understand the basic concepts regarding database, know about query processing and techniques involved in query optimization and understand the concepts of database transaction and related database facilities including concurrency control, backup and recovery.

2. To understand the introductory concepts of some advanced topics in data management like distributed databases, data warehousing, deductive databases and be aware of some advanced databases like partial multimedia and mobile databases

3. To understand the difference between DBMS and advanced DBMS and use of advanced database concepts and become proficient in creating database queries.

ORGANISATIONAL BEHAVIOUR, VALUES & ETHICS

PAPER CODE: HU 701

COURSE OUTCOME:

The objective if the course is to make the students enable to do the followings

1. Explain interpersonal conflict and conflict resolution.
2. Critique the most popular bases of power in organizations.
3. Interpret contemporary leadership theories.
4. Identify major leadership issues in contemporary organizations.
5. Describe individual and group, creative, and ethical decision making.
6. Define organizational culture and elaborate on its impact on performance.

FOURTH YEAR SEVENTH SEMESTER

TELEMETRY AND REMOTE CONTROL

PAPER CODE: EI 701

COURSE OUTCOME:

1. Functional components of a typical pneumatic, hydraulic and electronic Telemetry system.

2. Justify the need of process data multiplexing and Demultiplexing in Telemetry.

3. Justify the need of Process Signal Modulation and Demodulation.

4. Describe the modes of transmission.

5. Classify different types of telemetry systems.

PROCESS CONTROL-II

PAPER CODE: EI 702

COURSE OUTCOME:

1. Develop fundamental models for dynamic processes.

2. Implement dynamic models with or without controllers and perform simulations using computational tools.

3. Analyze properties such as stability, speed of response, frequency response

etc. of dynamic models and processes.

4. Analyze and tune PID controllers and more advanced controllers to achieve desired performance.

5. Able to implement Networking and industrial process automation.

DIGITAL IMAGE PROCESSING

PAPER CODE: EI 703A

COURSE OUTCOME:

1. Understand image formation and the role human visual system plays in perception of gray and color image data.

2. Get broad exposure to and understanding of various applications of image processing in industry, medicine, and defense.
3. Learn the signal processing algorithms and techniques in image enhancement and image restoration.

4. Acquire an appreciation for the image processing issues and techniques and be able to apply these techniques to real world problems.

5. Be able to conduct independent study and analysis of image processing problems and techniques.

NON-CONVENTIONAL ENERGY SOURCES

PAPER CODE: EI 703B

COURSE OUTCOME:

1. Basic concepts about design of solar and wind energy systems and solving problems related to such technologies.

2. Study about sources of biomass and different biomass energy conversion systems.
3. Knowledge on different renewable energy policies, need of renewable energy.

4. Conduct techno economic analysis of renewable energy systems and to conduct life cycle analysis.

5. Calculate the steam flow rate and plant efficiency of thermal power plant.

ANALYTICAL INSTRUMENTATION

PAPER CODE: EI 703C

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Acquire knowledge about the interaction of electromagnetic radiations with matter and apply analytical techniques to accurately
2. Determine the elements present in the given sample Select Instrument for a particular analysis with idea of its merits, demerits and limitations
3. Learn specific technique employed for monitoring different pollutants in air and water.

4. Understand the applications and usage of chromatography in real time industrial environments, various techniques for medical imaging and analysis.

COMPUTER NETWORKING

PAPER CODE: EI 704A

COURSE OUTCOME:

On completion of the course students will be able to

1. Demonstrate the networking strategies.

2. Examine the protocols operation of various layers of Data networks.

3. Identify the technical issues related to networking technologies.

4. Design and build a network using routers.

MULTIMEDIA

PAPER CODE: EI 704B

COURSE OUTCOME:

On completion of the course students will be able to

1. Identify different media; representations of different multimedia data and data formats.

2. Analyze various compression techniques.

3. Compare various audio and video file formats.

4. Apply different coding technique for solving real world problems.

5. Choose optical storage media suitable for multimedia applications.

TELEMETRY AND REMOTE CONTROL LAB

PAPER CODE: EI 791

COURSE OUTCOME:

1. Recognize and explain basic computational properties of remote sensing data acquisition, storage, and processing.

2. Apply mathematical relationships describing fundamental physical, geometric, and computational principles relevant to remote sensing.

3. Recognize and explain at a basic level fundamental physical principle of remote sensing.

4. Explain EM radiation interactions vary across a limited number of substances, geometries, and temperatures; and geometric properties of photographs and images.

5. Demonstrate proficiency and conceptual understanding in using software or manual techniques to carry out remote sensing image

processing and analysis through a series of laboratory exercises and reports.

COMPUTER NETWORKING LAB

PAPER CODE: EI 794A

COURSE OUTCOME:

On completion of the course students will be able to

1. To design and implement small size network and to understand various networking commands.

2. To provide the knowledge of various networking tools and their related concepts

3. To understand various application layer protocols for its implementation in client/server environment

MULTIMEDIA LAB

PAPER CODE: EI 794B

COURSE OUTCOME:

On completion of the course students will be able to

1. To understand the basic concepts regarding database, know about query processing and techniques involved in query optimization and understand the concepts of database transaction and related database facilities including concurrency control, backup and recovery.

2. To understand the introductory concepts of some advanced topics in data management like distributed databases, data warehousing, deductive databases and be aware of some advanced databases like partial multimedia and mobile databases.

3. To understand the difference between DBMS and advanced DBMS and use of advanced database concepts and become proficient in creating database queries.

FOURTH YEAR EIGHT SEMESTER

INDUSTRIAL &FINANCIAL MANAGEMENT

PAPER CODE: HU 801

COURSE OUTCOME:

After successful completion of the course,

1. Students will learn the bank asset and liability management.

2. They will learn different banking techniques and can implement that.

3. This subject is an ideal approach for an introduction to the fundamental methods of quantitative finance.

4. They will understand financial modelling and stochastic processes in finance.

PLANT AUTOMATION

PAPER CODE: EI 801A

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Characterize the (software) architecture of a control system
2. Apply methods and trade-offs in real-time systems
3. Analyze a plant
4. Propose suitable automation solutions meeting the requirements
5. Analyze the reliability, availability, safety of a system

EMBEDDED SYSTEM DESIGN

PAPER CODE: EI 801B

COURSE OUTCOME:

1. Understand microcontroller, microcomputer and embedded system.
2. Understand different components of a micro-controller and their interactions.
3. Become familiar with programming environment used to develop embedded systems.
4. Understand key concepts of embedded systems like IO, timers, interrupts, interaction with peripheral devices
5. Learn debugging techniques for an embedded system.

MOBILE COMMUNICATION

PAPER CODE: EI 802A

COURSE OUTCOME:

- By the end of the course, the student will be able to analyze and design wireless and mobile cellular systems.

- By the end of the course, the student will have the ability to work in advanced research wireless and mobile cellular programs.

VLSI & MICROELECTRONICS

PAPER CODE: EI 802B

COURSE OUTCOME:

1. To be aware about the trends in semiconductor technology, and how it impacts scaling and performance.

2. Able to learn Layout, Stick diagrams, Fabrication steps, Static and Switching characteristics of

inverters

3. Synthesis of digital VLSI systems from register-transfer or higher level descriptions in hardware design languages.

4. To understand MOS transistor as a switch and its capacitance.

5. Student will be able to design digital systems using MOS circuits.

INSTRUMENTATION & CONTROL LAB

PAPER CODE: EI 891

COURSE OUTCOME:

After successful completion of this course, the learners should be able to

1. Understand the basic principles & importance of process control in industrial process plants

2. Specify the required instrumentation and final elements to ensure that well-tuned control is achieved

3. Understand the use of block diagrams & the mathematical basis for the design of control systems

4. Design and tune process (PID) controllers

5. Use appropriate software tools (e.g. Matlab Control Toolbox & Simulink) for the modeling of plant dynamics and the design of well-tuned control loops.

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JIS GROUP

Educational Initiatives

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