

EASWARI ENGINEERING COLLEGE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Regulation – 2019

I SEMESTER

Course/Branch	M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:	
Subject Code	192MAB104T	Lecture	: 45
Subject Title	APPLIED MATHEMATICS FOR ELECTRICAL ENGINEERS	Tutorials	:
Year/Semester	I/I	Practical	: -
Faculty Name	Dr.K.S.VIDHYAA	TOTAL	: 45

COURSE OBJECTIVES:

1.To develop the ability to apply the concepts of Matrix theory in electrical engineering problems

2.To familiar with Calculus of variations and Euler's equation and too find solutions of homogeneous and non-homogenous differential equations of higher orders

3.To have a well – founded knowledge of standard distributions which can describe real life phenomena.

4.To know the Linear Programming in Electrical Engineering Problems

5.To Apply Fourier series in Electrical Engineering problems

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	The students are capable of identifying algebraic Eigen value problems from practical areas and obtain the Eigen solutions.
CO2	The students understood the concept of continuity ,Maxima & Minima of functions.
CO3	The students are able to identify and solve problems in electrical engineering using probability theory
CO4	Learners understood, how to apply linear programming to solve Electrical Engineering problems
CO5	The students have learnt the methods of fourier series to solve higher Engineering problems

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192MAB104T.1	3	3	2	-	-	-	-	-	-	-	-	-
192MAB104T.2	3	3	2	2	2	-	-	-	2	1	-	1
192MAB104T.3	3	2	3	-	2	-	1	1	2	1	-	-
192MAB104T.4	3	2	1	2	1	1	-	-	2	1	-	-
192MAB104T.5	3	2	1	2	-	-	-	-	2	1	1	2
192MAB104T.6	3	2	1	-	1	-	-	-	2	1	-	-
192MAB104T	3	3	1	2	2	1	-	-	2	1	-	1

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192MAB104T.1	2	2	2	1
192MAB104T.2	2	1	1	-
192MAB104T.3	3	2	1	2
192MAB104T.4	2	2	2	2
192MAB104T.5	2	2	-	1
192MAB104T.6	3	2	2	1
192MAB104T	3	2	2	1

JUSTIFICATION OF THE MAPPING:

192MAB104T.1	To establish talents in designing, implementing, evaluating, measurement in process industries, matrix theory plays a vital role (PSO1). The problems of Eigen solutions creates the ability to design digital processors in various projects and applications(PSO2). To work in control and automation industries using IA tools and apply it in higher studies,matrix theory is very useful(PSO3). Matrix theory will motive to do research in the field of Biomedical instrumentation, Industrial Automation, Robotics, Communication systems(PSO4).
192MAB104T.2	Calculus of variation helps to built the talents in designing, implementing, evaluating in process industries (PSO1). An ability to design digital processors using analog and digital systems and utilising the same in various projects and applications(PSO2). The concept of differential will develop the analytical skills to work in automation industries using IA tools and apply it in higher studies and career development(PSO3).
192MAB104T.3	To establish talents in designing, implementing, evaluating, measurement and control of systems in process industries, the study of basic concepts of probability is vital(PSO1). Studying several distributions improves the ability to design digital

	processors using analog and digital systems .
192MAB104T.4	Linear programming helps to demonstrate various analytical skills in applied mathematics(PSO1) and extensive experience with the tactics of problem solving and logical thinking(PSO2) applicable for the students of electrical engineering(PSO4)
192MAB104T.5	The study of Fourier Series helps to obtain logical and technical skills to model, simulate(PSO1) and analyze electrical components(PSO2) and systems(PSO3)
192MAB104T.6	The study of Matrix theory, Calculus of Variation, Probability theory, Linear Programming, Fourier Series helps to establish talents in designing, implementing, evaluating, measurement and control of systems in process industries.

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:	
Subject Code	: 192EEC101T	Lecture	: 45
Subject Title	: ARM Processors and Controllers	Tutorials	: -
Year/Semester	: I/I	Practical	: -
Faculty Name	: Mrs.D.Chandrakala	TOTAL	: 45

COURSE OBJECTIVES:

1 To study the concepts of Architecture and Assembly language programming of ARM Processor

2 To study the concepts of Architectural Support for High level language and memory hierarchy

3 To study the concepts of Architectural support for system Development and Operating system

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Analyze various types of coprocessors.
CO2	Design suitable co-processor interface to ARM processor.
CO3	Analyze floating point processor architecture.
CO4	Analyze Architectural support for higher level language.
CO5	Identify the architectural support of ARM for operating system and analyze the function of memory Management unit of ARM.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEC101T.1	3	3	3	2	-	-	-	-	-	-	-	1
192EEC101T.2	3	3	3	2	-	-	-	-	-	-	-	1
192EEC101T.3	3	3	3	2	-	2	2	2	-	-	-	1
192EEC101T.4	3	2	3	2	-	2	2	2	2	2	2	2
192EEC101T.5	3	2	2	2	-	-	-	-	2	2	2	3
192EEC101T	3	3	3	2	-	2	2	2	2	2	2	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEC101T.1	2	-	-	2
192EEC101T.2	-	-	-	2
192EEC101T.3	-	-	-	-
192EEC101T.4	-	-	-	2
192EEC101T.5	2	-	-	2
192EEC101T	2	-	-	2

JUSTIFICATION OF THE MAPPING:

192EEC101T.1	The basic fundamentals of mathematics, science, and engineering will help the students to apply engineering knowledge to all type of problems which strongly maps with (PO1). This will form the basics for problem analysis and to design machine components and also to form new ideas with a strong relation to (PO2) and (PO3). Progressing in his research field (PO4). The student takes his first step in applying his engineering knowledge for the societal by knowing the fundamentals with low mapping to (PO12). The knowledge of fundamentals of electrical and electronic engineering will help the students to analyze the working of mechanical structures and systems by hardware and software development which attributes moderately to PO1. This will help to apply computing and research gaps and hence to provide solution to new ideas and innovations moderately with PS04.
192EEC101T.2	By the basic fundamentals of mathematics, science, and engineering will help the students to apply engineering knowledge to all type of problems which strongly maps with ((PO1). This will form the basis for problem analysis and to design machine components and also to form new ideas with a strong relation to (PO2) and (PO3). The student will be able to apply fundamentals to his own work and keep progressing in his research field (PO4). The student takes his first step in applying his engineering knowledge for the societal by knowing the fundamentals with low mapping

	to (PO12). By knowledge of machines, the students can apply it to analyze circuits and mechanical systems moderately (PSO4) and hence to provide solution.
192EEEC101T.3	By assimilating the basic concepts of CRO and function generator, the students will be able to solve, a wide variety of practical engineering problems in a logical and effective manner which attributes strongly to (PO1), (PO2). The theory allows us to express the modes of operation and by interpreting these concepts the students will contribute to the development of new designs and also conduct investigations of complex problems attributing strongly to (PO3) and medium (PO4), With the basic knowledge of machines, he will be able to create his own ideas to fulfil the growing societal demand and improvise on it lifelong attributing weakly to (PO12).
192EEEC101T.4	By describing electrical hazards and safety equipment, it helps the students to apply his engineering knowledge to formulate new ideas, design machines that meet specified needs, analyze and interpret data's attributing strongly to (PO1) and moderately to (PO2), (PO3) and weakly to (PO4) and helps in engineer society relationship moderately (PO6). The students will also apply his engineering knowledge to his own work and meet the changing needs of the society lifelong attributing to strong mapping with (PO12). It aids in applications of Computing and Research in elimination of electrical hazards by proper controls and managing safety equipment's. (PSO4).
192EEEC101T.5	By analyzing and applying various grounding and bonding and the various factors that affect their performance, student will be able to apply his engineering knowledge and provide valid conclusions based on the interpretation of data's attributing strongly to (PO1) and moderately (PO4). It helps to design machines (PO3) that meet specified needs, analyze and interpret data's attributing. By selecting appropriate safety method for low, medium and high voltage equipment's it helps the students to analyze the safety of mechanical structures and systems by hardware and software development which attributes moderately to PSO1. This will help them to apply computing and research skill to identify gaps and hence to provide solution to new ideas and innovations moderately with PSO4.

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEEC102T	Lecture	:	45
Subject Title	: ADVANCED DIGITAL SYSTEMS DESIGN	Tutorials	:	
Year/Semester	: I/I	Practical	:	-
Faculty Name	: M.VENKATACHALAM	TOTAL	:	45

COURSE OBJECTIVES:

1. To expose the students to the fundamentals of sequential system design, Asynchronous circuits, switching errors.
2. To teach the fundamentals of modeling through comparative study on the classification of commercial family of Programmable Device
3. To study on Fault identification in digital switching circuits
4. To introduce logics for design of Programmable Devices
5. To involve Discussions/ Practice/Exercise onto revising & familiarizing the concepts acquired over the 5 Units of the subject for improved employability skills

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Analyze and design sequential digital circuits
CO2	Design and use programming tools for implementing digital circuits of industry standards
CO3	Identify the requirements and specifications of the system required for a given application
CO4	Learners can acquire knowledge about HDL programming.
CO5	Improved Employability and entrepreneurship capacity due to knowledge upgradation on recent trends in digital design for embedded systems.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEEC102T.1	1	1	-	-	-	-	-	-	-	-	-	-
192EEEC102T.2	3	3	2	2	-	-	-	-	-	-	-	-
192EEEC102T.3	1	-	-	1	-	-	-	-	-	-	-	-
192EEEC102T.4	2	1	1	2	-	1	2	-	-	-	-	-
192EEEC102T.5	2	1	1	-	-	-	-	-	-	-	-	-
192EEEC102T	3	3	2	2	3	1	2	-	1	-	2	1

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEEC102T.1	1	-	-	1
192EEEC102T.2	1	1	-	2
192EEEC102T.3	-	1	-	1
192EEEC102T.4	3	1	-	1
192EEEC102T.5	-	1	-	2
192EEEC102T	3	1	-	1

JUSTIFICATION OF THE MAPPING:

192EEEC102T.1	By understanding the operation, characteristics of digital logic families it features weakly to Engineering knowledge (PO1), by analysing the different number system, binary codes for the application of data transmission help in problem solving mapping moderately with (PO2).
192EEEC102T.2	By analysing different simplification techniques and designing of logic circuits it features strongly to Engineering knowledge (PO1). This will help in problem solving related designing of simplified logic circuit using universal gates and other logic gates (PO2) strongly. By understanding the concepts of the applications of different combinational logic circuits it features moderately with design and development of solution (PO3) and in investigation of complex problem (PO4).
192EEEC102T.3	By understanding the working of different flip flops it features weakly to Engineering knowledge (PO1). This will help to design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions in investigation of complex problem mapping weakly with (PO4).
192EEEC102T.4	By understanding the design procedure of synchronous sequential circuits it features moderately to Engineering knowledge (PO1), this will help to analyze complex engineering problems (PO2) with mapping moderately. By analyzing the designing of shift registers and counters helps to solve societal and environmental problems in design and development of solution (PO3) and mapping weakly and used to design of experiments in investigation of complex problem (PO4) moderately. By designing the different synchronous sequential circuit helps in the societal health and safety mapping weakly with (PO6) and also helps in societal and environmental sustainability mapping moderately (PO7).
192EEEC102T.5	By knowing the working of different programmable logic devices it features moderately to Engineering knowledge (PO1), by designing the asynchronous sequential circuits this will help weakly in problem solving (PO2) related to races and hazards. By knowing the working of memories and logic devices helps in design and development of solution mapping weakly with (PO3).

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEE012T	Lecture	:	45
Subject Title	: Electric Vehicles and Power Management	Tutorials	:	
Year/Semester	: I / I	Practical	:	-
Faculty Name	: Mr.P.Pushpakarthick	TOTAL	:	45

COURSE OBJECTIVES:

- 1 • To understand the basic concepts of electric vehicles and its operations
- 2 • To understand the need for architecture in electric vehicles.
- 3 • To understand the need of control of AC and DC drives.
- 4 . To understand the need of Battery fundamentals and types.
5. To provide the knowledge about various possible energy storage technologies that can be used in electric vehicles.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	To understand the concept of electrical vehicles and its operations
CO2	To understand the concept of electrical vehicles architecture and power train components
CO3	To understand the concept of control of AC and DC drives.
CO4	To understand the need of Battery management Systems in electric vehicles
CO5	To provide knowledge about various possible energy storage technologies that can be used in electric vehicles
CO6	To provide the knowledge on electric vehicles, drive systems, battery management systems and other energy storage technologies

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

Electric Vehicle and Power Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEE012T.1	3	1	-	2	-	1	3	-	-	1	-	3
192EEE012T.2	3	1	-	2	-	1	3	-	-	1	-	3
192EEE012T.3	3	2	2	1	1	2	3	-	-	-	-	3
192EEE012T.4	2	1	1	1	-	1	1	-	-	-	-	3
192EEE012T.5	1	3	2	1	1	2	2	-	-	-	1	3
192EEE012T	3	3	2	2	1	2	2	-	-	1	1	3

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

Electric Vehicle and Power Management	PSO1	PSO2	PSO3	PSO4
192EEE012T.1	1	-	-	1
192EEE012T.2	-	2	1	1
192EEE012T.3	-	2	1	1
192EEE012T.4	-	1	-	1
192EEE012T.5	-	1	1	1
192EEE012T	1	2	1	1

JUSTIFICATION OF THE MAPPING:

192EEE012T.1	The understanding of rapidly evolving (PO12) concepts of electric vehicles will lead to development of basic engineering knowledge (PO1). The selection of electric vehicles for various applications with due considerations to environmental and operating constraints will help in analyzing and investigating complex real-world problems and development of favorable solutions (PO2) (PO3) (PO4) (PSO1). The choice of EV must be made with proper reasoning considering society and sustainability of the environment (PO6) (PO7).
192EEE012T.2	Knowledge about the various Electric Vehicle architecture will aid in proving substantiated solutions to the widely increasing demands of the industries (PO1) (PO2) (PO12). Suitable design of the power train components can be made to provide a sustainable solution to the industry needs (PO3) (PO4) (PO5) (PSO2) (PO7).
192EEE012T.3	Knowledge about the various DC and AC motor drives will aid in proving substantiated solutions to the widely increasing demands of the industries (PO1) (PO2) (PO12). Learning about various developing electrical braking strategies of drives will pave way for energy conservation and energy efficiency (PO12) (PO1) (PO6) (PO7). Design of braking strategies using modern tools for analyses will cater to development of a sustainable solution. (PO5) (PSO1) (PSO2).
192EEE012T.4	Understanding the different methods of battery management systems will aid in proving substantiated solutions to the widely increasing demands of the industries (PO1) (PO2) (PO3) (PO4) (PSO1) (PSO2). This on the other hand to some extent will help to a sustainable growth in the EV industry (PO6) (PO7) (PO12).
192EEE012T.5	Adequate knowledge on basic engineering (PO1) and applying them to develop solutions (PO2) (PO3) for another alternative energy storage systems. This can be further enhanced by using modern simulation tools leading to a sustainable development (PO5) (PO12) (PSO2) (PSO3).
192EEE012T.6	Knowledge about the various electric vehicle fundamentals, DC and AC motor drives will aid in proving substantiated solutions to the widely increasing demands of the industries (PO1) (PO2) (PO12). Learning about various developing electrical braking strategies of drives will pave way for

	energy conservation and energy efficiency (PO12) (PO1) (PO6) (PO7). Design of braking strategies using modern tools for analyses will cater to development of a sustainable solution. (PO5) (PSO1) (PSO2).
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Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEEC103T	Lecture	:	45
Subject Title	: EMBEDDED SENSOR NETWORKS	Tutorials	:	
Year/Semester	: I/I	Practical	:	-
Faculty Name	: Dr.K.V.Thilagar	TOTAL	:	45

COURSE OBJECTIVES:
1. To focus on the various components of sensor network and formulate the various performance metrics
2. To Illustrate the various types of sensor networking protocol.
3. To Interpret the various infrastructure establishment in sensor networks
4. To Describe the various networking database environment.
5. To Study the software concepts in python programming.

COURSE OUTCOMES:	
Upon completion of the course, the students will be able to..	
CO1	Understand the concept of the various components of sensor network and formulate the various performance metrics
CO2	Understand the types of sensor networking protocol.
CO3	Gain the knowledge in the various infrastructure establishment in sensor networks
CO4	Describe the various networking database environment
CO5	Realize the software concepts in python programming
CO6	Gain the knowledge in sensor ,sensor networking protocols and python programming in sensor network.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

192EEEC103T	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEEC103T.1	3	3	3	2	-	-	-	-	-	-	-	1
192EEEC103T.2	3	3	3	2	-	-	-	-	-	-	-	1
192EEEC103T.3	3	3	3	2	-	2	2	2	-	-	-	1

192EEC103T.4	3	2	3	2	-	2	2	2	2	2	2	2
192EEC103T.5	3	2	2	2	-	-	-	-	2	2	2	3
192EEC103T	3	3	3	2	-	2	2	2	2	2	2	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

192EEC103T	PSO1	PSO2	PSO3	PSO4
192EEC103T.1	2	-	-	2
192EEC103T.2	-	-	-	2
192EEC103T.3	-	-	-	-
192EEC103T.4	-	-	-	2
192EEC103T.5	2	-	-	2
192EEC103T	2	-	-	2

JUSTIFICATION OF THE MAPPING:

192EEC103T.1	The basic fundamentals of mathematics, science, and engineering will help the students to apply engineering knowledge to all type of problems which strongly maps with (PO1). This will form the basics for problem analysis and to design sensor components and also to form new ideas with a strong relation to (PO2) and (PO3). Progressing in his research field (PO4). The student takes his first step in applying his engineering knowledge for the societal by knowing the fundamentals with low mapping to (PO12). The knowledge of fundamentals of electrical and electronic engineering will help the students to analyze the working of sensor nodes and systems by hardware and software development which attributes moderately to PO1. This will help to apply computing and research gaps and hence to provide solution to new ideas and innovations moderately with PS04.
192EEC103T.2	By the basic fundamentals of mathematics, science, and engineering will help the students to apply engineering knowledge to all type of problems which strongly maps with ((PO1). This will form the basis for problem analysis and to learn about sensor networking and also to form new ideas with a strong relation to (PO2) and (PO3). The student will be able to apply fundamentals to his own work and keep progressing in his research field (PO4). The student takes his first step in applying his engineering knowledge for the societal by knowing the fundamentals with low mapping to (PO12). By knowledge of network protocols , the students can apply it to analyze sensor systems moderately (PSO4) and hence to provide solution.
192EEC103T.3	By assimilating the basic concepts of network database , the students will be able to solve, a wide variety of practical engineering problems in a logical and effective manner which attributes strongly to (PO1), (PO2). The theory allows us to express the infrastructure of sensor network and by interpreting these concepts the students will contribute to the development of new designs and also conduct investigations of complex problems attributing

	strongly to (PO3) and medium (PO4), With the basic knowledge of sensor database, he will be able to create his own ideas to fulfil the growing societal demand and improvise on it lifelong attributing weakly to (PO12).
192EEEC103T.4	By describing sensor network database, it helps the students to apply his engineering knowledge to formulate new ideas, design protocols that meet specified needs, analyze and interpret data's attributing strongly to (PO1) and moderately to (PO2), (PO3) and weakly to (PO4) and helps in engineer society relationship moderately (PO6). The students will also apply his engineering knowledge to his own work and meet the changing needs of the society lifelong attributing to strong mapping with (PO12). It aids in applications of Computing and Research in elimination of clustering by proper controls and managing proper protocols. (PSO4).
192EEEC103T.5	By analyzing and applying various concepts of python programming, student will be able to apply his engineering knowledge and provide valid conclusions based on the interpretation of data's attributing strongly to (PO1) and moderately (PO4). It helps to write coding in python (PO3) that meet specified needs, analyze and interpret data's attributing. By selecting appropriate coding method for low, medium and high voltage equipment's it helps the students to write coding in hardware and software development which attributes moderately to PSO1. This will help them to apply computing and research skill to identify gaps and hence to provide solution to new ideas and innovations moderately with PSO4.

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEEC111L	Lecture	:	-
Subject Title	: EMBEDDED SYSTEM LAB	Tutorials	:	
Year/Semester	: I/I	Practical	:	60
Faculty Name	: MR.G.VIGNESH	TOTAL	:	60

COURSE OBJECTIVES:

1 To design with experiments, in programming suites/ simulators.

2. To learn design, modeling & simulation of Combinational, Sequential, Synchronous, Asynchronous circuits with simulators /experiments, in programming processor boards, processor interfacing/designing reprogrammable system.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

192EEEC111L.1	Design with simulators/experiments in programming processor with
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	boards
192EEEC111L.2	Processor interfacing and designing digital controllers
192EEEC111L.3	Design and simulation of arithmetic logic programs and filter signal analysis with simulators
192EEEC111L.4	Compiling in various software domains
192EEEC111L.5	Communication protocol and experimenting with communication interfaces
192EEEC111L.6	Implement embedded networking

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192GEM201T .1	3	2	2	2	3	1	1	-	2	-	2	2
192GEM201T .2	3	3	2	2	3	3	3	-	3	-	2	3
192GEM201T .3	3	3	2	2	3	1	1	-	2	-	2	2
192GEM201T .4	3	3	2	2	3	3	3	-	3	-	2	3
192GEM201T .5	3	3	-	1	1	1	1	-	2	-	1	3
192GEM201T .6	3	3	-	1	1	1	1		2	-	1	3

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192GEM201T .1	1	-	2	2
192GEM201T .2	2	-	2	2
192GEM201T .3	1	-	2	-
192GEM201T .4	2	-	2	2
192GEM201T .5	1	-	1	2
192GEM201T .6	1	-	1	2

JUSTIFICATION OF THE MAPPING:	
192EEC111L.1	Design with simulators in programming involves a thorough understanding of Engineering Knowledge with analysing suitable practical issues and arriving at an optimal solution. Modern simulation tools help in conducting complex experiments and effectively communicate a report for the same.
192EEC111L.2	Interfacing a processor involves a basic understanding of its architecture with proper design arriving at a real world solution. Usage of modern computing tools are inevitable in this entire process.
192EEC111L.3	Arithmetic logics can be derived by conducting suitable logical reasoning with a fundamental knowledge of Simulation tools and signal analyses using state of the art laboratory infrastructure.
192EEC111L.4	Compiling programs in various software domains need a proper use of syntactical flow along with state space modelling of the complex tasks.
192EEC111L.5	Experimenting Communication Protocols with modern interface tools and devices leads to alleviating major hurdles in networks.
192EEC111L.6	Implementing an holistic embedded networking system needs a basic understanding and complete design

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEA111L	Lecture	:	-
Subject Title	: TERM PAPER WRITING AND SEMINAR	Tutorials	:	
Year/Semester	: I/I	Practical	:	60
Faculty Name	: MR.T.KESAVAN	TOTAL	:	60

COURSE OBJECTIVES:
1 To develop their scientific and technical reading and writing skills
2 To understand and construct research articles
3 To to obtain information from a variety of sources (i.e., Journals, dictionaries, reference books)

4 To place it in logically developed ideas.
5 To write the journal paper and presentation

COURSE OUTCOMES:	
Upon completion of the course, the students will be able to..	
192EEA111L.1	Identify a subject, narrowing the subject into a topic
192EEA111L.2	Carry out objective and literature survey for its worthiness.
192EEA111L.3	Analyse and identify an appropriate working outline.
192EEA111L.4	Studying the papers and understanding the authors contributions and critically analyzing each paper.
192EEA111L.5	Linking the papers and preparing a draft of the paper
192EEA111L.6	Writing the Final Paper and giving final Presentation

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEA111L.1	3	3	2	2	2	2	-	-	3	3	3	2
192EEA111L.2	3	3	3	3	2	2	1	-	2	3	3	3
192EEA111L.3	-	-	3	3	-	-	-	-	2	2	2	2
192EEA111L.4	3	3	3	3	-	-	-	-	3	3	3	3
192EEA111L.5	3	3	3	3	3	3	2	-	2	2	2	2
192EEA111L.6	-	-	-	-	3			3	-	3	3	-

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEA111L.1	3	3	-	2
192EEA111L.2	3	3	-	2
192EEA111L.3	2	2	-	-
192EEA111L.4	3	3	-	2
192EEA111L.5	3	3	3	2

192EEA111L.6	2	2	2	2
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JUSTIFICATION OF THE MAPPING:	
192EEA111L.1	This course outcome enables the student to get sound technical knowledge of their selected Subject. This nature makes it to be mapped with PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12 and PSO1, PSO2
192EEA111L.2	This Course outcome enables the student to examine problem identification, objective from literature surveys. Therefore this is mapped with PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12 and PSO1, PSO2.
192EEA111L.3	Using this outcome, the students will be able to Analyse and identify an appropriate working outline..So, it is strongly mapped with PO3, PO4 and Mapped average with PO9, PO10, PO11, PO12 and PSO1, PSO2.
192EEA111L.4	From this course outcome, students will be able to Studying the papers and understanding the authors contributions and critically analyzing each paper. So, it is strongly mapped with PO1, PO2, PO3, PO4, PO9, PO10, PO11, PO12 and PSO1, PSO2.
192EEA111L.5	This course outcome, enables the students to Linking the papers and preparing a draft of the paper. Therefore this is mapped with PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12 and PSO1, PSO2.
192EEA111L.6	From this course outcome, students will be able to Writing the Final Paper and giving final Presentation. So, it is mapped with PO5, PO8, PO10, PO11 and PSO1, PSO2, PSO3.

II SEMESTER

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192GEM201L	Lecture	:	45
Subject Title	: RESEARCH METHODOLOGY AND IPR	Tutorials	:	
Year/Semester	: I/II	Practical	:	-
Faculty Name	: Dr.R.VIDHYAPRIYA	TOTAL	:	45

COURSE OBJECTIVES:

To understand the research information and the technologies involved in research. To know about the importance of IPR.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

192GEM201T .1	Analyze research related information
192GEM201T .2	Apply research ethics
192GEM201T .3	Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
192GEM201T .4	Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular
192GEM201T .5	Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits
192GEM201T .6	Evaluate an appropriate research problem in their interesting domain

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192GEM201T .1	3	3	1	1	-	1	-	3	1	-	-	-
192GEM201T .2	2	3	-	2	3	-	3	3	2	-	3	-
192GEM201T .3	3	-	1	3	3	2	-	3	2	2	1	3
192GEM201T .4	-	-	1	-	3	3	-	3	3	3	2	3
192GEM201T .5	-	3	-	3	-	-	-	-	2	2	3	3
192GEM201T .6	-	3	-	3	-	-	-	-	3	2	3	3

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192GEM201T .1	2	1	-	2
192GEM201T .2	1	1	1	1
192GEM201T .3	2	1	1	2
192GEM201T .4	3	-	1	2
192GEM201T .5	3	2	1	2
192GEM201T .6	-	2	3	2

JUSTIFICATION OF THE MAPPING:

192GEM201T .1	Understand the characteristics and objects of a good research problem will help in developing a specific list of information needed (PO 1, PO 2), Only when the research knows the selection, approaches of research problem the solutions of the research can be arrived (PO 1, PO 2), (PSO1) The purpose of data collection and interpretation is to acquire useful information , propose conclusions and decision-making to solve a research problem (PO1, PO 2).
192GEM201T .2	To provide foundation of knowledge on topic (PO1, PO2), Literature survey helps to identify areas of prior importance and to find gaps in research and conflicts in previous studies. Plagiarism helps to avoid duplication of others research work and helps to create the best report (PO2, PO5), Understanding research ethic concepts are important to promote aim of research. They support the scientific research depending on collaboration among the groups (PO2, PO5 & PO11) .The principles of ethics and ethical issues in science and engineering will helps to reduce the risk of harm, obtaining informed consent, protecting anonymity and confidentiality, avoiding deceptive practices and providing the right to withdraw (PO 1, PO 2 & PO 4).
192GEM201T .3	Effective technical writing and report serves as an essential tool in communicating or conveying ones ideas, views, observations, instructions and suggestions in a more logical and technical manner.(PO 1, PO 4), The main purpose of developing a research proposal and report is to convince the reader of the value of your project and your competence.(PO 1, PO 4, PO 6), A research report should include title, abstract, table of contents, introduction, statement of problem ,purpose and significance of research methodology and references as per format (PO4, PO5, PO6 & PO12), The main aim to assess report by a review committee is to ensure the research proposals prepared by investigators met the highest scientific and ethical standards. (PO4, PO 6).
192GEM201T .4	A patent search is often the first step in achieving objectives such as determining the probability of having a patent granted to a proposed invention, determining if you have the freedom to operate and

	determining if a granted patent can be invalidated (PSO2). The aim of patent laws is the balance of the interests of inventors on one hand and the interests of the public on the other hand. (PO5, PO 6 &PO12), The Process of Patenting and Development is the statutory right to the inventor provided by the government (PO2, PO 4), International Scenario: International intellectual property law refers to a set of laws that govern the creation, protection, sharing, and use of intellectual property (IP) in the global context. IP is intangible property created through mental work, such as an invention, creative work, design, or idea. The International Cooperation means the interaction of persons or groups of persons representing various nations in the pursuit of a common goal or interest. There are seven steps for grants of patents according to Indian government, The Patent Cooperation Treaty (PCT) is an international patent law treaty, concluded in 1970. It provides a unified procedure for filing patent applications to protect inventions in each of its contracting states. (PO5, PO 6).
192GEM201T .5	A patent information, databases and patent right granted by the Government of India is discussed along with the licensing and transfer of technology (PO5,PO6,PO11 & PO12). Geographical Indications is the study of products applied for labels are studied in detail.
192GEM201T .6	New Developments in IPR and administration of Patent System like IPR of Biological Systems, Computer Software are described in detail for best resource management(PSO3), (PO2, PO4, PO11 & PO12), Traditional knowledge carried out from one generation to another generation of IPR are discussed with case Studies - IITs (PO2, PO 4) which will be useful a long term learning.

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEC202T	Lecture	:	45
Subject Title	: REAL TIME OPERATING SYSTEMS	Tutorials	:	
Year/Semester	: I/II	Practical	:	-
Year/Semester	: Mr.S.VIJAYAKUMAR	TOTAL	:	45

COURSE OBJECTIVES:

1 To acquire knowledge about different types of scheduling algorithms

2 To study about microC/OSII RTOS

3 To understand the various functions of RTOS

COURSE OUTCOMES:	
Upon completion of the course, the students will be able to..	
CO1	Describe the general architecture of computers
CO2	Describe, contrast and compare differing structures for operating systems
CO3	understand and analyze theory and implementation of processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O and files.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEC202T.1	3	2	3	1	2	-	-	-	-	-	-	-
192EEC202T.2	2	3	-	3	1	-	-	-	-	-	-	-
192EEC202T.3	2	-	2	-	1	-	-	-	-	-	-	-
192EEC202T	3	3	3	3	2	-	-	-	-	-	-	-

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEC202T.1	2	1	-	2
192EEC202T.2	-	1	3	-
192EEC202T.3	1	-	-	3
192EEC202T	2	1	3	3

JUSTIFICATION OF THE MAPPING:	
192EEC202T.1	Basic Principles of Operating System structures, System Calls and File Processes (PO1)(PSO1), Design and Implementation of processes (PO3),Performance measures for real time systems, estimating program run times, task assignment and scheduling ,classical uni-processor scheduling algorithms and task assignment(PO2)
192EEC202T.2	Even TM process and graph-based models, pertinent models ,real time languages(PO1).System performance analysis, Optimization of time loading and memory loading models of multiprocessor system and distributed systems (PO2),starting /OS II RTOS Functions: task management. time management, semaphore management ,mutual exclusion ,semaphore event management, message management and memory management(PO4)(PSO3)
192EEC202T.3	Mutual Exclusion Semaphore, Event Management, Memory Management and Porting micro C/OS II(PO1),Design issues ,polled loop systems, RTOS porting to a target ,comparison between multitasking OS, embedded OS and RTOS and image processing(PO3)(PSO4)

Course/Branch	M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:	
Subject Code	192EEC203T	Lecture	: 45
Subject Title	DIGITAL CONTROLLERS IN POWER ELECTRONICS APPLICATION	Tutorials	:
Year/Semester	I/II	Practical	: -
Faculty Name	Ms.C.PRIYA	TOTAL	: 45

COURSE OBJECTIVES:

- 1.To acquire knowledge about architecture of C2000 DSP processor.
- 2.To study about FPGA based systems.
- 3.To understand the open loop and closed loop control for converters.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	To understand the basic concepts of DSP core processor
CO2	To understand the need for interrupts and Input-Output devices
CO3	To understand the basic concepts of Analog to digital conversion and event managers
CO4	To provide knowledge about various types of Field Programmable Gate Array.
CO5	To provide knowledge about various possible controllers in Power electronics applications

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEC203T.1	3	2	3	1	1	-	-	-	-	-	-	1
192EEC203T..2	3	2	2	2	1	-	-	-	-	-	-	1
192EEC203T..3	3	2	3	2	1	-	-	-	-	-	-	1
192EEC203T..4	3	2	1	2	1	-	-	-	-	-	-	1
192EEC203T.5	2	1	1	1	1	-	-	-	-	-	-	2
192EEC203T	3	2	3	2	1	-	-	-	-	-	-	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEEC203T.1	3	1	1	3
192EEEC203T..2	2	2	1	3
192EEEC203T..3	1	1	1	3
192EEEC203T..4	2	1	1	3
192EEEC203T.5	1	1	1	3
192EEEC203T	3	2	1	3

JUSTIFICATION OF THE MAPPING:

192EEEC203T.1	An in-depth knowledge of engineering is required to understand the basics of logic gates (PO1). Problems on number of buffers required and transition time can be formulated and analyzed with the fundamentals learnt (PO2). It inculcates the ability to develop solutions for integrated chip (PO3) through experimentation (PO4) and DSP processor tools (PO5). TMS320 is instilled to constantly update with the recent trends (PO12).
192EEEC203T..2	A good mathematical and engineering fundamental is required to define power and delay analysis (PO1) and hence formulate problems of interrupts on system on chip (PO2). Combination circuits and sequential circuits are perceived by memory interfacing (PO4) and thereby develop solutions to cater to the needs (PO3). Usage of addressing modes (PO5) is needed to indulge in persistent learning (PO12).
192EEEC203T..3	Adequate ability to illustrate the various types of adder and multipliers are acquired through competent comprehension of necessary mathematics and engineering concepts (PO1). With the knowledge assimilated, problems related to system on chip are identified and analyzed (PO2). Design of sub systems can be done by performing experiments (PO4) to cater to the needs (PO3). Usage of Application specific integrated circuit (PO5) is essential to engage in long-term study (PO12).
192EEEC203T..4	An in-depth knowledge of hardware description language is required to model the digital system (PO1). Problems on number of logic gates required can be formulated and programmed (PO2). It inculcates the ability to develop solutions for integrated chip (PO3) through experimentation (PO4) and FPGA design tools (PO5). CPLD is instilled to constantly update with the recent trends (PO12).
192EEEC203T.5	A knowledge of various design flow procedure is required to model implement the DSP based system (PO1). With the knowledge of problem analysis (PO2) develop solutions for integrated chip (PO3) through programming (PO4) and DSP based Power electronic devices design tools (PO5).

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEC204T	Lecture	:	45
Subject Title	: EMBEDDED LINUX	Tutorials	:	
Year/Semester	: I/II	Practical	:	-
Faculty Name	: Mr.G.VIGNESH	TOTAL	:	45

COURSE OBJECTIVES:

1. To study the fundamentals of operating systems.
2. To understand Linux operating measurement systems.
3. To obtain basic knowledge on board support packages and device drivers.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Infer the merits, architecture and working principles of general fundamental Operating Systems.
CO2	Apply various concepts of Linux Operating Systems.
CO3	Interpret the various concepts involved in embedded Linux.
CO4	Grasp the fundamentals of board support package and embedded storage.
CO5	Comprehend the basic principles, classification and performance of embedded drivers and application porting.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

192EEC204T	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEC204T.1	3	2	2	3	3	-	-	-	-	-	-	2
192EEC204T.2	-	2	2	2	2	-	-	-	-	-	-	-
192EEC204T.3	1	2	1	2	2	-	-	2	-	1	1	2
192EEC204T.4	2	-	-	3	1	-	-	-	-	-	-	1
192EEC204T.5	1	-	2	-	1	-	2	-	-	-	-	1
192EEC204T	3	2	2	3	3	-	2	2	-	1	1	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEC204T.1	2	3	2	-
192EEC204T.2	-	3	2	-
192EEC204T.3	2	-	2	3
192EEC204T.4	-	-	3	2
192EEC204T.5	2	1	2	-
192EEC204T	2	3	3	3

JUSTIFICATION OF THE MAPPING:	
192EEC204T.1	Ability to understand about rapidly developing (PO12) (PSO4) concepts of an operating system needs basic engineering knowledge along with usage of modern computing tools for problem identification and solving(PSO1) (PO1) (PO2) (PO3) (PO4) (PO5). Focus is given on architecture and working principles of an Operating system (PSO2) for providing sustainable (PSO2) development of the society (PSO3).
192EEC204T.2	Analyzing the impacts of integrating into the Linux Development Environment (PSO2) (PSO3) (PO2) (PO4) and providing proper solutions for the same by interpreting the various linux tools and commands (PO5)(PO3).
192EEC204T.3	Dealing with wide variety of embedded linux tool chains requires knowledge on engineering (PSO4) (PO1) (PO12) to analyze various complex tasks (PSO1) (PO4) (PO2) such as resource allocation and debugging. Embedded Linux follows the ethical standards in (PO8) (PSO3) process of conducting investigations, interpreting of data (PO4) (PO5) and providing valid conclusion and also communicating (PO10) the need for reducing expensive resources (PO11). The mitigation of critical issues of an OS will be done by optimal design of the kernel (PO3).
192EEC204T.4	Design of various evolving (PO12)(PO5) embedded storage systems with the help of basic knowledge fundamental knowledge of computer sciences (PO1)(PO4). Design of innovative board support packages will contribute towards effective management of interoperable boards(PSO3) (PSO4).
192EEC204T.5	Analyzing of various developing (PO12) (PSO1) schemes of embedded ports with the help of fundamental knowledge of engineering sciences (PO1)(PO5) and electronic hardware components (PSO2) for development of economical and solutions (PO3) for industrial requirements of the society in real-time (PO5) (PSO3).

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEE006T	Lecture	:	45
Subject Title	: WIRELESS AND MOBILE COMMUNICATION	Tutorials	:	
Year/Semester	: I/II	Practical	:	-
Faculty Name	: Mrs.K.A.INDU SAILAJA	TOTAL	:	45

COURSE OBJECTIVES:

1. To expose the students to the fundamentals of wireless communication technologies.
2. To teach the fundamentals of wireless mobile network protocols
3. To study on wireless network topologies
4. To introduce network routing protocols
5. To study the basis for classification of commercial family of wireless communication Technologies

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Gain knowledge of basic and advanced theories on wireless communications systems in physical, link and network layer.
CO2	Understand, model, and design mobile networks.
CO3	Understand and apply mathematically model in wireless communications.
CO4	Gain understanding on routing algorithm, wireless communication transceiver algorithm design
CO5	Design mobile system methodology, link level simulation for wireless communications.
CO6	Comprehend the fundamentals of mobile communication including various propagation path loss models under different operating conditions and their impact on received signal strength

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

192EEE006T	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEE006T.1	2	-	-	1	1	2	1	2	1	1	1	3
192EEE006T.2	2	-	2	-	2	2	2	-	1	1	2	2
192EEE006T.3	2	1	1	-	1	-	-	-	1	1	2	2
192EEE006T.4	2	-	1	1	2	-	2	-	1	1	1	3
192EEE006T.5	2	1	2	2	2	-	1	-	1	1	1	2
192EEE006T.6	2	-	1	2	2	2	2	-	2	1	2	3
192EEE006T	2	1	2	2	2	2	1	-	1	1	2	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEE006T.1	2	2	1	2
192EEE006T.2	1	2	2	2
192EEE006T.3	2	1	2	2
192EEE006T.4	2	2	2	2
192EEE006T.5	2	1	2	2
192EEE006T.6	2	2	2	2

JUSTIFICATION OF THE MAPPING:

192EEE006T.1	Design of wireless network requires medium knowledge of engineering fundamentals (PO1), week design solution for application(PO4), week usage of IT tools(PO5), medium contribution towards society (PO6), sustainable design(PO7),multidisciplinary team work(PO9), quality of instruments decides finance of project(PO11), requires life- long learning about instruments(PO12).
192EEE006T.2	Selection of suitable mobile networks requires medium knowledge of engineering (PO1), good formulation of factors affects error(PO2), design methodologies (PO3), interpretation of data at various conditions(PO4), week usage of IT tools(PO5), week contribution towards society(PO6), sustainable design(PO7),ethics towards calibration methods(PO8),maintain reports of calibration(PO10), strongly requires life- long updation of calibration procedure(PO12).

192EEE006T.3	Selection of proper wireless networks needs strong knowledge of Mathematics and Science(PO1), good identification of factors improves accuracy (PO2), well designed instruments (PO3), analysis of data at various conditions(PO4), week usage of IT tools(PO5), week contribution towards society(PO6), sustainable design(PO7),quality of instruments decides finance of project(PO11),creative method requires life- long learning (PO12).
192EEE006T.4	Choosing a proper routing protocol need strong knowledge of Mathematics and Science(PO1), good identification of factors affects accuracy (PO2), well designed instruments (PO3), analysis of data of various measurements(PO4), week usage of IT tools(PO5), sustainable design(PO7), quality of instruments decides finance of project(PO11), minimizing error requires life- long learning (PO12).
192EEE006T.5	Selection of suitable transport layer protocol based on knowledge of Mathematics and Science(PO1), good identification of factors affects accuracy (PO2), good design of bridges (PO3), analysis of data of various measurements(PO4), week usage of IT tools(PO5), sustainable design(PO7), maintaining records of measurement(PO10),decides finance of project(PO11), factors affecting error requires life- long learning (PO12).
192EEE006T.6	Design of all types mobile and wireless network needs knowledge of Mathematics and Science(PO1), good identification of factors improves accuracy (PO2), good design of bridges (PO3), analysis of data of various measurements(PO4), week usage of IT tools(PO5), developing sustainable design(PO7), ethics towards design methods(PO8), maintaining records of measurement(PO10), decides finance of project(PO11), good design requires life- long learning (PO12).

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192CSO009T	Lecture	:	45
Subject Title	: Machine learning techniques	Tutorials	:	
Year/Semester	: I/II	Practical	:	-
Faculty Name	: S.Bhuvaneshwari	TOTAL	:	45

COURSE OBJECTIVES:

- 1.To introduce students to the basic concepts and techniques of Machine Learning.
- 2.To have a thorough understanding of the Supervised and Unsupervised learning techniques
- 3.To study the various probability based learning techniques
- 4.To understand the various dimensionality and evolutionary models
- 5.To understand graphical models of machine learning algorithms

COURSE OUTCOMES:	
Upon completion of the course, the students will be able to..	
CO1	· Distinguish between, supervised, unsupervised and semi-supervised learning
CO2	· Apply the appropriate machine learning strategy for any given problem
CO3	· Suggest supervised, unsupervised or semi-supervised learning algorithms for problem
CO4	· Design systems that uses the appropriate graph models of machine learning
CO5	· Modify existing machine learning algorithms to improve classification efficiency

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192CSO009T .1	2	3	1	2	1	1	-	-	1	2	1	2
192CSO009T .2	1	3	2	3	1	2	2	1	-	1	-	-
192CSO009T .3	3	1	3	3	2	1	1	1	1	2	1	2
192CSO009T .4	3	3	3	2	3	2	3	-	1	1	1	2
192CSO009T .5	2	3	1	3	3	2	1	1	-	1	1	-

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192CSO009T .1	-	1	1	3
192CSO009T .2	-	-	2	3
192CSO009T .3	-	-	2	2
192CSO009T .4	-	-	3	2
192CSO009T .5	-	-	2	3

JUSTIFICATION OF THE MAPPING:	
192CSO009T .1	Distinguish between, supervised, unsupervised and semi-supervised learning
192CSO009T .2	Apply the appropriate machine learning strategy for any given problem
192CSO009T .3	Suggest supervised, unsupervised or semi-supervised learning algorithms for problem
192CSO009T .4	Design systems that uses the appropriate graph models of machine learning
192CSO009T .5	Modify existing machine learning algorithms to improve classification efficiency

III SEMESTER

Course/Branch	M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	192EEE005T	Lecture	:	45
Subject Title	SOFTWARE FOR EMBEDDED SYSTEMS	Tutorials	:	
Year/Semester	II / III	Practical	:	-
Faculty Name	Mr.G.VIGNESH	TOTAL	:	45

COURSE OBJECTIVES:

1. To expose the students to the fundamentals of embedded Programming.
2. To Introduce the GNU C Programming Tool Chain in Linux.
3. To study the basic concepts of embedded C and Embedded OS
4. To introduce time driven architecture, Serial Interface with a case study.
5. To introduce the concept of embedded Java for Web Enabling of systems.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Acquire knowledge about the basics of embedded programming and could able to write program for the specified problem.
CO2	Obtain knowledge about GNU C programming and able to debug the code with GDB.
CO3	Understand embedded C and able to create program.
CO4	Infer the concepts of EOS and timer applications.
CO5	Interpret concepts of Java programming and able to write program in it.

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEE005T.1	2	2	2	3	3	-	-	-	-	-	-	2
192EEE005T.2	-	3	1	2	2	-	-	-	-	-	-	-
192EEE005T.3	1	1	2	2	2	-	-	2	-	1	1	2
192EEE005T.4	2	2	3	3	1	-	-	-	-	-	-	1
192EEE005T.5	1	-	2	-	-	2	2	-	-	-	-	1
192EEE005T	2	3	3	3	3	2	2	2	-	1	1	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEE005T.1	2	3	2	-
192EEE005T.2	-	3	2	-
192EEE005T.3	2	-	2	3
192EEE005T.4	-	-	3	2
192EEE005T.5	3	1	2	-
192EEE005T	3	3	3	3

JUSTIFICATION OF THE MAPPING:

192EEE005T.1	Understanding about the developing (PO12) (PSO4) concepts embedded programming needs basic engineering knowledge along with usage of modern computing tools for algorithm development and solving (PSO1) (PO1) (PO2) (PO3) (PO4) (PO5). Emphasis is given on Embedded C Language and its syntax (PSO2) for providing optimal solution (PSO2).
192EEE005T.2	Analyzing the various C Programming Tool chains in Linux (PSO2) (PSO3) (PO2) (PO4) and providing proper solutions for the same by interpreting the various GNU Cross Compiler tools and commands (PO5)(PO3).
192EEE005T.3	Development of optimal and effective Embedded C program requires knowledge on engineering (PSO4) (PO1) (PO12) to analyze various complex tasks (PSO1) (PO4) (PO2) such as scope of variables and debugging. Embedded C programming follows the standards in (PSO3) process of conducting investigations, interpreting of data (PO4) (PO5) and providing valid conclusion and also communicating (PO10) the need for reducing expensive resources (PO11) like on-chip memory.
192EEE005T.4	Implementing of various evolving (PO12)(PO5) Multi-state tasks provides the fundamental knowledge of computer sciences (PO1)(PO4). Design of innovative Embedded OS applications will contribute towards effective development of sustainable solutions to complex engineering challenges (PSO1) (PO1) (PO2) (PO3) (PO4) (PO5).
192EEE005T.5	Interpreting the numerous evolving applications (PO12) (PSO1) of Embedded Java with the help of fundamental knowledge of programming (PO1)(PO5) and electronic hardware components (PSO2) for development of economical and secure solutions (PO3) for the requirements of the society (PO6) (PSO3).

Course/Branch	: M.E/EMBEDDED SYSTEMS	Total no. of hours given in syllabus:		
Subject Code	: 192EEE011T	Lecture	:	45
Subject Title	: ROBOTICS AND CONTROL	Tutorials	:	
Year/Semester	: II / III	Practical	:	-
Faculty Name	: Mrs.K.A.INDU SAILAJA	TOTAL	:	45

COURSE OBJECTIVES:

- 1.To introduce robot terminologies and robotic sensors
2. To educate direct and inverse kinematic relations
3. To educate on formulation of manipulator Jacobians and introduce path planning techniques
- 4.To educate on robot dynamics
- 5.To introduce robot control techniques

COURSE OUTCOMES:

Upon completion of the course, the students will be able to..

CO1	Understand the components and basic terminology of Robotics
CO2	Apprehend on forward and inverse kinematics
CO3	Model the motion of Robots and analyze the workspace and trajectory panning of robots
CO4	Formulate models for the control of mobile robots in various industrial applications
CO5	Develop application-based Robots

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM OBJECTIVES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
192EEE011T.1	2	-	-	1	1	2	1	2	1	1	1	3
192EEE011T.2	2	-	2	-	2	2	2	-	1	1	2	2
192EEE011T.3	2	1	1	-	1	-	-	-	1	1	2	2
192EEE011T.4	2	-	1	1	2	-	2	-	1	1	1	3
192EEE011T.5	2	1	2	2	2	-	1	-	1	1	1	2
192EEE011T	2	1	2	2	2	2	1	-	1	1	2	2

MAPPING OF COURSE OUTCOMES WITH THE PROGRAM SPECIFIC OUTCOMES:

CO/PSO	PSO1	PSO2	PSO3	PSO4
192EEE011T.1	2	2	1	2
192EEE011T.2	1	2	2	2
192EEE011T.3	2	1	2	2
192EEE011T.4	2	2	2	2
192EEE011T.5	2	1	2	2
192EEE011T	2	2	1	2

JUSTIFICATION OF THE MAPPING:

192EEE011T.1	Design of wireless network requires medium knowledge of engineering fundamentals (PO1), week design solution for application(PO4), week usage of IT tools(PO5), medium contribution towards society (PO6), sustainable design(PO7),multidisciplinary team work(PO9), quality of instruments decides finance of project(PO11), requires life- long learning about instruments(PO12).
192EEE011T.2	Selection of suitable mobile networks requires medium knowledge of engineering (PO1), good formulation of factors affects error(PO2), design methodologies (PO3), interpretation of data at various conditions(PO4), week usage of IT tools(PO5), week contribution towards society(PO6), sustainable design(PO7),ethics towards calibration methods(PO8),maintain reports of calibration(PO10), strongly requires life- long updation of calibration procedure(PO12).
192EEE011T.3	Selection of proper wireless networks needs strong knowledge of Mathematics and Science(PO1), good identification of factors improves accuracy (PO2), well designed instruments (PO3), analysis of data at various conditions(PO4), week usage of IT tools(PO5), week contribution towards society(PO6), sustainable design(PO7),quality of instruments decides finance of project(PO11),creative method requires life- long learning (PO12).
192EEE011T.4	Choosing a proper routing protocol need strong knowledge of Mathematics and Science(PO1), good identification of factors affects accuracy (PO2), well designed instruments (PO3), analysis of data of various measurements(PO4), week usage of IT tools(PO5), sustainable design(PO7), quality of instruments decides finance of project(PO11), minimizing error requires life- long learning (PO12).
192EEE011T.5	Selection of suitable transport layer protocol based on knowledge of Mathematics and Science(PO1), good identification of factors affects accuracy (PO2), good design of bridges (PO3), analysis of data of various measurements(PO4), week usage of IT tools(PO5), sustainable design(PO7), maintaining records of measurement(PO10),decides finance of project(PO11), factors affecting error requires life- long learning (PO12).