CO-PO Attainment and Mapping (CSE Department) 2022-23

Course Details:

Course Name:	Data Structure & Algorithm
Course Code:	PCC-CS301
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	3 rd Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	To learn and apply the basics of abstract data types.
CO2	To learn and apply the principles of linear and nonlinear data structures.
CO3	To build an application using sorting and searching.
CO4	Design applications with the knowledge of computation and principles of data structures.

Data Structure &		СО	Attainment
Algorithm	CO1	To learn and apply the	
		basics of abstract data types.	84%
	CO2	To learn and apply the	
		principles of linear and	85%
		nonlinear data structures.	
	CO3	To build an application	
		using sorting and searching.	88%
	CO4	Design applications with the	
		knowledge of computation	95%
		and principles of data	
		structures.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
CO1												
CO2												
CO3					V							
CO4					$\sqrt{}$							

Course Name:	Data Structure & Algorithm Lab
Course Code:	PCC-CS391
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	3 rd Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Design and develop programs using data structure & algorithm concepts.
CO2	Develop simple applications using linear and non-linear data structures & algorithmsconcepts and understand the access mechanisms and other use and functionalities.
CO3	Implement searching and sorting concepts
CO4	Implement the concepts of graph and hashing

Data Structure &		СО	Attainment
Algorithm Lab	CO1	Design and develop	
		programs using data	86%
		structure & algorithm	
		concepts.	
	CO2	Develop simple applications	
		using linear and non-linear	
		data structures & algorithms	0504
		concepts and understand the	87%
		access mechanisms and	
		other use and	
		functionalities.	
	CO3	Implement searching and	
		88%	
	CO4	Implement the concepts of	
		graph and hashing	92%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P	PO12
											О	
											11	
CO1	V	$\sqrt{}$	$\sqrt{}$									
CO2		$\sqrt{}$										
CO3												
CO4		$\sqrt{}$										

Course Name:	Computer Organization
Course Code:	PCC-CS302
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	3 rd Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.
CO2	Understand basic structure of different combinational circuits- multiplexer, decoder, encoder etc.
CO3	Perform different operations with sequential circuits.
CO4	Understand memory and I/O operations.

Computer		CO	Attainment
Organization	CO1	Understand basic structure	84%
		of digital computer, stored	
		program concept and	
		different arithmetic and	
		control unit operations.	
	CO2	Understand basic structure	86%
		of different combinational	
		circuits- multiplexer,	
		decoder, encoder etc.	
	CO3	Perform different operations	87%
		with sequential circuits.	
	CO4	Understand memory and	93%
		I/O operations.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2					$\sqrt{}$		$\sqrt{}$					
CO3									V			
CO4												

Course Name:	Computer Organization Lab
Course Code:	PCC-CS392
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	3 rd Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.
CO2	Understand basic structure of different combinational circuits- multiplexer, decoder, encoder etc.
CO3	Perform different operations with sequential circuits.
CO4	Understand memory and I/O operations.

Computer		CO	Attainment
Organization Lab	CO1	Understand basic structure	84%
		of digital computer, stored	
		program concept and	
		different arithmetic and	
		control unit operations.	
	CO2	Understand basic structure	85%
		of different combinational	
		circuits- multiplexer,	
		decoder, encoder etc.	
	CO3	Perform different operations	87%
		with sequential circuits.	
	CO4	Understand memory and	94%
		I/O operations.	

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2					$\sqrt{}$		$\sqrt{}$					
CO3									V			
CO4												

Course Details:

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Course Name:	Compiler Desig
Juli se Maille.	Complici Design

Course Code:	PCC-CS501
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

	<u>.</u>
CO1	To apply the basic concept of compilers and discuss on the components as well as
	the strengths and weaknesses of various phases of designing a compiler.
CO2	To understand the role of finite automata in compiler design.
CO3	To design and analyze algorithms for syntactic or parsing techniques and semantic
	analysis of the process of designing compilers.
CO4	Apply the knowledge of Type Checking and Run-Time Environments in designing a
	compiler.
CO5	Apply the knowledge of Intermediate Code Generation, Code Optimization and
	Code Generations in designing a compiler.

		СО	Attainment
	CO1	To apply the basic concept of compilers and discuss on the components as well as the strengths and weaknesses of various phases of designing a compiler.	84%
	CO2	To understand the role of finite automata in compiler design.	85%
Compiler Design PCC-CS501	CO3	To design and analyze algorithms for syntactic or parsing techniques and semantic analysis of the process of designing compilers.	86%
	CO4	Apply the knowledge of Type Checking and Run- Time Environments in designing a compiler.	87%
	CO5	Apply the knowledge of Intermediate Code Generation, Code Optimization and Code Generations in designing a compiler.	92%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3			V							V		
CO4												
CO5					V	V	V				V	

Course Details:

Course Name:	Operating Systems
Course Code:	PCC-CS502
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

CO1	Understand processes and threads.
CO2	Design algorithms for process scheduling for a given specification of CPU
	utilization, Throughput, Turnaround Time, Waiting Time and Response Time.
CO3	For a given specification of memory organization develop the techniques for
	optimally allocating memory to processes by increasing memory utilization and for
	improving the access time. Design and implement file management system.

		СО	Attainment
	CO1	Understand processes and	84%
		threads.	
Operating Systems	CO2	Design algorithms for	85%
		process scheduling for a	
		given specification of CPU	
		utilization, Throughput,	
		Turnaround Time, Waiting	
		Time and Response Time.	
CO3		For a given specification of	88%
		memory organization	
		develop the techniques for	
		optimally allocating	
		memory to processes by	
		increasing memory	
		utilization and for	
		improving the access time.	
		Design and implement file	
		management system.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1 2
CO1					$\sqrt{}$		V					
CO2										$\sqrt{}$		
CO3			$\sqrt{}$	$\sqrt{}$			V			V		

Course Details:

Course Name:	Operating System Lab
Course Code:	PCC-CS592
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	To Analyze different aspects of Linux.
CO2	To Create or design different scripts using shell programming.
CO3	To Create or design different scripts using shell programming.
CO4	Create shared memory with the implementation of reading from, write into shared
	memory.

		CO	Attainment
	CO1	To Analyze different	85%
		aspects of Linux.	
Operating System	CO2	To Create or design	86%
Lab		different scripts using shell	
PCC-CS592		programming.	
	CO3	To Create or design	87%
		different scripts using shell	
		programming.	
	CO4	Create shared memory with	90%
		the implementation of	
		reading from, write into	
		shared memory.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1
												2
CO1												
CO2			V							V		
CO3										$\sqrt{}$		
CO4				V								

Course Details:

Course Name:	Object Oriented Programming
Course Code:	PCC-CS503
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Specify simple abstract data types and design implementations, using abstraction
	functions to document them.
CO2	Recognize features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity
CO3	Name and apply some common object-oriented design patterns and give examples of their use
CO4	Design applications with an event-driven graphical user interface.

		CO	Attainment
	CO1	Specify simple abstract data	81%
		types and design	
Object Oriented		implementations, using	
Programming		abstraction functions to	
		document them.	
	CO2	Recognize features of	84%
		object-oriented design such	
		as encapsulation,	
		polymorphism, inheritance,	
		and composition of systems	
		based on object identity	
	CO3	Name and apply some	88%
		common object-oriented	
		design patterns and give	
		examples of their use	
	CO4	Design applications with an	93%
		event-driven graphical user	
		interface.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1 2
CO1												
CO2												
CO3												
CO4					V							

Course Details:

Course Name:	Object Oriented Programming Lab
Course Code:	PCC-CS593
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Design and develop java programs using object oriented programming concepts
CO2	Develop simple applications using object oriented concepts such as package, exceptions
CO3	Implement multi-threading, and generics concepts
CO4	Create GUIs and event driven programming applications for real world problems

Object Oriented		CO	Attainment
Programming Lab (PCC-CS593)	CO1	Design and develop java programs using object oriented programming concepts	84%
	CO2	Develop simple applications using object oriented concepts such as package, exceptions	87%
	CO3	Implement multi-threading, and generics concepts	90%
	CO4	Create GUIs and event driven programming applications for real world problems	95%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V									
CO2	$\sqrt{}$	$\sqrt{}$										
CO3					V							
CO4					V							

Course Details:

Course Name:	Software Engineering
Course Code:	ESC 501
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Apply basic SW engineering methods and practices different models, and their appropriate application, SRS Document.
CO2	Determine the role of project management including planning, scheduling, risk management, etc.
CO3	An understanding of software testing approaches such as unit testing and integration testing.
CO4	An understanding of software evolution and related issues such as version management.

		СО	Attainment
Software Engineering	CO1	Apply basic SW engineering methods and practices different models, and their appropriate application, SRS Document.	81%
	CO2	Design the role of project management including	
		planning, scheduling, risk management, etc.	83%
	CO3	An understanding of software testing approaches such as unit testing and integration testing.	86%
	CO4	An understanding of software evolution and related issues such as version management.	87%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	V				V							
CO2			V	V						$\sqrt{}$		
CO3					V		$\sqrt{}$					
CO4					V		$\sqrt{}$					

Course Details:

Course Name:	Economics for Engineers
Course Code:	HSMC301
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	3 rd Semester

COURSE OUTCOME:

CO1	Analyze the economic decisions making, engineering costs & estimation and classification of costs by applying the knowledge of estimating models. Student will develop an understanding of cash-flow, Rate of return analysis in different socioenvironmental situations.	83 %
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HSMC301 Economics for Engineers	CO2	Analyze the inflation and price change would be done to the students for the proper understanding of the price-indexes in economic analysis. Effect of inflation & deflation is analyzed to them to remember and if required to apply in real-life scenarios.	86%
	CO3	Recognize the types of property, depreciation and expenses and its impact on business, for better understanding of the business environment and apply the knowledge of it.	89 %

Mapping of Course Outcomes and Program Outcomes for the subject Economics for Engineers (HSMC301)

Course		ProgramOutcome											
Outcome		S											
S													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	
												2	
CO1		✓		✓									
CO2		√		✓									
CO3							✓					√	

Course Details:

Course Name:	Artificial Intelligence
Course Code:	PEC-IT501B
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

Paper Code (Name)	CO Number	CO Number CourseOutcomes (CO)				
PEC-IT501B Artificial Intelligence	CO1	Apply the good programming skill to formulate the solutions for computational Problems.	84%			
	CO2	Design and develop solutions for informed and uninformed search-problems in AI.	86%			
	CO3	Understand and enrich knowledge to select and apply AI tools to synthesize information and develop models within constraints of application area.	94%			

Mapping of Course Outcomes and Program Outcomes for the Artificial Intelligence

Course Outcomes		Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	√				✓	✓					✓		
CO2			✓	✓						✓			
CO3					√		√						

Course Details:

Course Name:	Industrial Management
Course Code:	
	HSMC501
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

Paper Code (Name)	CO Number	Course Outcomes (CO)	ATTAINED
	CO1	Analyze the concept of innovation	77%
		And entrepreneurship, contributions of entrepreneurs to the society, risk Opportunities perspective by applying the knowledge of factors affecting them.	
HSMC501, Industrial Management	CO2	Analyze the project management issues, Find the problems in project life cycle.	87%
	CO3	Identification and illustration of The critical path and its significance, types Of floats and Slacks and its impact on business, for better understanding of the recent trends and Apply the knowledge of it.	91%

 $Mapping of Course Outcomes and Program Outcomes for the subject Industrial Management \ (HSMC 501)$

Course		Program										
Outcomes		Outcomes										
	PO	PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12										
	1											
CO1		✓		✓								
CO2		√		✓								
CO3		✓					✓					

Course Name:	Introduction to philosophical thoughts
Course Code:	PEC-IT501B
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	5 th Semester

Paper Code (Name)	CO Number	Course	ATTAINED
		Outcomes(CO)	
PEC-IT501B Introduction to Philosophical thoughts	CO1	Identify the evaluation Of the history of philosophy.	77%
	CO2	Identify religious concepts, traditions, And historical practices Overtime and across cultures.	86%
	CO3	Analyze course-related Material to evaluate the Historical development Of contemporary issues.	87%

Mapping of Course Outcomes and Program Outcomes for the subject Philosophical thoughts (OEC-CS701B/C)

Course Outcomes		Program Outcomes										
	PO1	D1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12										
CO1		√										
CO2		√										
CO3		✓		✓								

Course Name:	Cloud Computing
Course Code:	PEC-CS701B
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	7 th Semester

Paper Code (Name)	CO Number	Course Outcomes (CO)	ATTAINED
PEC-CS701B Cloud Computing	CO1	Understand the fundamental principles of distributed Computing.	87%
	CO2	Understand the importance of Virtualization in Distributed computing And how this has enabled the development of Cloud Computing	88%
	CO3	Identify and define Technical challenges for Cloud applications and Assess their importance.	91%

Mapping of Course Outcomes and Program Outcomes for the subject Cloud Computing (PEC- CS701B)

Course	Program											
Outcomes		Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							✓					
CO2							√					
CO3		√										

Course Name:	Cyber Security
Course Code:	PEC-CS 702E
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	7th Semester

Paper Code (Name)	CO Number	Course	ATTAINED
		Outcomes (CO)	
PEC-CS702E Cyber Security	CO1	Recognize And analyze software vulnerabilities and security solutions to reduce the risk Of exploitation.	88%
	CO2	Design operational And strategic cyber Security strategies and policies.	89%
	CO3	Implement cyber Security solutions and use Of cyber security, information assurance, and cyber /computer Forensic software/tools.	91%

Mapping of Course Outcomes and Program Outcomes for the subject Cyber Security (PEC- CS702E)

Course	Program											
Outcomes		Outcomes										
	PO1	O1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12										
CO1		✓		✓								✓
CO2			√	√								
CO3				√								

Course Name:	Project Management and Entrepreneurship
Course Code:	HSMC701
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	7th Semester

Paper Code(Name	CO Number	Course Outcomes(CO)	ATTAINED
	CO1	Analyze the concept to innovation and entrepreneurship, contributions of entrepreneurs to the society, risk-opportunities perspective by applying the knowledge of factors affectingthem.	77%
HSMC701, Project Management and Entrepreneurship	CO2	Analyze the project management, issues and problems in project management, project life cycle-initiation/conceptualization phase, determination of project feasibility studies will be done to the students for their proper Understanding of social cost benefit analysis.	86%
CO3		Identify and recognize the critical path and its significance, types of floatsand slacks and its impact on business, for better understanding of the recent trends and apply the knowledge of it.	89%

Mapping of Course Outcomes and Program Outcomes for the subject Project Management and Entrepreneurship (HSMC701)

Course		Program										
Outcomes		Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		✓		✓								
CO2		√		✓								
CO3		✓										√

Course Name:	Design and Analysis of Algorithms
Course Code:	PCC-CS404
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	4 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	To analyze and identify the Complexity of a problem and compute the recurrence relation.
CO2	To analyze the several algorithms design techniques on some certain problems using divide &conquer method, dynamic programming approach and backtracking, greedy method.
CO3	To understand lower bound theory, graph traversal algorithm, network flow, disjoint set manipulation different method.
CO4	To design the algorithm of string matching problem, matrix manipulation algorithm.
CO5	To understand amortize analysis, approximation algorithm, notion of NP-completeness.

		CO	Attainment
	CO1	To analyze and identify the	
		Complexity of a problem	83%
Design and Analysis of		and compute the recurrence relation.	
Algorithms	CO2	To analyze the several	
(PCC-CS404)		algorithms design	84%
		techniques on some certain	
		problems using divide &	
		conquer method, dynamic	
		programming approach and	

	backtracking, greedy method.	
CO	3 To understand lower	
	boundtheory, graph traversal algorithm, network flow, disjoint setmanipulation different method.	85%
СО	To design the algorithm of string matching problem, matrix manipulation algorithm.	86%
СО	To understand amortize analysis, approximation algorithm, notion of NP-completeness.	93%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		V										
CO2		V	V	V						V		
CO3					V		V					
CO4			V	7						V		V
CO5					7		1					

Course Name:	Design and Analysis of Algorithm Lab
Course Code:	PCC-CS494
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	4 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Design algorithm and implement C program using divide and conquer approach in Computer Scienceand Engineering and related fields.
CO2	Design algorithm and implement C program using dynamic programming in Computer Science and Engineering and related fields.
CO3	Design algorithm and implement C program using branch and bound method in Computer Scienceand Engineering and related fields.
CO4	Design algorithm and implement C program using backtracking in Computer Science and Engineering and related fields.
CO5	Design algorithm and implement C program using greedy method in Computer Science and Engineering and related fields.
CO6	Design Graph Traversal Algorithm and implement C program in Computer Science and Engineeringand related fields.

CO Attainment

	CO	Attainment
Design and Analysis of Algorithm Lab (PCC-CS494)	Design algorithm and implement C program using divide and conquer approach in Computer Science and Engineering and related fields.	86%
	Design algorithm and implement C program using dynamic programming in Computer Science and Engineering and related fields.	87%
	Design algorithm and implement C program using branch and bound method in Computer Science and Engineering and related fields.	88%

CO4	Design algorithm and implement C program using backtracking in Computer Science and Engineering and related fields.	90%
CO5	Design algorithm and implement C program using greedy method in Computer Science and Engineering and related fields.	91%
CO6	Design Graph Traversal Algorithm and implement C program in Computer Science and Engineering and related fields.	93%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V	V						V		
CO2			V	V						V		
CO3			V	V						V		
CO4			V	V						V		
CO5			V	V						V		
CO6			1	V						V		

Course Name:	Computer Architecture
Course Code:	PCC-CS402
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	4 th Semester

COURSE OUTCOME:

CO1	Design pipelining concepts with a prior knowledge of stored program methods
CO2	Design about memory hierarchy and mapping techniques
CO3	Understand parallel architecture and interconnection network

		CO	Attainment
	CO1	Design pipelining concepts	
		with aprior	83%
C		knowledge of	
Computer Architecture		stored program methods	
(PCC-CS402)	CO2	Design about memory	
		hierarchyand mapping	85%
		techniques	
	CO3	Understand parallel	
		architecture and interconnection network	93%

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			7	7						V		
CO2			7	7						V		
CO3					V		V					

Course Details

Course Name:	Computer Architecture Lab
Course Code:	PCC-CS492
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	4 th Semester

COURSE OUTCOME:

CO1	Design pipelining concepts with a prior knowledge of stored program methods
CO2	Design about memory hierarchy and mapping techniques
CO3	Understand of parallel architecture and interconnection network

Computer		CO	Attainment
Architecture Lab (PCC-CS492)	CO1	Design pipelining concepts with a prior knowledge of stored program methods	85%
(100 004)2)	CO2	Design about memory hierarchy and mapping techniques.	90%
	CO3	Understand of parallel architecture and interconnection network	93%

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V	V						V		
CO2			1	V						V		
CO3					V		V					

Course Details

Course Name:	Formal Language & Automata
Course Code:	PCC-CS403
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	4 th Semester

COURSE OUTCOME:

CO1	Formulate a formal notation for strings, languages and machines.
CO2	Design finite automata to accept a set of strings of a language
CO3	For a given language understand whether the given language is regular or not.
CO4	Design context free grammars to generate strings of context free language.
CO5	Understand equivalence of languages accepted by Push Down Automata and languages generated bycontext free grammars
CO6	Analyze the hierarchy of formal languages, grammars and machines.
CO7	Recognize between computability and non-computability and Decidability and undecidability.

		CO	Attainment
Formal Language & Automata PC	CO1	Formulate a formal notation for strings, languages and machines.	82%
C-CS403)	CO2	Design finite automata to accept aset of strings of a language	85%
	CO3	For a given language understand whether the given language isregular or not.	85%
	CO4	Design context free grammars togenerate strings of context free language.	86%
	CO5	Understand equivalence of languages accepted by Push Down Automata and languages generated by context free grammars	86%
	CO6	Analyze the hierarchy of formallanguages, grammars and machines.	88%
	CO7	Recognize between computability and non-computability and Decidability and undecidability.	88%

Mapping of Course Outcomes and Program Outcomes for the subject Formal

Language & AutomataPCC-CS403

Course		Program										
Out comes		Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		√										
CO2			√	✓						✓		
CO3					✓		✓					
CO4			√	√						✓		
CO5					✓		✓					
CO6		√										
CO7												✓

Course Name:	DBMS
Course Code:	PCC-CS601
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	6 th Semester

Course Outcomes

On completion of the course students will be able to

- 1. Analyze a given query using relational algebra expressions and SQL for that query and optimize the developed expressions.
- 2. Design a given specification of the requirement design the databases using E R method and normalization.
- 3. Formulate a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.
- 4. Implement the isolation property, including locking, time stamping based on concurrency control and Serializability ofscheduling.

		CO	Attainment
DBMS	CO1	Analyze a given query using relational algebra expressions and SQL for that query and optimize the developed expressions.	85%
	CO2	Design a given specification of the requirement to design the databases.	86%
	CO3	Formulate a given transaction- processing system, determine the transaction, atomicity, consistency, isolation, and durability.	94%
	CO4	Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.	96%

CO – PO Mapping

Course Outcome s		Program Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12
										0		
CO1		√										
CO2			✓	✓						√		
CO3		✓										
CO4				✓								

Course Details

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Course Name:	DBMS LAB
Course Code:	PCC-CS691
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	6 th Semester

		CO	Attainment
	CO1	Understand HTML and	
		Infer database language	83%
		commands to create simple	
		database.	
DBMS LAB	CO2	Analyze the database	
		usingqueries to	
		retrieve records.	86%
	CO3	Applying PL/SQL for	
		processing database.	91%
	CO4	Develop solutions using	
		database concepts for real	95%
		time requirements.	
		_	

CO - PO Mapping

Course			Pro	gram (Outcor	nes						
Out												
comes												
	PO1	PO2	PO3	PO4	PO	PO	PO7	PO8	PO9	PO1	PO1	PO12
					5	6				0	1	
CO1					√		✓					
CO2		√								✓		
CO3	√				√	√					✓	
CO4							√					

Course Details:

Course Name:	Computer Networks
Course Code:	PCC-CS602
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	6 th Semester

COURSE OUTCOME:

CO1	To develop an understanding of modern network s from a design and performance perspective.
CO2	To introduce the student to the major concepts involved in wide-area networks (WANs), local areanetworks (LANs) and Wireless LANs (WLANs)
CO3	To provide an opportunity to do network programming
CO4	To provide a WLAN measurement ideas.

		СО	Attainment
Computer Networks(PCC- CS602)	CO1	To develop an understanding of modern network s from a designand performance perspective.	83%
	CO2	To introduce the student to the major concepts involved in wide- area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs)	86%
	CO3	To provide an opportunity to do network programming	88%
	CO4	To provide a WLAN measurement ideas.	93%

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V		V							
CO2	V	V			V							
CO3				V	V							
CO4				V	7							

Course Details:

Course Name:	
	Computer Networks Lab
Course Code:	PCC-CS692
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	6 th Semester

COURSEOUTCOMES

After completion of course, students would be able to:

- 1. Identify and use various networking components.
- 2. Analyze performance of various communication protocols.
- 3. Understandthetransportlayerconceptsandprotocoldesignincludingconnectionorientedan dconnection-less models.
- 4. Implement device sharing on network.

Paper Code (Name)	CO Number	Course Outcomes (CO)	ATTAINED
Computer Networks Lab	CO1	Identify and understand of various networking components.	81%
Code: PCC- CS692	CO2	Analyze the performance of various communication protocols.	85%
	CO3	Understand the transport Layer concepts and Protocol design including Connection oriented and Connectionless models.	88%
	CO4	Implement device sharing On network.	93%

Mapping of Course Outcomes and Program Outcomes for the subject Computer Network Lab (PCC-CS692)

Course Outcomes		Program Outcomes									
	PO1	01 PO2 PO3 PO PO5 PO6 PO PO8 PO9 PO10 PO11 PO12									
				4			7				
CO1		V					7				
CO2		V		1							
CO3							V				
CO4				V							

Course Details:

Course Name:	Research Methodology
Course Code:	PROJ-CS601
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	6 th Semester

Paper Code (Name)	CO Number	Course	ATTAINED
		Outcomes (CO)	
PROJ-CS601 Research Methodology	CO1	Identify and discuss the issues and concepts Salient to the research process.	81%
	CO2	Analysis of complexissues inherent in Selecting a Research problem, selecting an Appropriate research design, and implementing a Research project.	92%

CO3	Understand, comprehend and Explain research Articles in their Academic discipline.	93%

Mapping of Course Outcomes and Program Outcomes for the subject Research Methodology (PROJ-CS601)

Course	Program											
Out		Outcomes										
comes												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		✓										
CO2		>		✓								
CO3							√					

Course Name:	Image Processing
Course Code:	PEC-IT601D
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	6 th Semester
Name of Faculty	Suman Halder

COURSE OUTCOME:

CO1	Review the fundamental concepts of a digital image processing system.
CO2	Analyze images in the spatial and frequency domain using various transforms.
CO3	Evaluate the techniques for image enhancement and image restoration.
CO4	Interpret image segmentation and representation techniques.

Paper	СО	Course	ATTAINED		
Code (Name)	Number	Outcomes (CO)			
Image Processing	CO1	Review the fundamental concepts of a digital image processing system.	83%		
(PEC-IT601D)	CO2	Analyze images in the spatial and frequency domain using various transforms.	85%		
	CO3	Evaluate the techniques for image enhancement and image restoration.	93%		
	CO4	Interpret image segmentation and representation techniques.	94%		

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V		V							
CO2	V	V			V							
CO3				V	V							
CO4				V	V							

Course Details

Course Name:	Pattern Recognition
Course Code:	PEC-IT602D
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	6 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	Understand and compare a variety of pattern classification, structural pattern recognition and pattern classifier combination techniques.
CO2	Summarize, analyze, and relate research in the pattern recognition area verbally and in writing.
CO3	Apply performance evaluation methods for pattern and critique comparisons of techniques made in the research literature.
CO4	Apply pattern recognition techniques to real-world problems such as document analysis andrecognition.
CO5	Implement simple pattern classifiers, classifier combinations and structural pattern recognizers.
CO6	Able to manipulate Bayes' Classifier and implement Decision Trees.

	CO1	CO	Attainment
Pattern Recognition PEC-IT602D		Understand and compare a variety of pattern classification, structural pattern recognition and pattern classifier combination techniques.	81%
	CO2	Summarize, analyze, and relate research in the pattern recognition area verbally and in writing.	83%
	CO3	Apply performance evaluation methods for pattern and critique comparisons of techniques made in the research literature.	84%
	CO4	Apply pattern recognition techniques to real-world problems such as document analysis and recognition.	85%
	CO5	Implement simple Pattern classifiers, classifier combinations and structural pattern recognizers.	86%

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					7		V					
CO2		V		7								
CO3	V				7	V					V	
CO4					7	V					$\sqrt{}$	
CO5				7								

Course Details

Course Name:	Human ResourceDevelopment andOrganizational Behavior
Course Code:	OEC-IT601B
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	6 th Semester

Paper Code (Name)	CO Number	Course Outcomes (CO)	ATTAINED
Human Resource Development and Organizational Behavior (OEC-IT601B)	CO1	Understand the organizational structures, the Features and principles of organization. Analysis of the theories of motivation, and Applying the knowledge in the organizational Level and in different socio-environmental Legal situations.	83%

CO2	Understand and recognize different leadership in different social situations. Analysis of concept of Group Dynamic be done towards the students for their proper understanding and to apply in real-life scenarios.	85%
CO3	Recognize the factors of organizational Change and its impact on business, better Understanding of the business environment With respect to resistance to change and apply The knowledge of it in different problems.	89%

Mapping of Course Outcomes and Program Outcomes for the subject Human Resource Development and Organizational Behavior (OEC-IT601B)

Course Outcomes		Program Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		√		√			√					
CO2		✓		√			√					
CO3							√					✓

Course Details

Course Name:	Cryptography & Network Security
Course Code:	CS 801D
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	8 th Semester

Cryptography & Network Security (CS801D)

Course Outcomes:

CO1: To be able to identify common network security vulnerabilities/attacks; explain the foundations of Cryptography and network security.

CO2: To be able to analyze the risks and threats to networked computers.

CO3: To be able to demonstrate detailed knowledge of the role of encryption to protect data.

CO4: To be able to analyze security issues arising from the use of certain types of technologies.

CO5: To be able to identify the appropriate procedures required to secure networks, system security testing and procedures of Backup and Recover.

	CO1	CO	Attainment
Cryptography & Network Security (CS801D)		To be able to identify common network security vulnerabilities/attacks; explain the foundations of Cryptography and network security.	81%
	CO2	To be able to analyze the risks and threats to networked computers.	82%
	CO3	To be able to demonstrate detailed knowledge of the role of encryption to protect data.	84%
	CO4	To be able to analyze security issues arising from the use of certain types of technologies.	91%
	CO5	To be able to identify the appropriate procedures required to secure networks, system security testing and procedures of Backup and Recover.	93%

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		V										
CO2		V		V								
CO3	7	V				7	V					
CO4		V		√								
CO5		V										

Course Details:

Course Name:	E-Commerce & ERP
Course Code:	OEC-CS802A
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	8 th Semester

COURSE OUTCOME:

On successful completion of this course, students should be able to:

CO1	To identify and differentiate various types of Ecommerce.
CO2	To define and understand E-business and its Models.
CO3	To apply appropriate techniques and resources of Hardware and Software Technologies for Ecommerce.
CO4	To understand the basic concepts of ERP and identify different technologies used in ERP.
CO5	To apply different tools used in ER.

CO Attainment

		CO	Attainment
	CO1	To identify and differentiate various types of Ecommerce.	80%
E-Commerce & ERPOEC-	CO2	To define and understandE- business and its Models.	83%
CS802A	CO3	To apply appropriate techniques and resources of Hardware and Software Technologies for Ecommerce.	86%
	CO4	To understand the basic conceptsof ERP and identify different technologies used in ERP.	87%
	CO5	To apply different tools used in ER Diagram.	88%

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				V								
CO2					V		V					
CO3	$\sqrt{}$				V	V					\checkmark	
CO4					V		V					
CO5	$\sqrt{}$				V	V					V	

Course Details:

Course Name:	Soft Skill &Interpersonal
	Communication
Course Code:	OEC-CS801E
Name of the Program:	B. Tech
Department	Computer Science Engineering
Semester	8 th Semester

Paper Code (Name)	CO Number	Course Outcomes (CO)	ATTAINED
OEC-CS801E, Soft Skill &Interpers	CO1	Understand the importance of Behavioral aspects in the workplace	80%
onal Communication	CO2	Recognize the conflict resolution skillsat work	83%
	CO3	Understand the importance of Communication skills in daily life And at work	87%

Mapping of Course Outcomes and Program Outcomes for the subject Soft Skill &Interpersonal Communication (OEC-CS801E)

Course Outcom		Program Outcomes										
es												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		102										
CO1							√					
CO2												√
CO3							√					

Course Details:

Course Name:	BIOLOGY
Course Code:	BSC-401
Name of the Program:	B.Tech
Department	Computer Science Engineering
Semester	8 th Semester

PAPER NAME	CO No.	Course Outcomes	Attainment
BIOLOGY (BSC-401)	CO1	Describe how biological observations of 18th century lead to major discoveries and understand that the classification of organisms is based on morphological, biochemical or ecological parameters.	83%

		0.50/
	Highlight the concepts	85%
	ofexcessiveness and	
CO2	dominance during the	
	passage of genetic	
	material from parent to	
	offspring.	
	Convey that all forms	87%
	oflife have the same	
CO3	building blocks and	
	yet the manifestations	
	are	
	diverse.	
	Classify enzymes and	88%
	distinguish between	
	different mechanisms	
CO4	of enzyme action and	
	identify DNA as a	
	geneticmaterial in the	
	molecular	
	basis of	
	information	
	transfer.	
	Analyze biological	89%
	processes at the	
CO5	reductionist level	
	andapply	
	thermodynamic	
	principals to the	
	biological systems.	

Mapping of Course Outcomes and Program Outcomes for the subject BIOLOGY (BSC-401)

Course			Pro	gram C	Outcom	nes						
Outcom												
es												
	PO1	PO2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					√		✓					
CO2				✓			>					>
CO3		√										√
CO4												√
CO5		√										

2022-2023

Paper Code (Name)	COs	COURSE OUTCOMES(COs)	ATTAINED (%)
		3 RD SEMESTER	
	CO1	Differentiate the conduction techniques in semiconductor materials	70%
EC301 (Electronic Devices)	CO2	Analyze characteristics of semiconductor diodes, bipolar transistors, Mos- Transistors and solve problems.	70%
,	CO3	Differentiate between different Opto-electronic devices	70%
	CO1	Convert various number system and apply logic gates, Boolean algebra and K-Map to design digital circuits.	71%
EC302 (Digital System Design)	CO2	Design the digital combinational circuits likes decoders, encoders, multiplexers and de-multiplexers, half adder, full adder and compare their performance to optimize production cost and also develop sequential digital circuits like flip-flop, register, counter to design memory device.	71%
	CO3	Illustrate the knowledge of ROM,RAM,PROM,PLD,FPGA,TTL,CMOS and ECL apply them to design VLSI system.	71%
EC303	CO1	Analyze different types of signals.	55%
(Signals & Systems)	CO2	Represent continuous and discrete systems in time and frequency domain using different transforms.	55%
	CO3	Investigate whether the system is stable.	55%
	CO4	Sampling and reconstruction of a signal.	55%
7000	CO1	Apply all the electrical network theories and the concept of resonance to typical electric circuits with AC & DC sources to solve problems related to electronics & Communication Engineering	70%
EC304 Network Theory	CO2	Apply Laplace transform technique to analyze complex electrical circuits in s domain and solve for voltage & current values related to electronics & communication Engineering.	70%
	CO3	Apply the knowledge of any set of two-port parameters for circuit analysis, & measurement of different parameters and convert one set of two-port parameters to another.	70%
ES-CS301	CO1	Implementation of different data structures efficiently.	75%

	1	4 TH SEMESTER	
	CO4	Implement the concepts of graph and hashing concepts for problem solving.	
	CO3	Implement searching and sorting concepts for problem solving.	81%
ESCS391 Data Structure Lab	CO2	Develop simple applications using linear and non-linear data structures & algorithms concepts and understand the access mechanisms and other use and functionalities.	81%
	CO1	Design and develop programs using data structure & algorithm concepts.	81%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Digital System Design Lab.	88%
В	CO4	Analyze data and draw conclusion related to Digital System Design Lab.	88%
Digital System Design	CO3	Conduct actual experiment related to Digital System Design Lab.	88%
EC392	CO2	Generate experimental Data related to Digital System Design Lab.	88%
	CO1	Organize/Design the experiment related to Digital System Design Lab.	88%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Solid State Device Lab.	81%
,	CO4	Analyze data and draw conclusion related to Solid State Device Lab.	81%
Electronic Devices Lab.)	CO3	Conduct actual experiment related to Solid State Device Lab.	81%
EC391	CO2	Generate experimental Data related to Solid State Device Lab.	81%
	CO1	Organize/Design the experiment related to Solid State Device Lab.	81%
	CO3	The statistical methods of studying data samples.	73%
Statistics(BS)	CO2	The basic ideas of statistics including measures of central tendency, correlation and	73%
BS-M301 Probability &	CO1	The students will learn: The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.	73%
	CO3	Usage of appropriate data structures for problem solving.	75%
Data Structure & Algorithm (ES)	CO2	Usage of well-organized data structures to handle large amount of data.	75%

	CO1	Design system components for amplitude modulation techniques that meet the specified needs with appropriate consideration relevant to complex analog communication systems	72%
EC401 Analog Communication	CO2	Analyze system components and calculate the corresponding values for nonlinear communication systems that meet the specified needs with appropriate consideration relevant to complex analog communication systems.	72%
	CO3	Analyze a stereo and a multiplexed system as applied to audio, analog or digital communication respectively.	72%
	CO4	Analyze noise parameters and compare signal to noise ratio for analog modulation techniques reaching substantiated conclusions on the performance of analog communication systems.	72%
EC402 Analog Electronic	CO1	Understand the characteristics of diodes and transistors and design and analyse various rectifier and amplifier circuit.	75%
Circuits	CO2	Understand the functioning of OP-AMP and design OP-AMP based circuits, Oscillators and multivibrators.	75%
EC403 Microprocessor &	CO1	Students will be able to do assembly language programming using 8085/8086 and interfacing design of peripherals like I/O, A/D, D/A, Timer etc.	78%
Microcontrollers	CO2	Students will be able to distinguish and analyze the properties of microcontroller	78%
	CO1	To analyze and identify the Complexity of a problem and compute the recurrence relation.	75%
ESCS401 Design and Analysis	CO2	To analyze the several algorithms design techniques on some certain problems using divide & conquer method, dynamic programming approach, backtracking, greedy method.	75%
of Algorithm	CO3	To understand lower bound theory, graph traversal algorithm, network flow, disjoint set manipulation different method.	75%
	CO4	To design the algorithm of string matching problem, matrix manipulation algorithm.	75%
	CO5	To understand amortize analysis, approximation algorithm, notion of NP-completeness.	75%

BS M401	CO1	To develop thorough understanding of the mathematical concepts and theories that underlie numerical methods. This includes topics such as interpolation, differentiation, integration, and linear algebra.	75%
	CO2	Students should be able to analyse a given engineering problem and choose the appropriate numerical method to solve it. This requires an understanding of the strengths and limitations of various numerical techniques.	75%
Numerical Methods	CO3	Students should be able to write computer programs to implement numerical algorithms. This includes an understanding of programming languages such as MATLAB, Python, or C++.	75%
	CO4	Students should understand the concept of numerical error and the sources of error in numerical calculations. They should be able to perform error analysis and make appropriate adjustments to improve the accuracy of their numerical solutions.	75%
	CO1	Organize/Design the experiment related to Analog Communication Lab.	85%
EC491 Analog Communication Lab	CO2	Generate experimental Data related to Analog Communication Lab.	85%
	CO3	Conduct actual experiment related to Analog Communication Lab.	85%
Lab	CO4	Analyze data and draw conclusion related to Analog Communication Lab.	85%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Analog Communication Lab.	85%
	CO1	Organize/Design the experiment related to Analog Electronic Circuit Lab.	85%
EC492	CO2	Generate experimental Data related to Analog Electronic Circuit Lab.	85%
Analog Electronic Circuit	CO3	Conduct actual experiment related to Analog Electronic Circuit Lab.	85%
	CO4	Analyze data and draw conclusion related to Analog Electronic Circuit Lab.	85%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Analog Electronic Circuit Lab.	85%
EC493 Microprocessor & Microcontroller Lab	CO1	The knowledge of basic microcomputer system and the architecture as well as assembly language programming of 8085 Microprocessor to solve engineering problems related to design system based on these processors in ECE.	90%
	CO2	The knowledge of architecture and assembly language programming of 8051 microcontroller and the architecture of PIC to solve engineering problems related to design system based on these processors in ECE	90%

	CO3	The knowledge of architecture and assembly language programming of 8086 Microprocessor to solve engineering problems related to design system based on these processors in ECE.	90%
	CO4	The knowledge of memory and peripheral interfacing devices to solve engineering problems related to design of I/O and memory interfacing of Microprocessor and Microcontroller Lab based system in ECE.	90%
	CO5	Analyze with proper experimental data communicate effectively related to Microprocessor and Microcontroller Lab.	90%
	CO1	Students would develop deep understanding of numerical algorithms, including interpolation, differentiation, integration, and linear algebra, and how these algorithms can be implemented in C.	63%
BS-M(CS)491 Numerical Method Lab.	CO2	Students would be able to write computer programs in C to implement numerical algorithms. This requires an understanding of the syntax and features of C programming language.	63%
	CO3	Students would develop an understanding of programming concepts such as data structures, control structures, functions, and file handling in C, and how these concepts can be used to implement numerical algorithms.	63%
	CO4	Students would be able to identify and fix errors in C programs, including runtime errors, syntax errors, and logical errors. They should also understand the importance of error handling in numerical computations.	63%
		5 TH SEMESTER	
	CO1	Understand the basic mathematical concepts related to electromagnetic vector fields.	70%
EC501	CO2	Characterize uniform plane wave and calculate reflection and transmission of waves at media interface.	70%
Electromagnetic Waves	CO3	Understand characteristics and wave propagation on high frequency transmission lines, carryout impedance transformation on transmission line and use sections of transmission line sections for realizing circuit elements.	70%
	CO4	Analyze wave propagation on metallic waveguides in modal form.	70%
	CO5	Understand principle of radiation and radiation characteristics of an antenna.	70%
EC502	CO1	learn how computers work and know basic principles of computer's Working procedure.	74%
Computer	CO2	Analyze the performance of computers.	74%
Architecture	CO3	Know how computers are designed and built.	74%
	CO4	Understand issues affecting modern processors (caches, pipelines etc.)	74%

EC503	CO1	Apply the fundamental knowledge of probability theory and random processes for the solution of complex engineering problems related to digital communication techniques.	64%
Digital Communicatio	CO2	Analyze signal and system parameters using the methods of vector algebra reaching substantiated conclusions on digital communication techniques.	64%
n & Stochastic Process	CO3	Design solution for baseband transmission techniques as applicable to digital communication	64%
	CO4	Design solution for digital carrier modulation techniques as applicable to electronics and Communication Engineering	64%
EC504	CO1	Appling sampling theorem students can able to construct/convert continuous time signal/analog into digital sequence and gain the knowledge from time to frequency domain conversion like DTFT,DFT.	60%
Digital Signal Processing	CO2	Student can able to design and implement different types of digital filters(both FIR and IIR) from analog prototype filter using the knowledge of filter transformation(Likely Impulse invariant and Bilinear transform) in different form such as direct form-I, form-II, cascade and parallel etc.	60%
	CO3	They can able to process digital signals and can also design Digital system/Digital signal Processor by setting proper Algorithm onto FPGA and writing Assembly level program.	60%
PEEC505A Program Elective1	CO1	Understand various aspects of nano-technology and the processes involved in making nano components and material and appropriate use in solving practical problems	60%
Nano Electronics	CO2	Appropriate use of different nano-technology for life-long learning.	60%
	CO1	Understand the radiation pattern of dipole antenna	91%
EC591	CO2	Understand the radiation pattern of Folded dipole antenna.	91%
Electromagnetic Wave Lab	CO3	Understand the radiation pattern of 3 element yagi -uda antenna .	91%
	CO4	Analyze the beam width, gain and radiation pattern of a 3-element,5 element and 7 element yagi- uda antenna.	91%
	CO5	Evaluate the radiation characteristics of a Pyramidal horn antenna	91%
EC592	CO1	Apply the fundamental knowledge of probability theory and random processes for the solution of complex engineering problems related to digital communication techniques.	93%
Digital Communication Lab	CO2	Analyze signal and system parameters using the methods of vector algebra reaching substantiated conclusions on digital communication techniques.	93%
	CO3	Design solution for baseband transmission techniques as applicable to digital communication	93%

	CO4	Design solution for digital carrier modulation techniques as applicable to electronics and Communication Engineering	93%
	CO1	Organize/Design the experiment related to Digital Signal Processing Lab.	94.8%
EC593 Digital Signal	CO2	Generate experimental Data related to Digital Signal Processing Lab.	94.8%
Processing Lab.	CO3	Conduct actual experiment related to Digital Signal Processing Lab.	94.6%
	CO4	Analyze data and draw conclusion related to Digital Signal Processing Lab.	94.9%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Digital Signal Processing Lab.	94.8%
		6 TH SEMESTER	
EC601 Control System & Instrumentation	CO1	Characterize a system and find its steady state behavior.	72%
	CO2	Investigate stability of a system using different test related to control system.	72%
EC602 Computer Network	CO1	Familarization with the fundamental knowledge of data communication and networks and apply this knowledge to investigate the error in the communication network and analyze the errors using different error correcting codes.	74%
	CO2	Analyze the internetworking devices and investigate different addressing and subnetting protocols to investigate proper process to process delivery.	74%
PEEC603D	CO1	Recognize the notion of information in the quantitative sense to measure the quantity of information for transmission of data and apply this basic knowledge to calculate channel capacity and probability distribution for real time transmission systems.	70%
Information Theory & Coding	CO2	Assess the fundamental coding theorem for encoding and decoding the information and develop the different techniques for construction of error correction codes .	70%
	CO3	Evaluate the rate and error probabilities in different coding techniques to implement the cost effective system.	70%
OEEC604C Object Oriented	CO1	differentiate between structures oriented programming and object oriented programming.	70%
Programming	CO2	use object oriented programming language like C++ and associated libraries to develop object orientedprograms.	70%
	CO3	understand and apply various object oriented features like inheritance, data abstraction, encapsulation andpolymorphism to solve various computing	70%

		problems using C++ language.	
	CO4	apply concepts of operator-overloading, constructors and destructors	70%
	CO5	apply exception handling and use built-in classes from STL.	70%
	CO1	Characterize a system and investigate stability of the system in time and frequency domain with different method related to Control and Instrumentation Lab.	90%
EC691	CO2	Design various controllers related to Control and Instrumentation Lab.	90%
Control System & Instrumentation Lab.	CO3	Conduct experimental set up with CRO ,Instrumentation Amplifier knowing their functional details related to Control and Instrumentation Lab.	90%
	CO4	Conduct actual experiment related to Control System and Instrumentation Lab.	90%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to Control System and Instrumentation Lab.	90%
	CO1	Understand the basic concept related to NIC installation and configuration. Apply the knowledge of IPC message queue.	90%
EC692 Computer Network	CO2	Remembering and understanding the networking cables, switches, hubs and connectors.	90%
Lab	CO3	Understand multicast and broadcast socket and analyze TCP/UDP socket programming.	90%
	CO4	Applying the knowledge of socket programming, analyze prototype multithreaded server.	90%
	CO5	Understand the knowledge of data link layer flow control mechanism and apply this knowledge for the error control.	90%
EC681	CO1	Formulation of a problem statement either from rigorous literature survey or from the requirements raised need to be analysed.	90%
Electronic Design	CO2	Design, implement and test the photo type/algorithm in order to solve the problem statement.	90%
Mini Project Lab	CO3	Write comprehensive report on Mini Project work.	90%
		7 TH SEMESTER	
EC701B	CO1	Visualize the architecture of satellite systems as a means of high speed, high range communication system.	71%
Satellite Communication	CO2	State various aspects related to satellite systems such as orbital equations, sub-systems in a satellite, link budget, modulation and multiple access schemes.	71%
	CO3	Solve numerical problems related to orbital motion and design of link budget for the given parameters and conditions.	71%
EC702C	CO1	Analyze and classify neural networks and its implementation algorithms.	72%
Neural Network and Fuzzy Logic Control	CO2	Apply suitable algorithms on different cases.	72%

	CO3	Apply fuzzy logic and neural networks.	72%
	CO4	Analyze the applications of Neural Network and Fuzzy logic in image processing.	72%
EC703A Embeded System	CO1	Understand the internal structure, purpose and application of Embedded system.	74%
	CO2	Apply the concept of Embedded firmware in design of Embedded System.	74%
	CO1	design good web pages using different tags, tables, forms, frames and style sheets supported by HTML and implement, compile, test and run Java programs, comprising more than one class, to address a particular software problem.	73%
	CO2	demonstrate the ability to employ various types of selection statements and iteration statements in a Java program.	73%
OEEC704A	CO3	be able to leverage the object-oriented features of Java language using abstract class and interface.	73%
Web Technology	CO4	be able to handle errors in the program using exception handling techniques of Java.	73%
	CO5	design applets as per the requirements with event handling facility.	73%
	CO3	Conduct actual experiment related to VLSI Design Lab.	73%
	CO4	Analyze data and draw conclusion related to VLSI Design Lab.	73%
	CO5	Analyze with proper experimental data and graphs and communicate effectively related to VLSI Design Lab .	73%
	CO1	Apply knowledge(fundamental & specialized) to understand the real life problem in the related field.	93%
EC781	CO2	Understand the design and implementation aspects of engineering system/components.	93%
Industrial Training & Project	CO3	Work individually and also in a group.	93%
	CO4	Communicate the details of training through Training Report, Presentation and Viva-Voce.	93%
	CO5	Understand implication of engineering solutions in social and environmental perspective.	93%
	CO1	Formulate the problem.	92%
	CO2	Develop or design a solution of the problem.	92%
EC782	CO3	Build up project prototype or model in hardware or software.	92%

Project Stage 1	CO4	Analyze the experimental/collected data.	92%
	CO5	Do investigation/research in the problem area.	92%
	CO6	Apply fundamental and specialize knowledge in the area of the problem.	92%
	CO7	Self learn new methods, tools and techniques.	92%
	CO8	Apply modern tools and techniques.	92%
	CO9	Work individually and also in team.	92%
	CO10	Communicate the details and findings of the project through project report, presentation, Viva-Voce and paper presentation, if any.	92%
	CO11	Apply project management and economic knowledge	92%
	CO12	Identify implications of the project in society and environment.	92%
		8 TH SEMESTER	
PEEC 801B Fibre Optics Communication	CO1	Learn the properties of light in different medium and utilize the knowledge in different types of fibres for optical fibre communication system, and also the corresponding losses of each kinds of fibres.	73%
Communication	CO2	Learn the working of all types of optical source and detectors for signal modulation and demodulation respectively.	73%
PPP 0004 0	CO1	Understand the practical situations where mixed signal analysis is required.	74%
PEEC802C	CO2	Analyze and handle the inter-conversions between signals.	74%
	CO3	Design systems involving mixed signals.	74%
	CO1	Understand the modern view of AI as the study of agents that receive precepts' from the environment and perform actions.	75%
OEEC804C	CO2	Demonstrate awareness of the major challenges facing AI and the complex of typical problems within the field.	75%
OEEC004C	СО3	Exhibit strong familiarity with a number of important AI techniques, including in particular search, knowledge representation, planning and constraint management.	75%
	CO4	Asses critically the techniques presented and to apply them to real world problems.	75%
EC881	CO1	Formulate the problem.	93%
Project II	CO2	Develop or design a solution of the problem.	93%
	CO3	Build up project prototype or model in hardware or software.	93%

	CO4	Analyze the experimental/collected data.	93%
	CO5	Do investigation/research in the problem area.	93%
	CO6	Apply fundamental and specialize knowledge in the area of the problem.	93%
	CO7	Self learn new methods, tools and techniques.	93%
	CO8	Apply modern tools and techniques.	93%
	CO9	Work individually and also in team.	93%
	CO10	Communicate the details and findings of the project through project report, presentation, Viva-Voce and paper presentation, if any.	93%
	CO11	Apply project management and economic knowledge	93%
	CO12	Identify implications of the project in society and environment.	93%
	CO1	. Demonstrate the capability to formulate the problem.	95%
	CO2	Demonstrate the capability to develop or design a solution of the problem.	95%
	CO3	Demonstrate the capability to build up project prototype or model in hardware or software.	95%
	CO4	Demonstrate the capability to analyze the experimental/collected data.	95%
EC882	CO5	Show the capability to demonstrate the research based knowledge	95%
Grand Viva	CO6	Demonstrate the capability to apply fundamental and specialize knowledge in the area of the problem.	95%
	CO7	Demonstrate the capability for self learning new methods, tools and techniques.	95%
	CO8	Demonstrate the capability to apply modern tools and techniques.	95%
	CO9	Demonstrate the capability to work individually and also in team.	95%
	CO10	Demonstrate the capability to communicate in details and present a topic related to Electronics & Communication Engineering.	95%

PO NO.	BROAD	ELABORATE
1	Engineering	
	knowledge	engineering fundan
2	Problem	Identify, formulate, research literature, and analyse complex
	analysis:	engineering problems reaching substantiated conclusions usi
3	Daniero/dayal	Decision colutions for complex engineering problems and deci-
3	Design/devel opment of	Design solutions for complex engineering problems and designable bealth and safety, and cultural, societal, and environments
4	Conduct	Use research-based knowledge and research methods include
-		interpretation of data, and synthesis of the information to prov
	s of complex	interpretation of data, and synthesis of the information to prov
5		Create, select, and apply appropriate techniques, resources,
	usage:	activities, with an understanding of the limitations.
6	The engineer	Apply reasoning informed by the contextual knowledge to ass
	and society:	the professional engineering practice.
7		Understand the impact of the professional engineering solutio
	and	development.
	sustainabilit	
8	Ethics:	Apply ethical principles and commit to professional ethics and
9	Individual	Function effectively as an individual, and as a member or lea
	and team	
	work:	
10	Communicat	Communicate effectively on complex engineering activities wi
	ion:	write effective reports and design documentation, make effect
11	Project	Demonstrate knowledge and understanding of t h e engineer
11		to manage projects and in multidisciplinary environments
12	Life-long	Recognise the need for, and have the preparation and ability
	learning:	. teeegee and need for, and have the proparation and ability
	ioai i i i i i i i i i i i i i i i i i i	

PROGRAM SPECIFIC OUTCOMES

PSO1: Ability to apply the knowledge of Basic Computing, Basic Sciences and Social Sciences in the field of electrical engineering to identify, analyze and so life problems faced in industries and/or during research work.

PSO2: Ability to model, test, analyze and design components or processes rel modern power system involving both conventional and renewable energy resolvoltage systems and energy management.

PSO3: Ability to apply the concept of circuit theory, electromagnetic field thec and basic electronics to solve complex problems of electrical machines and dripower electronic converters and electrical system design.

PSO4: Ability to identify and analyze the role of measurement, instrumentatic modern control engineering to enhance sustainability, reliability and efficiency electrical systems.

PSO5: Ability to demonstrate proficiency in operating and handling modern er tools to cop up with dynamic industrial environment.

PSO6: Ability to work and communicate effectively in the corporate life keepir responsible outlook towards socio-economic and environmental issues.

JRSE OUTCOMES

Name

CO6	design filter circuits.
CO5	estimate parameters of two-port networks.
CO4	select suitable techniques of network analysis for efficient solution.
CO3	apply network theorems and different tools to solve network problems.
CO2	explain different network theorems, coupled circuit and tools for solution
CO1	describe different type of networks, sources and signals with examples.

Naı

CO1	1. describe analog electronic components and analog electronics circuits
CO2	2. explain principle of operation of analog electronic components, filters, I
CO3	3. compute parameters and operating points of analog electronic circuits.
CO4	4. determine response of analog electronic circuits.
CO5	5. distinguish different types amplifier and different types oscillators base
CO6	6. construct operational amplifier based circuits for different applications.

Name of

CO1	1. Relate different coordinate systems for efficient solution of electromagi
CO2	2. describe mathematical s tools to solve electromagnetic problems.
CO3	3. explain laws applied to electromagnetic field.
CO4	4. apply mathematical tools and laws to solve electromagnetic problems.
CO5	5. analyze electromagnetic wave propagation
CO6	6. estimate transmission line parameters

Nam

Course	After completing this course, the students will be able to:
CO1	explain the co-ordinate system, principle of three dimensional rotation, kir
CO2	elaborate the theory of general motion, bending moment, torsional motio
CO3	develop free body diagram of different arrangements.

CO4	solve problems with the application of theories and principle of motion , f
CO5	analyze torsional motion and bending moment.
CO1	explain basics of probability theories, rules, distribution and properties of
CO2	describe different methods of numerical analysis.
СОЗ	solve numerical problems based on probability theories , numerical analy
CO4	apply numerical methods to solve engineering problems.
CO5	5. solve engineering problems using z transform and probability theory.
	Nan
Course	Upon completion of this course, students will be able to:
CO1	Describe with examples the biological observations lead to major discover
CO2	Explain the classification of kingdom of life the building blocks of life
CO3	Different techniques of bio physics used to study biological phenomena.
CO4	The role of imaging in the screening, diagnosis, staging, and treatments
CO5	Identify DNA as a genetic material in the molecular basis of information
CO6	Analyze biological processes at the reductionistic level.
CO7	Apply thermodynamic principles to biological systems.
CO8	Identify microorganisms
	Na
Course	After completing this course, the students will be able to:
CO1	Describe different features of Indian constitution. Power and functioning of
CO2	Identify authority to redress a problem in the profession and in the socie
	Nama
	Name o
_	
Course	Up
CO1	Determine transient response of different electrical circuit, frequency res
CO2	Generate different signals in both discrete and analog form
CO3 CO4	Analyze amplitude and phase spectrum of different signals.
CO5	Verify network theorems.
CO5	Construct circuits with appropriate instruments and safety precautions.
CUS	Simulate electrical circuit experiments using suitable software.
	Name
Carrer	
Course	Up

Course	Up
	At
CO1	Determine characteristics of full wave rectifier with filter and without filte
CO2	Verify function of DAC and ADC
CO3	Construct function generator using IC, R-C coupled amplifier, linear voltage

CO4	Work in a team
CO5	Validate theoretical learning with practical Special Remarks: The above-m
	Name

Course	Upon successful completion of the course, student will have:
CO1	Solve problems with Newton forward /backward, Lagrange's interpolation
CO2	problems of numerical integration using Trapezoidal rule, Simpson's 1/3
CO3	rule, Weddle's rule problems to find numerical solution of a system of line
CO4	Gauss elimination and Gauss-Seidel iterations. problems to find numerical
CO5	Ordinary differential equation by Euler's and Runga-Kutta methods.
CO6	Find appropriate numerical methods to solve engineering problems.
CO7	Use software package to solve numerical problems.

Na

Course	Up
CO1	Describe the function of different components of magnetic circuit, DC mag
CO2	Explain the principle of operation of different types of DC machines and tr
CO3	Solve numerical problems of DC machines and transformers.
CO4	Estimate the parameters and efficiency of transformer.
CO5	Determine the characteristics of DC machines
CO6	recommend methods to control output of DC machines.

Nan

Course	Up
CO1	Describe the function of different building blocks of digital electronics, ser
CO2	Explain the principle of operation of combinational and sequential digital of
CO3	Solve numerical problems of Boolean algebra, number system, combinati
CO4	Specify applications of combinational and sequential digital circuits.
CO5	Determine specifications of different digital circuits.
CO6	Design combinational and sequential digital circuits

Name of the S

Course	Up
CO1	Explain the terms accuracy, precision, resolution, speed of response, erro
CO2	Describe methods of measurement of power, energy by instruments and
CO3	Explain the principle of operation of analog meters, instrument transform
CO4	Explain the different building block, principle of operation of oscilloscope a
CO5	Solve numerical problems related to analog meters, instrument transform
CO6	Specify applications of analog and digital measuring instruments, sensors
	Name or
_	

Course	Upon successful completion of the course, student will have:

201			
CO1	Describe the function of different components of boilers. Engines and turk		
CO2	Explain the principle of operation of different types of boilers, turbines, IC		
CO3	Solve numerical problems of boilers, turbines, IC engines and Gas turbine		
CO4	Analyze the performance of boilers, engines and turbines.		
CO5	Determine efficiency of boilers, engines and turbines.		
CO6	Explain methods to control boiler, engines and turbines parameters.		
	Name of t		
	Name of t		
Course	Upon successful completion of the course, student will have:		
Course CO1			
	Upon successful completion of the course, student will have:		
CO1	Upon successful completion of the course, student will have: 1. Illustrate different aspects of human values, ethics, engineers' respons		
CO1 CO2	Upon successful completion of the course, student will have: 1. Illustrate different aspects of human values, ethics, engineers' respons 2. Explain different principles, different theories and laws of engineering e		
CO1 CO2 CO3	Upon successful completion of the course, student will have: 1. Illustrate different aspects of human values, ethics, engineers' respons 2. Explain different principles, different theories and laws of engineering e 3. Identify different factors in the light of Engineers' responsibility toward		

Course	Upon successful completion of the course, student will have:	
CO1	Understand the natural environment and its relationships with human ac	
CO2	Apply the fundamental knowledge of science and engineering to assess ϵ	
CO3	Develop guidelines and procedures for health and safety issues obeying the	
CO4	Acquire skills for scientific problem-solving related to air, water, noise& la	
	Name of t	

Course	Upon successful completion of the course, student will have:	
CO1	Identify appropriate equipment and instruments for the experiment.	
CO2	Test the instrument for application to the experiment.	
CO3	Construct circuits with appropriate instruments and safety precautions	
CO4	Validate different characteristics of DC machine, methods of speed contri	
CO5	Work effectively in a team	

Name of t

Upon successful completion of the course, student will have:		
Identify appropriate equipment and instruments for the experiment		
2. Test the instruments for application to the experiment		
3. Construct decoder, multiplexer, adder and subtractor circuits with app		
4. Realize RS-JK and D flip flop, universal register with gates, multiplexer		
5. Validate the operation of code conversion circuit –BCD to Excess 3 & vi		
Work effectively in a team		

Name of the Subject

Course	Upon successful completion of the course, student will have:		
	1. identify appropriate equipment and instruments for the experiment		

2. test the instrument for application to the experiment
3. construct circuits with appropriate instruments and safety precautions
4. evaluate and adjust the precision and accuracy of AC energy meter, m
5. measure voltage, current, power, energy, phase, frequency, resistance
6. work effectively in a team

Name of the 5

Upon successful completion of the course, student will have:
Identify appropriate equipment and instruments for the experiment
Construct experimental setup with appropriate instruments and safety pr
Identify different parts of Lanchashire Boiler, Bahcock & Willcox Boiler, Co
Test 4 stroke petrol engine by electrical load box and diesel engine by ele
Find calorific value, flash point, fire point, cloud point, pour point of fuel.
Work effectively in a team

Name of t

Course	On successful completion of the course the student will be able to:		
	1. To understand the arrangement of windings of AC machines.		
	2. To understand the principle of production of pulsating and revolving m		
	3. To understand the principle of operation and characteristics of three pl		
	4. To understand the principle of operation and characteristics of single p		
	5. To understand the principle of operation and characteristics of synchro		
	6. To understand the principle of operation and characteristics of special		
	7. To solve problems of Induction machines, synchronous machines and s		

Course After completion of this course the students will be able to:

To understand the basic principle of generation of Electricity from differer

To find parameters and characteristics of overhead transmission lines and

To find different parameters for the construction of overhead transmission

To determine the performance of transmission lines.

To understand the principle tariff calculation.

To solve numerical problems on the topics studied.

Course	On completion of this course a student will be in a position to:	
CO1	L. To find mathematical representation of LTI systems.	
CO2	2. To find time response of LTI systems of different orders	
CO3	. To find the frequency response of LTI systems of different orders	
CO4	4. To understand stabilityof differentLTI systems.	
CO5	5. To analyze LTIsystems with state variables.	
CO6	6. To solve problems of mathematical modelling and stability of LTI syste	

Course	On completion of this course a students will be able to		
CO1	To understand the functioning and characteristics of power switching dev		
CO2	To understand the principle of operation of converters.		
CO3	To understand different triggering circuits and techniques of commutation		
CO4	To find external performance parameter of converters.		
CO5	To analyze methods of voltage control, improvement of power factor and		
CO6	To solve numerical problems of converters		

Name of

Course	After completion of the course, the students will be able to:	
CO1	identify appropriate equipment and instruments for the experiment.	
CO2	test the instrument for application to the experiment.	
CO3	construct circuits with appropriate instruments and safety precautions.	
CO4	validate different characteristics of single phase Induction motor, three pl	
CO5	work effectively in a team	

Name (

Course	On completion of this course a students will be able to	
CO1	identify appropriate equipment and instruments for the experiment.	
CO2	test the instrument for application to the experiment.	
CO3	3. construct circuits with appropriate instruments and safety precautions.	
CO4	4. validate different characteristics of transmission line.	
CO5	5. determine earth resistance, dielectric strength of insulating oil, breakd	
CO6	6. analyze an electrical transmission line circuit with the help of software	
CO7	7. work effectively in a team	
CO4 CO5 CO6	4. validate different characteristics of transmission line.5. determine earth resistance, dielectric strength of insulating oil, bre6. analyze an electrical transmission line circuit with the help of softw	

Name c

After completion of this course the students will be able to
identify appropriate equipment and instruments for the experiment.
test the instrument for application to the experiment.
construct circuits with appropriate instruments and safety precautions.
use MAT-Lab control system tool box, MAT-Lab- simulink tool box & PSP
5. determinecontrol system specifications of first and second order syster

Name of

Course	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
CO3	construct circuits with appropriate instruments and safety precautions

Name o

Course	On completion of this course a student will be in a position to:
CO1	differentiate how the choices of data structure & algorithm methods enha
CO2	solve problems based upon different data structure & also write programs
CO3	write programs based on different data structure
CO4	identify appropriate data structure & algorithmic methods in solving probl
CO5	discuss the computational efficiency of the principal algorithms for sorting
CO6	comparethe benefits of dynamic and static data structures implementatio
	Name of

Name of

v	ea	۳.	3rd	
	Ca		JIU	

Course	After completion of this course the students will be able to	
CO1	specify simple abstract data types.	
CO2	recognise features of object-oriented design such as encapsulation, polyn	
CO3	inheritance, and composition of systems based on object identity.	
CO4	apply common object-oriented design patterns	
CO5	specify uses of common object oriented design patterns with examples.	
CO6	design applications with an event-driven graphical user interface.	

Course	After completion of the course, the students will be able to:	
Course	Arter completion of the course, the students will be able to.	
CO1	Represent power system components in line diagrams.	
CO2	Determine the location of distribution substation.	
CO3	Determine the performance of power system with the help of load flowv s	
CO4	Analyse faults in Electrical systems.	
CO5	Determine the stabilty of Power system.	
CO6	Explain principle of operation of different power system protection equipn	
CO7	Solve numerical problems related to representation, load flow, faults, stal	
	Name of the	

Name of the

Year: 3 rd	
Course	After completion of the course, the students will be able to
CO1	1. explain the architecture of 8086 and 8051.
CO2	2. do assembly language programming of 8086, 8051
CO3	3. interface different peripheral with 8086 and 8051
CO4	4. develop micro processor/ microcontroller based systems.
CO5	5. compare microprocessor, microcontroller, PIC and ARM processors
	A.I

Name

Course	On completion of this course a students will be able to	
CO1	explain the principle of sampling and reconstrction of analog signal. syst	
CO2	perform Z-transformation and inverse Z-tranaformation of systems.	
CO3	analyse and design digital control	
CO4	design compensators for digital control system to achieve desired specifi	

CO5	represent digital control systems using state space models.
CO6	analyze the effect sampling on stability, controllability and observability
	Na

CO1 choose intelligently AC and DC transmission systems for the dedicated at identify the suitable two-level/multilevel configuration for high power cor select the suitable protection method for various converter faults.

CO4 4. identify suitable reactive power compensation method.

CO5 5. decide the configuration for harmonic mitigation on both AC and DC sides of the configuration of the converters, power flow analysis, resident and problems related to converters, power flow analysis, resident and problems related to converters, power flow analysis, resident and problems related to converters, power flow analysis, resident and problems related to converters.

Name

Course	After completion of this course the students will be able to
CO1	specify the rating of electrical machines with standard specifications.
CO2	explain the principles of electrical machine design and carry out basic des
CO3	3. determine the various factors which influence the design of electrical, r
CO4	4. explain the construction and performance characteristics of electrical n
CO5	5. use software tools to do design calculations.

Name of

Course	On completion of this course a students will be able to
CO1	explain the principle of Electric traction.
CO2	choose a suitable drive scheme for developing an electric hybrid vehicle d
CO3	design and develop basic schemes of electric vehicles and hybrid electric
CO4	choose proper energy storage systems for vehicle applications
CO5	implement different energy management strategies for hybrid vehicle.

Nam₍

Course	analyse uncompensated AC transmission line.						
Outcomes	es explain the working principles of FACTS devices and their operating cha						
	3. apply FACTS devices for power flow control and stabilty.						
	4. identify different issues of power quality in distribution system.						
	5. apply different compensation and control techniques for DSTATCOM6.						
Name of the	e Subject: INDUSTRIAL ELECTRICALSYSTEMS						
Subject Cod	le: PE-EE-602C						
Year: 3 rd							
Course	1. Represent electrical wiring system for residential, commercial and indu						
Outcomes	2. Determine the rating of components of residential and commercial elec						
	3. Design lighting scheme for a residential and commercial premises.						
	4. Select transformer, switchgear, protection equipments for industrial ele						
	5. explain methods of automation of Industrial Electrical Systems						
	6. Solve numerical problems related to earthing system, lighting scheme,						

Name of the Subject: DIGITAL SIGNALPROCESSING Subject Code: PE-EE-601A Year: 3rd Course 1. represent signals mathematically in continuous and discrete-time and i Outcomes 2. analyse discrete-time systems using z-transform. 3. explain the Discrete-Fourier Transform (DFT) and the FFT algorithms. 4. design digital filters for various applications. 5. apply digital signal processing for the analysis of real-life signals. Name of the Subject: COMMUNICATION ENGINEERING **Subject Code:** PE-EE-601B Year: 3rd Course 1. compare the performance of AM, FM and PM schemes with reference to Outcomes 2. explain noise as a random process and its effect on communication rec 3. evaluate the performance of ASK, FSK, PSK, BPSK, QPSK in a digital co 4. identify source coding and channel coding schemes for a given commu 5. analyze various digital modulation methods 6. compute band width requirement and probability of error in various dic Name of the Subject: VLSI AND MICROELECTRONICS Subject Code: PE-EE-603C Year: 3rd 1. explain the principle of design of VLSI circuits Course **Outcomes** 2. explain different MOS structure with characteristics 3. apply different processes for VLSI fabrication 4. use programming language for the design of logic circuits 5. draw the stick diagram and layout for simple MOS circuits Name of the Subject: ECONOMICS FOR ENGINEERS **Subject Code:** HM-EE-601 Year: 3rd Course 1. evaluate the economic theories, cost concepts and pricing policies **Outcomes** 2. explain the market structures and integration concepts 3. apply the concepts of financial management for project appraisal 4. explain accounting systems, the impact of inflation, taxation, deprecia 5. analyze financial statements using ratio analysis 6. explain financial planning, economic basis for replacement, project sch Name of the Subject: POWER SYSTEM-II LABORATORY **Subject Code:** PC-EE 691 Year: 3rd Course 1. Identify appropriate equipment and instruments for the experiment. 2. Test the instrument for application to the experiment. **Outcomes** 3. Construct circuits with appropriate instruments and safety precautions 4. Validate the characteristics of under voltage relay, over current relay, 5. Validate protection schemes of transformer, generator, motor and feed 7. work effectively in a team Name of the Subject: MICRO PROCESSOR AND MICRO CONTROLLERLABORATORY Subject Code: : PC-EE 692 Year: 3rd 1. identify appropriate equipment and instruments for the experiment Course

- **Outcomes** 2. test the instrument for application to the experiment
 - 3. construct circuits with appropriate instruments and safety precautions
 - 4. program 8086 for arithmatic operation, sorting of array, searching for
 - 5. interface ADC/DAC, 8255, 8251 to 8086 and LCD, keyboard to 8051
 - 6. program 8051 using arithmatic, logical and bit manipulation instruction
 - 7. work effectively in a team

Name of the Subject: ELECTRICAL AND ELECTRONICS DESIGNLABORATORY

Subject Code: PC-EE 681

Year: 3rd

Course Outcomes

- 1. explain basic concept of measurement, noise in electronic system, sens
- 2. implement PC based data acquisition systems
- 3. construct circuits with appropriate instruments and safety precautions
- 4. design heating elements, air core grounding reactor, power distribution
- 5. do wiring and installation design of a multistoried residential building w
- 6. design electronic hardware for controller of lift, speed of AC/DC motor,

Name of the Subject: ELECTRIC DRIVE

Subject Code: PC-EE 701

Year: 4[™]

Course **Outcomes**

- 1. Explain the principle of operation of Electric Drive.
- 2. Describe different methods of starting and braking of Electric Drive.
- 3. Model and control DC Drive
- 4. Control speed of Induction and Synchronous motors.
- 5. Recommend drives for different applications.
- 6. Estimate ratings, variables and parameters of Electric Drives.

Name of the Subject: CONTROL SYSTEM DESIGN

Subject Code: PE-EE 701 A

Year: 4[™]

Course **Outcomes**

- 1. explain the effect of gain, addition of pole and zeros on system's performance of the system's performance of t
- 2. describe time domain and frequency domain design specifications.
- 3. demonstrate the effect of nonlinearity on system performance.
- 4. design control system in time domain, in frequency domain and in sta
- 5. design PID controllers.
- 6. select appropriate method for design of control system.

Name of the Subject: ELECTRICAL ENERGY CONSERVATION& AUDITING

Subject Code: : PE-EE 701B

Year: 4[™]

Course **Outcomes**

- 1. explain the basic of energy resources, energy security, energy conserv
- 2. quantify the energy conservation opportunities in different thermal sys
- 3. quantify the energy conservation opportunities in different electrical sy
- 4. identify the common energy conservation opportunities in different ene
- 5. explain the methods of energy management and audit.
- 6. analyse and report the outcome of energy audit

Name of the Subject: POWER GENERATION ECONOMICS

Subject Code: : PE-EE 701C

Year: 4[™]

Course

1. explain the different terms e.g. load factor etc for economics of genera

2. apply different types of tariff for electricity pricing. Outcomes 3. optimize the operation of power system with unit commitment. 4. determine generation levels such that the total cost of generation beco 5. determine the state of the system given by the voltage magnitudes an 6. predict the power or energy needed to balance the supply and load del Name of the Subject: ARTIFICIAL INTELLIGENCE **Subject Code:** OE-EE-701A Year: 4[™] Course 1. explain the concept of knowledge representation and predicate logic ar **Outcomes** 2. describe state space and its searching strategies 3. demonstrate proficency in applying scientific method to models of mach 4. apply the machine learning concepts in real life problems 5. demonstrate an ability to share in discussions of AI, its current scope a Name of the Subject: INTERNET OF THINGS Subject Code: OE-EE-701B Year:4[™] 1. explain the definition and usage of the term "Internet of Things" in different terms of the term th Course Outcomes 2. explain the key components that make up an IoT system. 3. differentiate between the levels of the IoT stack and be familiar with t 4. build and test a IoT system involving prototyping, programming and date 5. apply cloud computing and data analytics in a typical IoT system Name of the Subject: COMPUTER GRAPHICS Subject Code: OE-EE-701C Year: 4[™] 1. explain Computer graphics and graphic systems. Course 2. test and implement line drawing algorithm, circle and ellipse drawing a Outcomes 3. Perform 2D and 3D transformation and viewing. 4. apply algorithms for visible surface determination. 5. explain colors and shading models and ray tracing. Name of the Subject: EMBEDDED SYSTEM **Subject Code:** OE-EE 702A Year: 4[™] 1. discuss the definition, purpose, application, classification, quality char-Course 2. explain the internal structure of the Embedded system. **Outcomes** 3. interface IO devices and other peripherals with micro controllers in Em 4. write programs for Micro controllers in Embedded systems. 5. apply the concept of Embedded firmware in design of Embedded system Name of the Subject: DIGITAL IMAGE PROCESSING Subject Code: OE-EE 702B Year: 4[™] Course 1. explain the fundamental concepts of a digital image processing system Outcomes 3. apply different image segmentation techniques. 4. categorize various compression techniques. 5. implement image process and analysis algorithms. 6. apply image processing algorithms in practical applications. Name of the Subject: COMPUTER NETWORK

Subject Code: : OE-EE 702C

Year: 4 TH	
Course	1. explain the concepts of data communication and networking.
Outcomes	2. identify the different types of network topologies and protocols.
	3. describe the function of a network system with OSI and TCP/IP model
	4. differentiate different types of routing protocol.
	5. apply principles of congestion control .
	6. implement different schemes for security of the networks.
Name of the	e Subject: PRINCIPLE OF MANAGEMEENT
	de: : HM-EE 701
Year: 4 [™]	
Course	1. explain the concepts and approaches of management.
Outcomes	2. demonstrate the roles, skills and functions of management.
	3. diagnose and solve organizational problems.
	4. identify the complexities associated with management of human resou
	5. apply different methods of Customer, Operation and Technology mana
	6. acquire skills of good leader in an organization.
Name of the	e Subject: ELECTRIC DRIVE LABORATORY
	de: PC-EE 791
Year: 4 [™]	
Course	1. identify appropriate equipment and instruments for the experiment.
Outcomes	2. test the instrument for application to the experiment.
	3. construct circuits with appropriate instruments and safety precautions
	4. apply different methods of control of Electric Drive in the laboratory.
	5. analyse experimental data obtained in the laboratory.
	6. work effectively in a team
Name of the	e Subject: UTILIZATION OF ELECTRIC POWER
	de: : PC-EE 801
Year: 4 [™]	
Course	1. explain the fundamentals of illumination and different lighting schemes
Outcomes	3. able to select appropriate lighting, heating and welding techniques for
	4. apply different electrolysis process for different applications.
	5. explain the principle of different aspect of Electric traction and control
Name of the	e Subject: LINE COMMUTATED AND ACTIVE PWM RECTIFIERS
	de: PE-EE 801A
Year: 4 [™]	
Course	1. explain the principle of operation of different converters.
Outcomes	2. suggest the application of different filters.
	3. apply converters for different applications.
	4. analyze converter circuits.
	5. develop appropriate scheme for control of different converters.
	6. solve numerical problems relating to different converters.
Name of the	e Subject: POWER SYSTEM DYNAMICS AND CONTROL
	de: PE-EE 801B
Year: 4 TH	
Course	1. explain the model of power system components
Outcomes	2. select the appropriate model for required analysis.
Jaconics	3. analyze the performance of the system with small signal analysis.
	15. driary 20 the performance of the system with small signal analysis.

4. evaluate the stability of the single and multi machine systems. 5. develop measures for enhancing the stability of the system. 6. Solve numerical problems of linear dynamical system, modeling of diffe Name of the Subject: ADVANCED ELECTRIC DRIVE Subject Code: PE-EE 801C Year: 4TH 1. explain the principle of operation of converters for AC drives. Course **Outcomes** 2. model Induction and Synchronous motor by reference frame theory. 3. apply different control methods to control speed and torque of Inductic 4. explain the configurations and method of speed control of BLDC, PMSN 5. realize basic blocks for DSP based motion control. 6. develop appropriate scheme for speed control of Induction and Synchri Name of the Subject: INDUSTRIAL AUTOMATION AND CONTROL **Subject Code:** : PE-EE 801D Year: 4TH Course 1. explain the basic structure of industrial automation and control 2. classify different types of control actions of controllers. **Outcomes** 3. analyze control strategies of different processes of industry. 4. illustrate the construction and use of different types of actuators and c 5. use PLC, DCS and SCADA in advanced industrial control. Name of the Subject: SOFT COMPUTING TECHNIQUES Subject Code: OE-EE 801A Year: 4[™] 1. explain soft computing techniques and their roles in building intelligent Course **Outcomes** 2. anlyse the feasibility of application of soft computing techniques for a r 3. effectively use existing software tools to solve real problems using a sc 4. evaluate solutions by various soft computing approaches for a given pr 5. apply different soft computing techniques to solve Engineering problem Name of the Subject: BIOMEDICAL INSTRUMENTATION Subject Code: OE-EE 801B Year: 4[™] 1. describe the principle of medical transducers for temperature, pressure Course **Outcomes** 2. explain the principle of operation of Biomedical recorders, Medical Ima-3. use different Medical laboratory equipments for different tests. 4. analyze any measurement application and suggest suitable measurem 5. suggest suitable imaging methodology for a specific ailment. Name of the Subject: INTRODUCTION TO MACHINE LEARNING **Subject Code:** OE-EE 801C Year: 4[™] 1. explain the basics concepts and classification of Machine Learning. Course **Outcomes** 2. write simple programs using python. 3. describe Supervised Learning concepts. 4. explain the concept of Support Vector Machine. 5. describe unsupervised learning concepts and dimensionality reduction 6. apply Machine Learning in a range of real-world applications.

Name of the Subject: SENSORS AND TRANSDUCERS

Subject Code: OE-EE 801D

Course Outcomes

- 1. explain the basic principle of operation of Transducers and Sensors.
- 2. distinguish different sensors and transducers.
- 3. identify suitable transducer by comparing different industrial standards
- 4. estimate the performance of different transducers.
- 5. design real life electronics and instrumentation measurement systems

PROGRAMME OUTCOMES (PO) BASED ON G.A.

		PO1	PO2	PO3	PO4
Course	CO1	0.67	0.67	0.67	0.67
Outcomes	CO2	0.67	0.67	0.67	0.67
	CO3	0.67	0.67	0.67	
	CO4	0.67	0.67	0.67	0.67
	CO5	0.67	0.67	0.67	
	CO6	0.67	0.67	0.67	0.67
Course	CO1	0.66	0.66	0.66	0.66
Outcomes	CO2	0.66	0.66	0.66	0.66
	CO3	0.66	0.66	0.66	
	CO4	0.66	0.66	0.66	0.66
	CO5	0.66	0.66	0.66	
	CO1	0.74	0.74	0.74	0.74
Course	CO2	0.74	0.74	0.74	0.74
Outcomes	CO3	0.74	0.74	0.74	0.74
	CO4	0.74	0.74	0.74	0.74
	CO5	0.74	0.74	0.74	0.74
	CO6	0.74	0.74	0.74	0.74

	CO1	0.77	0.77	0.77	0.77
Course	CO2	0.77	0.77	0.77	0.77
Outcomes	CO3	0.77	0.77	0.77	0.77
Outcomes	CO4	0.77	0.77	0.77	0.77
	CO5	0.77	0.77		0.77
	CO1	0.78	0.78		0.78
	CO2	0.78	0.78		0.78
Course	CO3	0.78	0.78		0.78
Outcomes	CO4	0.78	0.78		0.78
0410011100	CO5	0.78	0.78		0.78
	CO6	0.78	0.78		0.78
	CO1	0.75			
	CO2	0.75			0.75
Course	соз	0.75			0.75
Outcomes	CO4	0.75			0.75
	CO5	0.75			0.75
	CO6	0.75			0.75
	CO1	0.92			
	CO2				
Course	CO1	0.9	0.9	0.9	0.9
Outcomes	CO2	0.9	0.9	0.9	0.9
	CO3	0.9	0.9	0.9	
	CO4	0.9	0.9	0.9	0.9
	CO5	0.9	0.9	0.9	
	CO6	0.9	0.9	0.9	0.9
Course	CO1	0.89	0.89	0.89	0.89
Outcomes	CO2	0.89	0.89	0.89	0.89
	CO3	0.89			
	CO4	0.89	0.89	0.89	0.89
	CO5	0.89			
	CO1	0.84			0.84
Course	CO2	0.84			0.84
Outcomes	CO3	0.84			0.84
	CO4	0.84			0.84
	CO5	0.84			0.84
	CO6	0.84			0.84
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	0.87
Outcomes	CO3	0.87	0.87		
	CO4	0.87			
	CO5	0.87	0.87		0.07
	CO6	0.87	0.87		0.87
	CO1	0.76			0.76 0.76
Course	CO2 CO3	0.76 0.76			0.76
Outcomes	CO4	0.76			
	CO4 CO5	0.76			0.76
		0.76	0.76	0.76	0.76

	CO6	0.76	0.76	0.76	0.76
	CO1	0.72	0.72	0.72	0.72
Course	CO2	0.72	0.72	0.72	
Outcomes	CO3	0.72	0.72	0.72	
	CO4	0.72			
	CO5	0.72			0.72
	CO6	0.72	0.72	0.72	
	CO1	0.71	0.71	0.71	0.71
Course	CO2	0.71	0.71		
Outcomes	CO3	0.71	0.71	0.71	
	CO4	0.71			
	CO5	0.71			0.71
	CO6	0.71	0.71	0.71	0.71
	CO1	0.88	0.88	0.88	0.88
Course	CO2	0.88	0.88	0.88	
Outcomes	СОЗ	0.88	0.88	0.88	
	CO4	0.88			
	CO5	0.88			0.88
	CO6	0.88	0.88	0.88	0.88
	CO1	0.95	0.95	0.95	0.95
Course	CO2	0.95	0.95	0.95	
Outcomes	CO3	0.95	0.95	0.95	
	CO4	0.95			
	CO5	0.95			0.95
	CO6	0.95	0.95	0.95	0.95
	CO1	0.76	0.76	0.76	0.76
Course	CO2	0.76	0.76		
Outcomes	CO3	0.76	0.76	0.76	
	CO4	0.76			
	CO5	0.76			0.76
	CO6	0.76	0.76	0.76	0.76
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92	0.92	
Outcomes	CO3	0.92	0.92	0.92	
	CO4	0.92			
	CO5	0.92			0.92
	CO6	0.92	0.92	0.92	0.92
	CO1	0.91	0.91	0.91	0.91
Course	CO2	0.91	0.91	0.91	
Outcomes	CO3	0.91	0.91	0.91	
	CO4	0.91			
	CO5	0.91			0.91
	CO6	0.91	0.91	0.91	0.91
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	
Outcomes	CO3	0.87	0.87	0.87	

	CO5	0.87			0.87
	CO6	0.87	0.87	0.87	0.87
	CO1	0.67	0.67	0.67	
Course	CO2	0.67			0.67
Outcomes	CO3	0.67			0.67
Outcomes	CO4				0.67
	CO5		0.67	0.67	
	CO6	0.67	0.67	0.67	
	CO1	0.84	0.84	0.84	
Course	CO2	0.84			0.84
Outcomes	CO3	0.84			0.84
	CO4				0.84
	CO5		0.84	0.84	
	CO6	0.84	0.84	0.84	
	CO1	0.71	0.71	0.71	
Course	CO2	0.71			0.71
Outcomes	соз	0.71			0.71
	CO4				0.71
	CO5		0.71	0.71	
	CO6	0.71	0.71	0.71	
	CO1	0.92	0.92	0.92	
Course	CO2	0.92			0.92
Outcomes	CO3	0.92			0.92
	CO4				0.92
	CO5		0.92	0.92	
	CO6	0.92	0.92	0.92	
	CO1	0.63	0.63	0.63	
Course	CO2	0.63			0.63
Outcomes	CO3	0.63			0.63
	CO4				0.63
	CO5		0.63	0.63	
	CO6	0.63	0.63	0.63	
	CO1	0.87	0.87	0.87	
Course	CO2	0.87			0.87
Outcomes	CO3	0.87			0.87
	CO4				0.87
	CO5		0.87	0.87	
	CO6	0.87	0.87	0.87	
	CO1	0.68	0.68	0.68	
Course	CO2	0.68			
Outcomes	CO3	0.68			
	CO4				
	CO5		0.68	0.68	
	CO6	0.68		0.68	
	CO1	0.83	0.83	0.83	
Course	CO2	0.83			
Outcomes	CO3	0.83			

	CO4	I	Ī	1	1
	CO5		0.83	0.83	
	CO6	0.83	0.83	0.83	
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	соз	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1		0.83	0.83	0.83
Course	CO2	0.83	0.83		
Outcomes	соз	0.83	0.83		
	CO4	0.83			
	CO5	0.83		0.83	0.83
	CO6	0.83	0.83	0.83	0.83
	CO1	0.71	0.71	0.71	0.71
Course	CO2	0.71	0.71		
Outcomes	соз	0.71	0.71		
outcomes	CO4	0.71			
	CO5	0.71		0.71	0.71
	CO6	0.71	0.71	0.71	0.71
	CO1	0.68	0.68	0.68	0.68
Course	CO2	0.68	0.68		
Outcomes	CO3	0.68	0.68		
Gutcomes	CO4	0.68			
	CO5	0.68		0.68	0.68
	CO6	0.68	0.68	0.68	0.68
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	соз	NA	NA	NA	NA
outcomes	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.73	0.73	0.73	0.73
Course	CO2	0.73	0.73		
Outcomes	CO3	0.73	0.73		
	CO4	0.73			
	CO5	0.73		0.73	0.73
	CO6	0.73	0.73	0.73	0.73
	CO1	0.89	0.89	0.89	0.89
Course	CO2	0.89	0.89		
Outcomes	CO3	0.89	0.89		
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	CO4	0.89			
	CO5	0.89		0.89	0.89
	CO6	0.89	0.89	0.89	0.89
	CO1	0.65	0.65	0.65	0.65
Course	CO2	0.65	0.65		

Outcomes	соз	0.65	0.65		
	CO4	0.65	0.65		
	CO5	0.65	0.65	0.65	0.65
	CO6	0.65	0.65	0.65	0.65
	CO1	0.89	0.89	0.89	0.89
Course	CO2	0.89	0.89		
Outcomes	CO3	0.89	0.89		
Gutcomes	CO4	0.89	0.89		
	CO5	0.89	0.89	0.89	0.89
	CO6	0.89	0.89	0.89	0.89
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92		
Outcomes	CO3	0.92	0.92		
Guttomics	CO4	0.92	0.92		
	CO5	0.92	0.92	0.92	0.92
	CO6	0.92		0.92	0.92
	CO1	0.68	0.68	0.68	0.68
Course	CO2	0.68			0.68
Outcomes	CO3	0.68			0.68
Guttomics	CO4	0.68			0.68
	CO5	0.68	0.68	0.68	0.68
	CO6	0.68	0.68	0.68	0.68
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
Guttomics	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	СОЗ	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.9	0.9	0.9	0.9
Course	CO2	0.9	0.9	0.9	0.9
Outcomes	соз	0.9	0.9		
	CO4	0.9	0.9		
	CO5	0.9	0.9	0.9	0.9
	CO6	0.9	0.9	0.9	0.9
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	COS	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.87	0.87	0.87	0.87
	CO1	0.07	0.07	0.07	0.0

Course	CO2	0.87	0.87	0.87	0.87
Outcomes	CO3	0.87			0.87
Outcomes	CO4	0.87	0.87	0.87	0.87
	CO5	0.87			
	CO6	0.87	0.87	0.87	0.87
	CO1	0.86		0.86	
Course	CO2	0.86		0.86	0.86
Outcomes	CO3	0.86	0.86	0.86	
Outcomes	CO4	0.86	0.86		0.86
	CO5	0.86	0.86		0.86
	CO6	0.86	0.86		0.86
	CO1	0.83	0.83	0.83	0.83
Course	CO2	0.83	0.83		
Outcomes	CO3	0.83			
	CO4	0.83	0.83	0.83	0.83
	CO5	0.83	0.83	0.83	
	CO6	0.83	0.83	0.83	
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92		
Outcomes	соз	0.92			
	CO4	0.92	0.92	0.92	0.92
	CO5	0.92	0.92	0.92	
	CO6	0.92	0.92	0.92	
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.82		0.82	
Course	CO2	0.82	0.82	0.82	
Outcomes	CO3	0.82		0.82	
	CO4	0.82		0.82	
	CO5	0.82		0.82	
	CO6	0.82		0.82	
	CO1	0.84		0.84	0.84
Course	CO2	0.84		0.84	0.84
Outcomes	CO3	0.84			
	CO4	0.84			
	CO5	0.84		0.84	
	CO6	0.84	0.84	0.84	0.84

	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2		NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
-	CO1	0.82	0.82		
Course	CO2	0.82	0.82	0.82	
Outcomes	соз	0.82	0.82	0.82	
	CO4	0.82	0.82	0.82	
	CO5	0.82	0.82	0.82	0.82
	CO6	0.82	0.82	0.82	0.82
	CO1	0.86			
Course	CO2	0.86	0.86		
Outcomes	CO3	0.86	0.86		
	CO4	0.86	0.86		
	CO5	0.86	0.86		
	CO6	0.86	0.86		
	CO1	0.91	0.91	0.91	0.91
Course	CO2	0.91	0.91	0.91	0.91
Outcomes	CO3	0.91	0.91	0.91	0.91
	CO4	0.91	0.91	0.91	0.91
	CO5	0.91	0.91	0.91	6.04
	CO6	0.91	0.91	0.91	0.91
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92	0.92	0.92
Outcomes	CO3	0.92	0.92	0.92	0.92
	CO4	0.92	0.92	0.92	0.92
	CO5	0.92	0.92	0.92	0.92

	CO6	0.92	0.92	0.92	0.92
	CO1	0.86	0.86		
Course	CO2	0.86	0.86		
Outcomes	CO3	0.86	0.86		
	CO4	0.86	0.86		
	CO5	0.86	0.86		
	CO6	0.86	0.86		
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	0.87
Outcomes	CO3	0.87	0.87	0.87	0.87
	CO4	0.87	0.87	0.87	0.87
	CO5	0.87	0.87	0.87	0.87
	CO6	0.87	0.87	0.87	0.87
	CO1	0.85	0.85		
Course	CO2	0.85	0.85		0.85
Outcomes	CO3	0.85	0.85		
	CO4	0.85	0.85		0.85
	CO5	0.85	0.85		0.85
	CO6	0.85	0.85		0.85
	CO1	0.94	0.94	0.94	0.94
Course	CO2	0.94	0.94	0.94	0.94
Outcomes	CO3	0.94	0.94	0.94	0.94
	CO4	0.94	0.94	0.94	0.94
	CO5	0.94	0.94	0.94	0.94
	CO6	0.94	0.94	0.94	0.94
	AVERAGE	0.818013937	0.822268908	0.819392265	0.81755814
	PERCENTAGE (%)	81	82	81	81

Apply the knowledge of mathematics, science, nentals, and an engineering specialisation for the solution of complex engineering problem

ng first principles of mathematics, natural sciences, and engineering sciences.

gn system components or processes that meet the specified needs with appropriate considerations.

ling design of experiments, analysis and ide valid conclusions.

and modern engineering and IT tools, including prediction and modelling to complex engin

ess societal, health, safety, legal, and cultural issues and the consequent responsibilities

ons in societal and environmental contexts, and demonstrate the knowledge of, and need for

d responsibilities and norms of the engineering practice.

der in diverse teams, and in multidisciplinary settings.

th the engineering community and with the society at large, such as, being able to comprive presentations, and give and receive clear instructions.

ing and management principles and apply these to one's own work, as a member and lead

 γ to engage in independent and life-long learning in the broadest context of technological ϵ

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ng a
e of the Subject: ELECTRIC CIRCUIT THEORY Subject Code: : PC-EE 301 Year: 2nd (New Syllabus)
of networks.
me of the Subject: ANALOG ELECTRONICS Subject Code: PC-EE 302 Year: 2nd (New Syllabus)
regulators and analog electronic circuits.
ed on application.
the Subject: ELECTRO MAGNETIC FIELD THEORY Subject Code: PC-EE 303 Year: 2nd (New Syllabus)
netic problems.
e of the Subject: ENGINEERING MECHANICS
Subject Code: ES-ME 301 Year: 2nd (New Syllabus)
nematics and kinetics of rigid bodies.
n and friction.

riction and rigid bodies.
Vame of the Subject: MATHEMATICS-III
Subject Code: BS- M 301
Year: 2nd (New Syllabus)
Z transform
sis and Z transform
e of the Subject: BIOLOGY FOR ENGINEERS
Subject Code: BS-EE- 301
Year: 2nd (New Syllabus)
ries.
of cancer.
transfer
me of the Subject: INDIAN CONSTITUTION
Subject Code: : MC-EE 301
Year: 2nd (New Syllabus)
f Union, state and local self-government.Structure, jurisdiction and function of Indian
Ty.
f the Subject: Electric circuit theory Laboratory
Subject Code: PC-EE391
Year: 2nd (New Syllabus)
on successful completion of the course, student will have:
ponse of filters, Laplace transform and inverse Laplace transform
of the Subject: : Analog Electronic laboratory
Subject Code: PC-EE392
Year: 2nd (New Syllabus)
on successful completion of the course, student will have:
fter completion of this course, the learners will be able to
er (A)characteristics of BJT and FET,(B)characteristics of Zener diode as voltage regula
ge regulator using regulator IC chip.timer circuit using 555 for monostable, astable an

nentioned outcomes are not limited. Institute may redefine outcomes based their progr of the Subject: : Numerical Methods laboratory **Subject Code:** PC-CS 391 **Year:** 2nd (New Syllabus) n ear equations using al solution of Algebraic Equation by Regularfalsi and Newton Raphson methods. me of the Subject: : ELECTRIC MACHINE-I **Subject Code:** PC-EE-401 **Year:** 2nd (New Syllabus) on successful completion of the course, student will have: chines and transformers ransformers ne of the Subject: : DIGITAL ELECTRONICS **Subject Code:** PC-EE-402 Year: 2nd (New Syllabus) on successful completion of the course, student will have: niconductor memories and programmable logic devices. circuits, A/D and D/A converter onal & sequential digital circuits and A/D and D/A converter. **ubject:** : ELECTRICAL & ELECTRONICS MEASUREMENTS **Subject Code:** PC-EE-403 **Year:** 2nd (New Syllabus) on successful completion of the course, student will have: ors in measurement, loading effect resistance, capacitance and inductance by bridges and potentiometer er, digital multimeter, digital voltmeter, digital frequency meter, signal generator, stra and measurement techniques of voltage, current, frequency and phase by oscilloscope ner, measurement of power, energy, resistance, inductance and capacitance and transducers f the Subject: : THERMAL POWER ENGINEERING Subject Code: ES-EE-401 **Year:** 2nd (New Syllabus)

pines
engines and Gas turbines.
≥S.
he Subject: : VALUES AND ETHICS IN PROFESSION
Subject Code: HM-EE-401
Year: 2nd (New Syllabus)
ibility and duties
ethics and social experimentation
s safety and risk
of the Subject: : ENVIRONMEMTAL SCIENCE
Subject Code: MC-EE-401
Year: 2nd (New Syllabus)
tivities
environmental and health risk
he environmental laws and regulations
ind pollution.
the Subject: : ELECTRIC MACHINE-I LABORATORY
Subject Code: PC-EE491
Year: 2nd (New Syllabus)
ol of DC motor and parallel operation of the transformer
he Subject: : DIGITAL ELECTRONICS LABORATORY
Subject Code: PC-EE492
Year: 2nd (New Syllabus)
propriate instruments and precaution
and flip-flops and asynchronous and synchronous up down counters
ice versa, 4 bit parity generator & comparator circuits,
t:: ELECTRICAL & ELECTRONICS MEASUREMENT LABORATORY
Subject Code: PC-EE493
Year: 2nd (New Syllabus)

oving iron and dynamometer type ammeter, voltmeter and wattmeter by potentiomet :e, inductance, capacitance
te, inductance, capacitance
,
Sala at a THERMAL DOWER ENGINEEING LARORATORY
Subject: : THERMAL POWER ENGINEEING LABORATORY
Subject Code: ES-ME-491
Year: 2nd (New Syllabus)
ecautions
ochran Boiler, Vertical Tubular Boiler, Locomotive Boiler, 4S Diesel Engine, 4S Petrol Er
ctrical load box and rope brake dynamometer
the Subject: ELECTRIC MACHINE-II PC-EE-501
Subject Code: PC-EE-501
Year: 3rd
agnetic fields.
nase Induction machines
hase Induction machines
nous machine
electromechanical devices.
special eletromechanical device.
Name of the Subject: POWER SYSTEM-I
Subject Code: : PC-EE-502
Year: 3rd (Old Syllabus)
nt sources
1 cables.
n line
lame of the Subject: CONTROL SYSTEM
Subject Code: PC-EE-503
Year: 3rd
ms
me of the Subject: POWER ELECTRONICS

Subject Code: PC-EE-504 Year: 3rd ices. 1 of SCR reduction of harmonics of the converter the Subject: ELECTRIC MACHINE-IILABORATORY **Subject Code:** : PC-EE 591 Year: 3rd hase Inductionmotor, Induction generator and synchronous motor, methods of speed of the Subject: POWER SYSTEM-I LABORATORY **Subject Code:** PC-EE 592 Year: 3rd own strength of solidinsulating material and dielectric constant of transformer oil. of the Subject: CONTROL SYSTEMLABORATORY **Subject Code:** PC-EE 593 Year: 3rd ICE for simulation of systems. the Subject: POWER ELECTRONICSLABORATORY **Subject Code:** PC-EE 594 **Year:** 3rd

of the Subject: DATA STRUCTURE & ALGORITHM

Subject Code: OE-EE-501A Year: 3rd nce the performance of the program. lem. 3, searching, and hashing ns. the Subject: OBJECT ORIENTED PROGRAMMING **Subject Code:** OE-EE-501B norphism, lame of the Subject: POWER SYSTEM-II **Subject Code:** PC-EE-601 Year: 3rd studies. nents. bilty and protection ofpower system. e Subject: MICROPROCESSOR & MICROCONTROLLER **Subject Code:** PC-EE-602 e of the Subject: DIGITAL CONTROL SYSTEM **Subject Code: PE-EE-601A Year:** 3rd tems.

cations.

me of the Subject: HVDC TRANSMISSION
Subject Code: PE-EE-601B
Year: 3 rd
fter completion of this course the students will be able to
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iverters.
des.
eactive power control.nts.
of the Subject: ELECTRICAL MACHINE DESIGN
Subject Code: PE-EE-601C
Year: 3 rd
ign of an ac machine
nagnetic and thermalloading of electrical machines
nachines.
the Subject: ELECTRICAL AND HYBRID VEHICLE
Subject Code: PE-EE-602A
Year: 3 rd
lepending on resources.
vehicles.
a of the Subject, DOMED OUALITYANDEACTS
e of the Subject: POWER QUALITYANDFACTS Subject Code: PE-EE-602B
Year: 3 rd
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icteristics.
explain working principle of dynamic voltage restorer and UPQC
explain working principle of dynamic voltage restorer and of Qe
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strial consumers.
ctrical systems.
ectrical systems.
power factor correction.
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in the frequencydomain.
o SNR
ceivers
ommunication system nication link
THECKIOTI HITK
gital modulation systems
ıtion
eduling, legal andregulatory issues applied to economic investment and project-manage
earth fault relay, on loadtime delay relay, off load time delay relay, CT and PT.
der. 6. Apply software tools to find bus voltage, currents and power flows throughout t

a number in a string andstring manipulation
ns of 8051
sor and signal conditioning circuits
n system for small township, double circuit transmission line and Electric machines with lift and pump and for an applicationwith analog, digital, mixed signal, microcontroller and PCB
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te space.
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ergy intensive industrialequipments
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mes minimum for a definedlevel of load.
d phase angles at all buses. mand at all the times.
mana at an the times.
nd transform the real lifeinformation in different representation
id transform the real memormation in different representation
nine learning
and limitations, and societalimplications
erent contexts
he key technologies andprotocols employed at each layer of the stack
ata analysis
ılgorithm, areafilling algorithms.
acteristics and attributesof Embedded Systems
bedded systems.
ms. 6. design RTOS based Embedded systems.
. 2. enhance images in the spatial and frequency domain using various transforms.

rces in the organizationsand integrate the learning in handling these complexities. gement.
3. 2. explain the fundamental of Electrolytic processes, Electric heating and Welding. specific applications.
of traction motor.

erent components and stability.
on and Synchronous motor.
1 and SRM.
onous motor.
ontrol valves.
machines
particular problem
oft computing approach
roblem.
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e and respiration rate.
ging equipments Surgical & Therapeutic Instruments and Medical Laboratory Instruments
nent methods.
ient methods.
techniques.

3 and procedures for measurement of physical parameters

. 6. apply smart sensors, bio-sensors, PLC and Internet of Things to different applicati

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	0.71	0.71	0.71	
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	0.00	0.92		
	0.92			
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	0.92	0.92	0.92	
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		0.63	0.63	
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		0.87		
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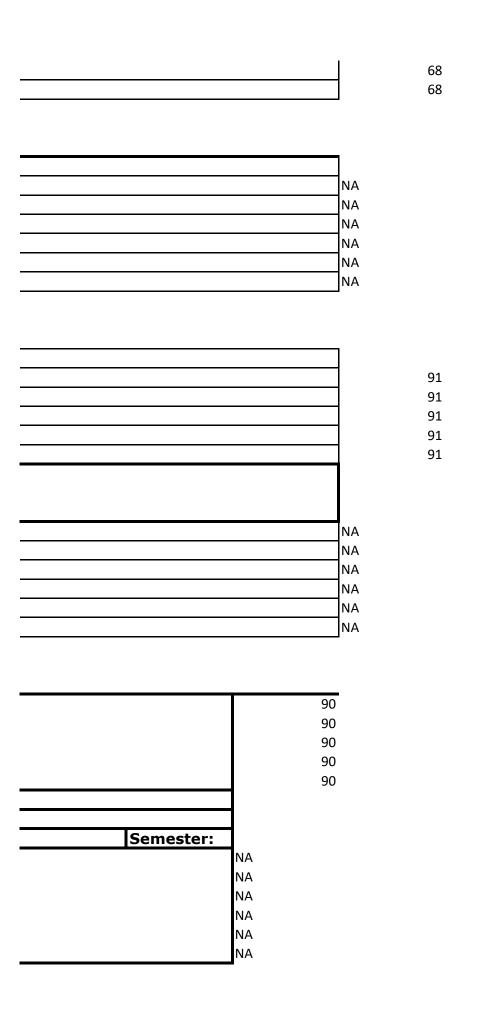
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DEPARTMENT OF ELECTRICAL ENGINEERING

Program Outcomes & Course Outcomes

PROGRAM OUTCOMES

PO NO.	² O NO.		
1	Engineering knowledge	Apply the knowledge of mathematics, science,	
2	Problem analysis:	Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principle	
3	Design/development of solutions:	Design solutions for complex engineering problems and design system compsafety, and cultural, societal, and environmental considerations.	
4	Conduct investigations of complex problems:	Use research-based knowledge and research methods including design of exinterpretation of data, and synthesis of the information to provide valid conclu	
5	Modern tool usage:	Create, select, and apply appropriate techniques, resources, and modern enqunderstanding of the limitations.	
6	The engineer and society:	Apply reasoning informed by the contextual knowledge to assess societal, he engineering practice.	
7	Environment and	I Inderetand the impact of the professional engineering solutions in societal as	

,	sustainability:	Tonuerstand the impact of the professional engineering solutions in societal at
8	Ethics:	Apply ethical principles and commit to professional ethics and responsibilities
9	Individual and team work:	Function effectively as an individual, and as a member or leader in diverse te
10	Communication:	Communicate effectively on complex engineering activities with the engineeri and design documentation, make effective presentations, and give and receiv
11	Project management and finance:	Demonstrate knowledge and understanding of the engineering and manage and in multidisciplinary environments
12	Life-long learning:	Recognise the need for, and have the preparation and ability to engage in inc

PROGRAM SPECIFIC OUTCOMES

PSO1: Ability to apply the knowledge of Basic Computing, Basic Sciences and

Social Sciences in the field of electrical engineering to identify, analyze and solve real life problems faced in industries and/or during research work.

PSO2: Ability to model, test, analyze and design components or processes related to modern power system involving both conventional and renewable energy resources, high voltage systems and energy management.

PSO3: Ability to apply the concept of circuit theory, electromagnetic field theory and basic electronics to solve complex problems of electrical machines and drives, power electronic converters and electrical system design.

PSO4: Ability to identify and analyze the role of measurement, instrumentation and modern control engineering to enhance sustainability, reliability and efficiency of electrical systems.

PSO5: Ability to demonstrate proficiency in operating and handling modern engineering tools to cop up with dynamic industrial environment.

PSO6: Ability to work and communicate effectively in the corporate life keeping a

responsible outlook towards socio-economic and environmental issues.

COURSE OUTCOMES & COURSE ATTAINMENTS

Name of the Subj	ect: ELECTRIC CIRCUIT THEORY
Subject Code: : Po	C-EE 301
Year: 2nd (New S	yllabus)
Course Outcomes:	After completion of this course the students will be able to
CO1	describe different type of networks, sources and signals with examples.
CO2	explain different network theorems, coupled circuit and tools for solution of networks.
CO3	apply network theorems and different tools to solve network problems.
CO4	select suitable techniques of network analysis for efficient solution.
CO5	estimate parameters of two-port networks.
CO6	design filter circuits.
Name of the Subj	ect: ANALOG ELECTRONICS
Subject Code: PC-	EE 302
Year: 2nd (New S	yllabus)
Course Outcomes:	After completion of this course the students will be able to
CO1	1. describe analog electronic components and analog electronics circuits
CO2	2. explain principle of operation of analog electronic components, filters, regulators and analog (
СО3	3. compute parameters and operating points of analog electronic circuits.
CO4	4. determine response of analog electronic circuits.
CO5	5. distinguish different types amplifier and different types oscillators based on application.
CO6	6. construct operational amplifier based circuits for different applications.
Name of the Subj	ect: ELECTRO MAGNETIC FIELD THEORY
Subject Code: PC-	EE 303
Year: 2nd (New S	yllabus)
Course Outcomes:	After completion of this course the students will be able to
CO1	1. Relate different coordinate systems for efficient solution of electromagnetic problems.
CO2	2. describe mathematical s tools to solve electromagnetic problems.
СО3	3. explain laws applied to electromagnetic field.
CO4	4. apply mathematical tools and laws to solve electromagnetic problems.

CO5	5. analyze electromagnetic wave propagation
CO6	6. estimate transmission line parameters
Name of the Su	bject: ENGINEERING MECHANICS
Subject Code:	ES-ME 301
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	After completing this course, the students will be able to:
CO1	explain the co-ordinate system, principle of three dimensional rotation, kinematics and kinetics o
CO2	elaborate the theory of general motion, bending moment, torsional motion and friction.
СО3	develop free body diagram of different arrangements.
CO4	solve problems with the application of theories and principle of motion , friction and rigid bodies
CO5	analyze torsional motion and bending moment.
Name of the Su	bject: MATHEMATICS-III
Subject Code:	3S- M 301
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	Upon completion of this course, students will be able to:
CO1	explain basics of probability theories, rules, distribution and properties of Z transform
CO2	describe different methods of numerical analysis.
соз	solve numerical problems based on probability theories , numerical analysis and Z transform
CO4	apply numerical methods to solve engineering problems.
CO5	5. solve engineering problems using z transform and probability theory.
Name of the Su	bject: BIOLOGY FOR ENGINEERS
Subject Code:	3S-EE- 301
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	Upon completion of this course, students will be able to:
CO1	Describe with examples the biological observations lead to major discoveries.
CO2	Explain the classification of kingdom of life the building blocks of life
соз	Different techniques of bio physics used to study biological phenomena.
CO4	The role of imaging in the screening, diagnosis, staging, and treatments of cancer.
CO5	Identify DNA as a genetic material in the molecular basis of information transfer
CO6	Analyze biological processes at the reductionistic level.
CO7	Apply thermodynamic principles to biological systems.
CO8	Identify microorganisms
Name of the Su	bject: INDIAN CONSTITUTION

Subject Code:	: MC-EE 301
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	After completing this course, the students will be able to:
CO1	Describe different features of Indian constitution. Power and functioning of Union, state and loca
CO2	Identify authority to redress a problem in the profession and in the society.
Name of the S	ubject: : Electric circuit theory Laboratory
Subject Code:	PC-EE391
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Determine transient response of different electrical circuit, frequency response of filters, Laplace
CO2	Generate different signals in both discrete and analog form
CO3	Analyze amplitude and phase spectrum of different signals.
CO4	Verify network theorems.
CO5	Construct circuits with appropriate instruments and safety precautions.
CO5	Simulate electrical circuit experiments using suitable software.
Name of the S	ubject: : Analog Electronic laboratory
Subject Code:	PC-EE392
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
	After completion of this course, the learners will be able to
CO1	Determine characteristics of full wave rectifier with filter and without filter (A)characteristics of E
CO2	Verify function of DAC and ADC
СОЗ	Construct function generator using IC, R-C coupled amplifier, linear voltage regulator using regul
CO4	Work in a team
CO5	Validate theoretical learning with practical Special Remarks: The above-mentioned outcomes are
Name of the S	ubject: : Numerical Methods laboratory
Subject Code:	PC-CS 391
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Solve problems with Newton forward /backward, Lagrange's interpolation
CO2	problems of numerical integration using Trapezoidal rule, Simpson's 1/3
СО3	rule, Weddle's rule problems to find numerical solution of a system of linear equations using

CO4	Gauss elimination and Gauss-Seidel iterations, problems to find numerical solution of Algebraic
CO5	Ordinary differential equation by Euler's and Runga-Kutta methods.
CO6	Find appropriate numerical methods to solve engineering problems.
C07	Use software package to solve numerical problems.
Name of the	Subject: : ELECTRIC MACHINE-I
Subject Code	: PC-EE-401
Year: 2nd (N	ew Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Describe the function of different components of magnetic circuit, DC machines and transformer
CO2	Explain the principle of operation of different types of DC machines and transformers
CO3	Solve numerical problems of DC machines and transformers.
CO4	Estimate the parameters and efficiency of transformer.
CO5	Determine the characteristics of DC machines
CO6	recommend methods to control output of DC machines.

Year: 2nd (New Syllabus)

Course Upon successful completion of the course, student will have: Outcomes: Describe the function of different building blocks of digital electronics, semiconductor memories CO1 Explain the principle of operation of combinational and sequential digital circuits, A/D and D/A co CO₂ Solve numerical problems of Boolean algebra, number system, combinational & sequential digita **CO3** Specify applications of combinational and sequential digital circuits. **CO4** Determine specifications of different digital circuits. **CO5** Design combinational and sequential digital circuits **CO6**

Name of the Subject: : ELECTRICAL & ELECTRONICS MEASUREMENTS

Subject Code: PC-EE-403 Year: 2nd (New Syllabus)

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Course	Upon successful completion of the course, student will have:
CO1	Explain the terms accuracy, precision, resolution, speed of response, errors in measurement, loa
CO2	Describe methods of measurement of power, energy by instruments and resistance, capacitance
соз	Explain the principle of operation of analog meters, instrument transformer, digital multimeter, or
CO4	Explain the different building block, principle of operation of oscilloscope and measurement tech
CO5	Solve numerical problems related to analog meters, instrument transformer, measurement of po

CO6	Specify applications of analog and digital measuring instruments, sensors and transducers
Name of the Sub	ject: : THERMAL POWER ENGINEERING
Subject Code: ES	-EE-401
Year: 2nd (New	Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Describe the function of different components of boilers. Engines and turbines
CO2	Explain the principle of operation of different types of boilers, turbines, IC engines and Gas turbi
СО3	Solve numerical problems of boilers, turbines, IC engines and Gas turbines.
CO4	Analyze the performance of boilers, engines and turbines.
CO5	Determine efficiency of boilers, engines and turbines.
CO6	Explain methods to control boiler, engines and turbines parameters.
Name of the Sub	ject: : VALUES AND ETHICS IN PROFESSION
Subject Code: H	1-EE-401
Year: 2nd (New	Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	1. Illustrate different aspects of human values, ethics, engineers' responsibility and duties
CO2	2. Explain different principles, different theories and laws of engineering ethics and social experi
CO3	3. Identify different factors in the light of Engineers' responsibility towards safety and risk
CO4	4. Correlate ethics of different work environment.
CO5	5. Explain the need for intellectual property rights.
Name of the Sub	ject: : ENVIRONMEMTAL SCIENCE
Subject Code: M	C-EE-401
Year: 2nd (New	Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Understand the natural environment and its relationships with human activities
CO2	Apply the fundamental knowledge of science and engineering to assess environmental and healt
соз	Develop guidelines and procedures for health and safety issues obeying the environmental laws
CO4	Acquire skills for scientific problem-solving related to air, water, noise& land pollution.
Name of the Sub	ject: : ELECTRIC MACHINE-I LABORATORY
Subject Code: PC	-EE491
Year: 2nd (New	Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment.

i	
CO2	Test the instrument for application to the experiment.
CO3	Construct circuits with appropriate instruments and safety precautions
CO4	Validate different characteristics of DC machine , methods of speed control of DC motor and par
CO5	Work effectively in a team
Name of the S	Subject: : DIGITAL ELECTRONICS LABORATORY
Subject Code:	PC-EE492
Year: 2nd (Ne	ew Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment
CO2	2. Test the instruments for application to the experiment
соз	3. Construct decoder , multiplexer, adder and subtractor circuits with appropriate instruments a
CO4	4. Realize RS-JK and D flip flop, universal register with gates, multiplexer and flip-flops and asyr
CO5	5. Validate the operation of code conversion circuit -BCD to Excess 3 & vice versa, 4 bit parity g
CO5	Work effectively in a team
Name of the S	Subject: : ELECTRICAL & ELECTRONICS MEASUREMENT LABORATORY
Subject Code:	PC-EE493
Year: 2nd (Ne	ew Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
	1. identify appropriate equipment and instruments for the experiment
	2. test the instrument for application to the experiment
	3. construct circuits with appropriate instruments and safety precautions
	4. evaluate and adjust the precision and accuracy of AC energy meter, moving iron and dynamo
	5. measure voltage, current, power, energy, phase , frequency, resistance, inductance, capacita
	6. work effectively in a team
Name of the S	Subject: : THERMAL POWER ENGINEEING LABORATORY
Subject Code:	ES-ME-491
Year: 2nd (Ne	ew Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment
CO2	Construct experimental setup with appropriate instruments and safety precautions
соз	Identify different parts of Lanchashire Boiler, Bahcock & Willcox Boiler, Cochran Boiler, Vertical
CO4	Test 4 stroke petrol engine by electrical load box and diesel engine by electrical load box and ro
CO5	Find calorific value, flash point, fire point, cloud point, pour point of fuel.
<u> </u>	

C06	Work effectively in a team
Name of the	Subject: ELECTRIC MACHINE-II PC-EE-501
Subject Code	: PC-EE-501
Year: 3rd	
Course Outcomes:	On successful completion of the course the student will be able to:
· · · · · · · · · · · · · · · · · · ·	1. To understand the arrangement of windings of AC machines.
	2. To understand the principle of production of pulsating and revolving magnetic fields.
	3. To understand the principle of operation and characteristics of three phase Induction machine
	4. To understand the principle of operation and characteristics of single phase Induction machine
	5. To understand the principle of operation and characteristics of synchronous machine
	6. To understand the principle of operation and characteristics of special electromechanical devices
	7. To solve problems of Induction machines, synchronous machines and special eletromechanical
Name of the	Subject: POWER SYSTEM-I
Subject Cod	e: : PC-EE-502
Year: 3rd (C	ld Syllabus)
Course Outcomes:	After completion of this course the students will be able to:
CO1	To understand the basic principle of generation of Electricity from different sources
CO2	To find parameters and characteristics of overhead transmission lines and cables.
CO3	To find different parameters for the construction of overhead transmission line
CO4	To determine the performance of transmission lines.
CO5	To understand the principle tariff calculation.
CO6	To solve numerical problems on the topics studied.
Name of the	Subject: CONTROL SYSTEM
Subject Cod	e: PC-EE-503
Year: 3rd	
Course Outcomes:	On completion of this course a student will be in a position to:
CO1	1. To find mathematical representation of LTI systems.
CO2	2. To find time response of LTI systems of different orders
CO3	3. To find the frequency response of LTI systems of different orders
CO4	4. To understand stabilityof differentLTI systems.
CO5	5. To analyze LTIsystems with state variables.
CO6	6. To solve problems of mathematical modelling and stability of LTI systems

Name of the Subject: POWER ELECTRONICS

Subject Code: PC-EE-504 Year: 3rd Course On completion of this course a students will be able to Outcomes To understand the functioning and characteristics of power switching devices. CO1 To understand the principle of operation of converters. CO₂ To understand different triggering circuits and techniques of commutation of SCR CO₃ To find external performance parameter of converters. **CO4** To analyze methods of voltage control, improvement of power factor and reduction of harmonics **CO5** To solve numerical problems of converters **CO6** Name of the Subject: ELECTRIC MACHINE-IILABORATORY Subject Code: : PC-EE 591 Year: 3rd Course After completion of the course, the students will be able to: Outcomes identify appropriate equipment and instruments for the experiment. CO1 test the instrument for application to the experiment. CO₂ construct circuits with appropriate instruments and safety precautions. **CO3** validate different characteristics of single phase Induction motor, three phase Inductionmotor, I **CO4** work effectively in a team **CO5** Name of the Subject: POWER SYSTEM-I LABORATORY Subject Code: PC-EE 592 Year: 3rd Course On completion of this course a students will be able to Outcomes identify appropriate equipment and instruments for the experiment. CO1 test the instrument for application to the experiment. CO₂ 3. construct circuits with appropriate instruments and safety precautions. **CO3** 4. validate different characteristics of transmission line. **CO4** 5. determine earth resistance, dielectric strength of insulating oil, breakdown strength of soliding **CO5** 6. analyze an electrical transmission line circuit with the help of software **CO6 CO7** 7. work effectively in a team Name of the Subject: CONTROL SYSTEMLABORATORY Subject Code: PC-EE 593 Year: 3rd Course After completion of this course the students will be able to

Outcomes

CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
СО3	construct circuits with appropriate instruments and safety precautions.
CO4	use MAT-Lab control system tool box, MAT-Lab- simulink tool box & PSPICE for simulation of sys
CO5	5. determinecontrol system specifications of first and second order systems.
Name of the Su	bject: POWER ELECTRONICSLABORATORY
Subject Code:	PC-EE 594
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
CO3	construct circuits with appropriate instruments and safety precautions
Name of the Su	bject: DATA STRUCTURE & ALGORITHM
Subject Code:	OE-EE-501A
Year: 3rd	
Course Outcomes:	On completion of this course a student will be in a position to:
CO1	differentiate how the choices of data structure & algorithm methods enhance the performance of
CO2	solve problems based upon different data structure & also write programs.
СО3	write programs based on different data structure
CO4	identify appropriate data structure & algorithmic methods in solving problem.
CO5	discuss the computational efficiency of the principal algorithms for sorting, searching, and hashi
CO6	comparethe benefits of dynamic and static data structures implementations.
Name of the Su	bject: OBJECT ORIENTED PROGRAMMING
Subject Code:	DE-EE-501B
Year: 3rd	
Course Outcomes:	After completion of this course the students will be able to
CO1	specify simple abstract data types.
CO2	recognise features of object-oriented design such as encapsulation, polymorphism,
соз	inheritance, and composition of systems based on object identity.
CO4	apply common object-oriented design patterns
CO5	specify uses of common object oriented design patterns with examples.
CO6	design applications with an event-driven graphical user interface.

Name of the Subject: POWER SYSTEM-II

Subject Code:	PC-EE-601
Year: 3rd	
Course Outcomes:	After completion of the course, the students will be able to:
CO1	Represent power system components in line diagrams.
CO2	Determine the location of distribution substation.
соз	Determine the performance of power system with the help of load flowv studies.
CO4	Analyse faults in Electrical systems.
CO5	Determine the stabilty of Power system.
CO6	Explain principle of operation of different power system protection equipments.
CO7	Solve numerical problems related to representation, load flow, faults, stabilty and protection of
Name of the Su	bject: MICROPROCESSOR & MICROCONTROLLER
Subject Code: I	PC-EE-602
Year: 3rd	
Course	After completion of the course, the students will be able to
CO1	1. explain the architecture of 8086 and 8051.
CO2	2. do assembly language programming of 8086, 8051
соз	3. interface different peripheral with 8086 and 8051
CO4	4. develop micro processor/ microcontroller based systems.
CO5	5. compare microprocessor, microcontroller, PIC and ARM processors
Name of the Su	bject: DIGITAL CONTROL SYSTEM
Subject Code: I	PE-EE-601A
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the principle of sampling and reconstrction of analog signal. systems.
CO2	perform Z-transformation and inverse Z-tranaformation of systems.
соз	analyse and design digital control
CO4	design compensators for digital control system to achieve desired specifications.
CO5	represent digital control systems using state space models.
CO6	analyze the effect sampling on stability, controllability and observability
Name of the Su	bject: HVDC TRANSMISSION
Subject Code:	PE-EE-601B
Year: 3rd	
Course	After completion of this course the students will be able to

CO1	choose intelligently AC and DC transmission systems for the dedicated application(s).
CO2	identify the suitable two-level/multilevel configuration for high power converters.
соз	select the suitable protection method for various converter faults.
CO4	4. identify suitable reactive power compensation method.
CO5	5. decide the configuration for harmonic mitigation on both AC and DC sides.
CO6	6. solve numerical problems related to converters, power flow analysis, reactive power control.n

Name of the Subject: ELECTRICAL MACHINE DESIGN

Subject Code: PE-EE-601C

Year: 3rd

Course Outcomes:	After completion of this course the students will be able to
CO1	specify the rating of electrical machines with standard specifications.
CO2	explain the principles of electrical machine design and carry out basic design of an ac machine
CO3	3. determine the various factors which influence the design of electrical, magnetic and thermallo
CO4	4. explain the construction and performance characteristics of electrical machines.
CO5	5. use software tools to do design calculations.

Name of the Subject: ELECTRICAL AND HYBRID VEHICLE

Subject Code: PE-EE-602A

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	explain the principle of Electric traction.
CO2	choose a suitable drive scheme for developing an electric hybrid vehicle depending on resources
соз	design and develop basic schemes of electric vehicles and hybrid electric vehicles.
CO4	choose proper energy storage systems for vehicle applications
CO5	implement different energy management strategies for hybrid vehicle.

Name of the Subject: POWER QUALITY AND FACTS

Subject Code: PE-EE-602B

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	analyse uncompensated AC transmission line.
CO2	explain the working principles of FACTS devices and their operating characteristics.
соз	apply FACTS devices for power flow control and stabilty.
CO4	identify different issues of power quality in distribution system.
CO5	apply different compensation and control techniques for DSTATCOM6. explain working principle

Name of the S	Name of the Subject: INDUSTRIAL ELECTRICAL SYSTEMS	
Subject Code:		
Year: 3rd		
Course Outcomes:	On completion of this course a students will be able to	
CO1	Represent electrical wiring system for residential, commercial and industrial consumers.	
CO2	Determine the rating of components of residential and commercial electrical systems.	
соз	Design lighting scheme for a residential and commercial premises.	
CO4	Select transformer, switchgear, protection equipments for industrial electrical systems.	
CO5	explain methods of automation of Industrial Electrical Systems	
CO6	Solve numerical problems related to earthing system, lighting scheme, power factor correction.	
Name of the S	Subject: DIGITAL SIGNAL PROCESSING	
Subject Code:	OE-EE-601A	
Year: 3rd		
Course	On completion of this course a students will be able to	

Outcomes:	On completion of this course a students will be able to
CO1	represent signals mathematically in continuous and discrete-time and in the frequencydomain.
CO2	analyse discrete-time systems using z-transform.
соз	explain the Discrete-Fourier Transform (DFT) and the FFT algorithms.
CO4	design digital filters for various applications.
CO5	apply digital signal processing for the analysis of real-life signals.

Name of the Subject: COMMUNICATION ENGINEERING

Subject Code: OE-EE-601B

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	compare the performance of AM, FM and PM schemes with reference to SNR
CO2	explain noise as a random process and its effect on communication receivers
CO3	evaluate the performance of ASK, FSK, PSK, BPSK, QPSK in a digital communication system
CO4	identify source coding and channel coding schemes for a given communication link
CO5	analyze various digital modulation methods
CO6	compute band width requirement and probability of error in various digital modulation systems

Name of the Subject: VLSI AND MICROELECTRONICS

Subject Code: PE-EE-603C

Year: 3rd

Course	On completion of this course a students will be able to
Outcomes	On completion of this course a students will be able to

CO1	explain the principle of design of VLSI circuits
CO2	explain different MOS structure with characteristics
СО3	apply different processes for VLSI fabrication
CO4	use programming language for the design of logic circuits
CO5	draw the stick diagram and layout for simple MOS circuits

Name of the Subject: ECONOMICS FOR ENGINEERS

Subject Code: HM-EE-601

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	evaluate the economic theories, cost concepts and pricing policies
CO2	explain the market structures and integration concepts
CO3	apply the concepts of financial management for project appraisal
CO4	explain accounting systems , the impact of inflation, taxation, depreciation
CO5	analyze financial statements using ratio analysis
CO6	explain financial planning, economic basis for replacement, project scheduling, legal andregulate

Name of the Subject: POWER SYSTEM-II LABORATORY

Subject Code: PC-EE 691

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	Identify appropriate equipment and instruments for the experiment.
CO2	Test the instrument for application to the experiment.
соз	Construct circuits with appropriate instruments and safety precautions.
CO4	Validate the characteristics of under voltage relay, over current relay, earth fault relay, on loadt
CO5	Validate protection schemes of transformer, generator, motor and feeder. 6. Apply software too
CO6	work effectively in a team

Name of the Subject: MICRO PROCESSOR AND MICRO CONTROLLER LABORATORY

Subject Code: : PC-EE 692

Year: 3rd

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Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	test the instrument for application to the experiment
СО3	construct circuits with appropriate instruments and safety precautions
CO4	program 8086 for arithmatic operation, sorting of array, searching for a number in a string ands

CO5	interface ADC/DAC, 8255, 8251 to 8086 and LCD, keyboard to 8051
CO6	program 8051 using arithmatic, logical and bit manipulation instructions of 8051
CO7	work effectively in a team
Name of the Subject: ELECTRICAL AND ELECTRONICS DESIGN LABORATORY	

Subject Code: PC-EE 681

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	explain basic concept of measurement, noise in electronic system, sensor and signal conditioning
СОЗ	implement PC based data acquisition systems
CO4	construct circuits with appropriate instruments and safety precautions
CO5	design heating elements, air core grounding reactor, power distribution system for small townsh
CO6	do wiring and installation design of a multistoried residential building with lift and pump
CO7	design electronic hardware for controller of lift, speed of AC/DC motor, and for an applicationwit

Name of the Subject: ELECTRIC DRIVE

Subject Code: PC-EE 701

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	Explain the principle of operation of Electric Drive.
соз	Describe different methods of starting and braking of Electric Drive.
CO4	Model and control DC Drive
CO5	Control speed of Induction and Synchronous motors.
CO6	Recommend drives for different applications.
CO7	Estimate ratings, variables and parameters of Electric Drives.

Name of the Subject: CONTROL SYSTEM DESIGN

Subject Code: PE-EE 701 A

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	explain the effect of gain, addition of pole and zeros on system's performance.
CO3	describe time domain and frequency domain design specifications.
CO4	demonstrate the effect of nonlinearity on system performance.

Name of the Subject: ELECTRICAL ENERGY CONSERVATION& AUDITING	
CO7	select appropriate method for design of control system.
CO6	design PID controllers.
CO5	design control system in time domain , in frequency domain and in state space.

Subject Code: : PE-EE 701B

Year: 4TH

Course	On completion of this course a students will be able to
CO1	explain the basic of energy resources, energy security, energy conservation and pollution.
CO2	quantify the energy conservation opportunities in different thermal systems
соз	quantify the energy conservation opportunities in different electrical systems
CO4	identify the common energy conservation opportunities in different energy intensive industrialed
CO5	explain the methods of energy management and audit.
CO6	analyse and report the outcome of energy audit

Name of the Subject: POWER GENERATION ECONOMICS

Subject Code: : PE-EE 701C

Year: 4TH

Course	On completion of this course a students will be able to
CO1	explain the different terms e.g. load factor etc for economics of generation.
CO2	apply different types of tariff for electricity pricing.
соз	optimize the operation of power system with unit commitment.
CO4	determine generation levels such that the total cost of generation becomes minimum for a defin
CO5	determine the state of the system given by the voltage magnitudes and phase angles at all buse
CO6	predict the power or energy needed to balance the supply and load demand at all the times.

Name of the Subject: ARTIFICIAL INTELLIGENCE

Subject Code: OE-EE-701A

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to
CO1	explain the concept of knowledge representation and predicate logic and transform the real lifeir
CO2	describe state space and its searching strategies
CO3	demonstrate profciency in applying scientifc method to models of machine learning
CO4	apply the machine learning concepts in real life problems
CO5	demonstrate an ability to share in discussions of AI, its current scope and limitations, and societ
Name of the C	THE ALL PRITEDRIFT OF THENCO

Name of the Subject: INTERNET OF THINGS

Subject Code: OE	-EE-701B
Year:4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the definition and usage of the term "Internet of Things" in different contexts
CO2	explain the key components that make up an IoT system.
соз	differentiate between the levels of the IoT stack and be familiar with the key technologies andpr
CO4	build and test a IoT system involving prototyping, programming and data analysis
CO5	apply cloud computing and data analytics in a typical IoT system
Name of the Subj	ect: COMPUTER GRAPHICS
Subject Code: OE	-EE-701C
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain Computer graphics and graphic systems.
CO2	test and implement line drawing algorithm, circle and ellipse drawing algorithm, areafilling algori
CO3	Perform 2D and 3D transformation and viewing.
CO4	apply algorithms for visible surface determination.
CO5	explain colors and shading models and ray tracing.
Name of the Subj	ect: EMBEDDED SYSTEM
Subject Code: OE	-EE 702A
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	discuss the definition, purpose, application, classification, quality characteristics and attributeso
CO2	explain the internal structure of the Embedded system.
CO3	interface IO devices and other peripherals with micro controllers in Embedded systems.
CO4	write programs for Micro controllers in Embedded systems.
CO5	apply the concept of Embedded firmware in design of Embedded systems. 6. design RTOS based
Name of the Subj	ect: DIGITAL IMAGE PROCESSING
Subject Code: OE	-EE 702B
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the fundamental concepts of a digital image processing system.
CO2	enhance images in the spatial and frequency domain using various transforms.
CO3	apply different image segmentation techniques.

Ī	
CO4	categorize various compression techniques.
CO5	implement image process and analysis algorithms.
CO6	apply image processing algorithms in practical applications.
Name of the Si	ıbject: COMPUTER NETWORK
Subject Code:	OE-EE 702C
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the concepts of data communication and networking.
CO2	identify the different types of network topologies and protocols.
CO3	describe the function of a network system with OSI and TCP/IP model.
CO4	differentiate different types of routing protocol.
CO5	apply principles of congestion control .
CO6	implement different schemes for security of the networks.
Name of the Si	ıbject: PRINCIPLE OF MANAGEMENT
Subject Code:	: HM-EE 701
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the concepts and approaches of management.
CO2	demonstrate the roles, skills and functions of management.
СО3	diagnose and solve organizational problems.
CO4	identify the complexities associated with management of human resources in the organizationsa
CO5	apply different methods of Customer, Operation and Technology management.
CO6	acquire skills of good leader in an organization.
Name of the Si	ıbject: ELECTRIC DRIVE LABORATORY
Subject Code:	PC-EE 791
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	1. identify appropriate equipment and instruments for the experiment.
CO2	2. test the instrument for application to the experiment.
СОЗ	3. construct circuits with appropriate instruments and safety precautions.
CO4	4. apply different methods of control of Electric Drive in the laboratory.
CO5	5. analyse experimental data obtained in the laboratory.
CO6	6. work effectively in a team
	· ·

Name of the	Subject: PROJECT STAGE-I
Subject Code	: PW-EE 781
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	The students will be able to formulate the problem
CO2	The students will be able to develop or design a solution for the problem
CO3	Build up project prototype or model in hardware or software
CO4	Analyze the experimental collected data
CO5	Do investigation/research in the problem area
CO6	Apply fundamental and specialized knowledge in the area of the problem
CO7	Students will be able to self learn new methods, tools and techniques
CO8	Students will be able to apply modern tools and techniques
CO9	Students will be able to work individually and also in team
CO10	Students will be able to communicate the details and findings of the project through Project report, Presentation, Vivo
CO11	Students will be able to apply project management and economics knowledge
CO12	Students will be able to identify implications of the project in society and environment.
Name of the	Subject: ELECTRIC DRIVE LABORATORY
Subject Code	: PC-EE 791
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	Students will be able to apply fundamental and specialized knowledge to under stand the real life pro
CO2	Students will be able to understand the design and implementation aspects of engineering systems/o
CO3	Students will be able to communicate the details of training through Training Report, Presentation ar
CO4	Students will be able to understand implication of engineering solutions in social and environment pe
Name of the	Subject: UTILIZATION OF ELECTRIC POWER
Subject Code	: : PC-EE 801
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	1. explain the fundamentals of illumination and different lighting schemes.
CO2	2. explain the fundamental of Electrolytic processes, Electric heating and Welding.
CO3	3. able to select appropriate lighting, heating and welding techniques for specific applications.
CO4	4. apply different electrolysis process for different applications.
CO5	5. explain the principle of different aspect of Electric traction and control of traction motor.

Name of the Subject: LINE COMMUTATED AND ACTIVE PWM RECTIFIERS

Subject Code: PE-EE 801A

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. explain the principle of operation of different converters.				
CO2	2. suggest the application of different filters.				
CO3	3. apply converters for different applications.				
CO4	4. analyze converter circuits.				
CO5	5. develop appropriate scheme for control of different converters.				
CO6	6. solve numerical problems relating to different converters.				

Name of the Subject: POWER SYSTEM DYNAMICS AND CONTROL

Subject Code: PE-EE 801B

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. explain the model of power system components				
CO2	2. select the appropriate model for required analysis.				
соз	3. analyze the performance of the system with small signal analysis.				
CO4	4. evaluate the stability of the single and multi machine systems.				
CO5	5. develop measures for enhancing the stability of the system.				
CO6	6. Solve numerical problems of linear dynamical system, modeling of different components and				

Name of the Subject: ADVANCED ELECTRIC DRIVE

Subject Code: PE-EE 801C

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to					
CO1	1. explain the principle of operation of converters for AC drives.					
CO2	2. model Induction and Synchronous motor by reference frame theory.					
CO3	3. apply different control methods to control speed and torque of Induction and Synchronous me					
CO4	4. explain the configurations and method of speed control of BLDC, PMSM and SRM.					
CO5	5. realize basic blocks for DSP based motion control.					
CO6	6. develop appropriate scheme for speed control of Induction and Synchronous motor.					

Name of the Subject: INDUSTRIAL AUTOMATION AND CONTROL

Subject Code: : PE-EE 801D

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. explain the basic structure of industrial automation and control				
CO2	2. classify different types of control actions of controllers.				
соз	3. analyze control strategies of different processes of industry.				
CO4	4. illustrate the construction and use of different types of actuators and control valves.				
CO5	5. use PLC, DCS and SCADA in advanced industrial control.				
Name of the Subject: SOFT COMPLITING TECHNIQUES					

Subject Code: OE-EE 801A

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. explain soft computing techniques and their roles in building intelligent machines				
CO2	2. anlyse the feasibility of application of soft computing techniques for a particular problem				
CO3	3. effectively use existing software tools to solve real problems using a soft computing approach				
CO4	4. evaluate solutions by various soft computing approaches for a given problem.				
CO5	5. apply different soft computing techniques to solve Engineering problems.				

Name of the Subject: BIOMEDICAL INSTRUMENTATION

Subject Code: OE-EE 801B

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. describe the principle of medical transducers for temperature, pressure and respiration rate.				
CO2	2. explain the principle of operation of Biomedical recorders, Medical Imaging equipments Surgi				
СО3	3. use different Medical laboratory equipments for different tests .				
CO4	4. analyze any measurement application and suggest suitable measurement methods.				
CO5	5. suggest suitable imaging methodology for a specific ailment.				

Name of the Subject: INTRODUCTION TO MACHINE LEARNING

Subject Code: OE-EE 801C

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to				
CO1	1. explain the basics concepts and classification of Machine Learning .				
CO2	2. write simple programs using python.				
соз	3. describe Supervised Learning concepts.				
CO4	4. explain the concept of Support Vector Machine.				
CO5	5. describe unsupervised learning concepts and dimensionality reduction techniques.				

CO7	6. apply Machine Learning in a range of real-world applications .					
Name of the Subj	ect: SENSORS AND TRANSD	UCERS				
Subject Code: OE-	·EE 801D					
Year: 4TH						
Course Outcomes:	On completion of this course a students will be able to					
CO1	1. explain the basic principle of operation of Transducers and Sensors.					
CO2	2. distinguish different sensors and transducers.					
CO3	3. identify suitable transducer by comparing different industrial standards and procedures for many					
CO4	4. estimate the performance of different transducers.					
CO5	5. design real life electronics and instrumentation measurement systems. 6. apply smart senso					
	PROGRAMME OUTCO	OMES (PO) BASI	ED ON G A			
	POS& COS	P01	PO2	PO3	PO4	PO5
	CO1	0.65	0.65	0.65	0.65	
Name of the	CO2	0.65	0.65	0.65	0.65	
Subject: ELECTRIC	CO3	0.65	0.65	0.65		
CIRCUIT THEORY	CO4	0.65	0.65	0.65	0.65	
Subject Code: PCE301	CO5	0.65	0.65	0.65		
1 02002	CO6	0.65	0.65	0.65	0.65	0.65
	CO1	0.66	0.66	0.66	0.66	
Name of the Subject:ANALOG	CO2	0.66	0.66	0.66	0.66	
ELECTRONICS	CO3	0.66	0.66	0.66		
Subject Code: PCEE302	CO4	0.66	0.66	0.66	0.66	
	CO5	0.66	0.66	0.66		
Name of the Subject:	CO1	0.53	0.53	0.53	0.53	
ELECTRO MAGNETIC FIELD THEORY Subject Code: PC- EE 303	CO2	0.53	0.53	0.53	0.53	
	CO3	0.53	0.53	0.53	0.53	
	CO4	0.53	0.53	0.53	0.53	
	CO5	0.53	0.53	0.53	0.53	
	CO6	0.53	0.53	0.53	0.53	
Name of the	CO1	0.57	0.57	0.57	0.57	
Subject:	CO2	0.57	0.57	0.57	0.57	

ENGINEERING MECHANICS	соз	0.57	0.57	0.57	0.57	7
Subject Code: ES-	CO4	0.57	0.57	0.57	0.57	
ME 301	CO5	0.57	0.57	0.57	0.57	
Name of the	CO1	0.78	0.78		0.78	
Subject:	CO2	0.78	0.78		0.78	
MATHEMATICS	CO3	0.78	0.78		0.78	0.78
Subject	CO4	0.78	0.78		0.78	
Code: BS M	CO5	0.78	0.78		0.78	0.78
	CO6	0.78	0.78		0.78	
Name of the Subject:	CO1	0.75				
BIOLOGY FOR	CO2	0.75			0.75	
ENGINEERS	CO3	0.75			0.75	
Subject Code:	CO4	0.75			0.75	
BS EE	CO5	0.75			0.75	
301	CO6	0.75			0.75	
Name of the Subject:	CO1	0.92				
Subject Code: MC EE 301	CO2					
Name of the Subject:	CO1	0.9	0.9	0.9	0.9	
ELECTRIC	CO2	0.9	0.9	0.9	0.9	
CIRCUIT THEORY LABORATORY	CO3	0.9	0.9	0.9		
LABORATORT	CO4	0.9	0.9	0.9	0.9	
Subject Code:	CO5	0.9	0.9	0.9		
PC EE	CO6	0.9	0.9	0.9	0.9	0.9
N 6.1	CO1	0.81	0.81	0.81	0.81	
Name of the Subject: ANALOG	CO2	0.81	0.81	0.81	0.81	
ELECTRONICS	соз	0.81	0.81	0.81		
LABORATORY Subject Code:	CO4	0.81	0.81	0.81	0.81	
PCEE392	CO5	0.81	0.81	0.81		
Name of the Subject:	CO1	0.84	0.84		0.84	
NUMERICAL	CO2	0.84	0.84		0.84	
METHODS LABORATORY —	соз	0.84	0.84		0.84	0.84
Subject Code: BS	CO4	0.84	0.84		0.84	
M	CO5	0.84	0.84		0.84	0.84

ELECTRICAL AND ELECTRONICS				+		
Name of the Subject:	CO1	0.72	0.72	0.72	0.72	0.72
ELECTRICAL AND	CO2	0.72	0.72	0.72		
ELECTRONICS MEASUREMENT	соз	0.72	0.72	0.72		
MEASUREMENT	CO4	0.72				
Subject	CO5	0.72			0.72	0.72
Code: PC EE	CO6	0.72	0.72	0.72		0.72
Name of the	CO1	0.61	0.61	0.61	0.61	0.61
Subject:	CO2	0.61	0.61	0.01	0.01	0.01
THERMAL POWER				0.04		
ENGINEERING	CO3	0.61	0.61	0.61		
	CO4	0.61				
Subject Code: ES EE	CO5	0.61			0.61	0.61
401	CO6	0.61	0.61	0.61	0.61	0.61
Name of the	CO1	0.72	0.72	0.72	0.72	0.72
Subject: VALUES ——— AND ETHICS IN	CO2	0.72	0.72	0.72		
PROFESSION	CO3	0.72	0.72	0.72		
		0.72	0.72	0.72		
Subject Code:	CO4				0	1
401 HM EE	CO5	0.72			0.72	0.72
	CO6	0.72	0.72	0.72	0.72	0.72
	CO1	0.81	0.81	0.81	0.81	0.81
Name of the	CO2	0.81	0.81	0.95		

ENVIRONMENTA	соз	0.81	0.81	0.95		
L SCIENCE	CO4	0.81				
Subject Code: MC EE 401	CO5	0.81			0.81	0.81
==	CO6	0.81	0.81	0.81	0.81	0.81
Name of the	CO1	0.76	0.76	0.76	0.76	0.76
Subject: — ELECTRIC	CO2	0.76	0.76			
MACHINE I LABORATORY	CO3	0.76	0.76	0.76		
S	CO4	0.76				
ubject Code: PC	CO5	0.76			0.76	0.76
EE	CO6	0.76	0.76	0.76	0.76	0.76
Name of the Subject:	CO1	0.92	0.92	0.92	0.92	0.92
DIGITAL	CO2	0.92	0.92	0.92		
ELECTRONICS LABORATORY	соз	0.92	0.92	0.92		
LABORATORT	CO4	0.92				
Subject Code:	CO5	0.92			0.92	0.92
PC EE	CO6	0.92	0.92	0.92	0.92	0.92
Name of the Subject:	CO1	0.91	0.91	0.91	0.91	0.91
ELECTRICAL AND	CO2	0.91	0.91	0.91		
ELECTRONICS MEASUREMENT	CO3	0.91	0.91	0.91		
LABORATORY	CO4	0.91				
Cultivat Carta	CO5	0.91			0.91	0.91
Subject Code: PC EE Name of the	CO6	0.91	0.91	0.91	0.91	0.91
Name of the Subject:	CO1	0.87	0.87	0.87	0.87	0.87
THERMAL	CO2	0.87	0.87	0.87		
POWER ENGINEERING	CO3	0.87	0.87	0.87		
LABORATORY	CO4	0.87				
S Code TC	CO5	0.87			0.87	0.87
ubject Code: ES ME	CO6	0.87	0.87	0.87	0.87	0.87
Name of the Subject:	CO1	0.54	0.54	0.54		
ELECTRIC	CO2	0.54			0.54	
MACHINE II	соз	0.54			0.54	
Subject	CO4				0.54	
Code: PC EE	CO5		0.54	0.54		0.54

201	CO6	0.54	0.54	0.54		0.54
Name of the	CO1	0.84	0.84	0.84		
Subject: ELECTRIC	CO2	0.84			0.84	
MACHINE II	CO3	0.84			0.84	
LABORATORY	CO4				0.84	
Subject Code:	CO5		0.84	0.84		
PC EE 591	CO6	0.84	0.84	0.84		
Name of the	CO1	0.56	0.56	0.56		
Subject: POWER	CO2	0.56			0.56	
SYSTEM	соз	0.56			0.56	
Subject	CO4				0.56	
Code: PC EE 502	CO5		0.56	0.56		
	CO6	0.56	0.56	0.56		
Name of the	CO1	0.92	0.92	0.92		
Subject: POWER SYSTEM I	CO2	0.92			0.92	
LABORATORY	CO3	0.92			0.92	
Subject Code:	CO4				0.92	
PC EE	CO5		0.92	0.92		
592	CO6	0.92	0.92	0.92		
Name of the	CO1	0.55	0.55	0.55		
Subject: CONTROL	CO2	0.55			0.55	
SYSTEM	соз	0.55			0.55	
Su bject Code: PC	CO4				0.55	
EE	CO5		0.55	0.55		
503	CO6	0.55	0.55	0.55		
Name of the Subject:	CO1	0.87	0.87	0.87		
CONTROL	CO2	0.87			0.87	
SYSTEM	CO3	0.87			0.87	
_ABORATORY	CO4				0.87	
Subject Code:	CO5		0.87	0.87		
PC EE	CO6	0.87	0.87	0.87		
Name of the	CO1	0.6	0.6	0.6		
Subject: POWER	CO2	0.6				

LLLC I NO II 100	CO3	0.6				
Subject Code:	CO4					
PC EE -	CO5		0.6	0.6		
	CO6	0.68	0.6	0.6		
Name of the	CO1	0.92	0.92	0.92		
Subject: POWER — ELECTRONICS	CO2	0.92				
ABORATORY	CO3	0.92				
Subject Code:	CO4					
PC EE	CO5		0.92	0.92		
594	CO6	0.92	0.92	0.92		
Name of the	CO1	NA	NA	NA	NA	NA
Subject: HIGH — VOLTAGE	CO2	NA	NA	NA	NA	NA
ENGINEERING	CO3	NA	NA	NA	NA	NA
	CO4	NA	NA	NA	NA	NA
Subject	CO5	NA	NA	NA	NA	NA
Code: EE PE 501	CO6	NA	NA	NA	NA	NA
Name of the	CO1	0.72	0.72	0.72	0.72	
Subject: — RENEWABLE	CO2	0.72	0.72			
AND NON	CO3	0.72	0.72			
CONVENTIONAL — ENERGY	CO4	0.72				
Subject	CO5	0.72		0.72	0.72	
Code: EE PE 501	CO6	0.72	0.72	0.72	0.72	
Name of the	CO1	NA	NA	NA	NA	NA
Subject: DATA — STRUCTURE AND	CO2	NA	NA	NA	NA	NA
ALGORITHM	CO3	NA	NA	NA	NA	NA
Subject Code:	CO4	NA	NA	NA	NA	NA
OE EE	CO5	NA	NA	NA	NA	NA
501A	CO6	NA	NA	NA	NA	NA
Name of the	CO1	NA	NA	NA	NA	NA
Subject: OBJECT — ORIENTED	CO2	NA	NA	NA	NA	NA
PROGRAMMING	CO3	NA	NA	NA	NA	NA
Subject	CO4	NA	NA	NA	NA	NA
Code: OE EE	CO5	NA	NA	NA	NA	NA

DOTR	CO6	NA	NA	NA	NA	NA
Name of the	CO1		0.71	0.71	0.71	
Subject: COMPUTER	CO2	0.71	0.71			
ORGANISTION	CO3	0.71	0.71			
AND ARCHITECTURE	CO4	0.71				
	CO5	0.71		0.71	0.71	
Subject Code: OE EE	CO6	0.71	0.71	0.71	0.71	
Name of the	CO1	0.65	0.65	0.65	0.65	
Subject: POWER	CO2	0.65	0.65			
SYSTEM	CO3	0.65	0.65			
Subject	CO4	0.65				
Code: PC EE	CO5	0.65		0.65	0.65	
	CO6	0.65	0.65	0.65	0.65	
Name of the Subject: POWER	CO1	0.91	0.91	0.91	0.91	
SYSTEM II	CO2	0.91	0.91			
LABORATORY	CO3	0.91	0.91			
Su bject Code: PC	CO4	0.91				
EE	CO5	0.91		0.91	0.91	
691	CO6	0.91	0.91	0.91	0.91	
	CO1	0.65	0.65	0.65	0.65	
Name of the Subject:	CO2	0.65	0.65			
MICRO PROCESSOR AND	CO3	0.65	0.65			
MICROCONTROLLER Subject Code: PC EE	CO4	0.65	0.65			0.65
602	CO5	0.65	0.65	0.65	0.65	0.65
	CO6	0.65	0.65	0.65	0.65	0.65
	CO1	0.92	0.92	0.92	0.92	
Name of the Subject: MICRO PROCESSOR	CO2	0.92	0.92			
AND	CO3	0.92	0.92			
MICROCONTROLLER LABORATORY	CO4	0.92	0.92			0.92
Subject Code: PC EE 692	CO5	0.92	0.92	0.92	0.92	0.92
	CO6	0.92	0.92	0.92	0.92	0.92
Name of the Subject:	CO1	0.89	0.89	0.89	0.89	0.89
ELECTRICAL AND	CO2	0.89	0.89			0.89

LABORATORY	соз	0.89	0.89			
Subject Code: PC EE	CO4	0.89	0.89			
681	CO5	0.89	0.89	0.89	0.89	0.89
	CO6	0.89	0.89	0.89	0.89	0.89
	CO1	0.68	0.68	0.68	0.68	
Name of the Subject:	CO2	0.68			0.68	
ELECTRICAL AND ELECTRONIC DESIGN	СОЗ	0.68			0.68	
LABORATORY Subject Code: PC EE	CO4	0.68			0.68	
681	CO5	0.68	0.68	0.68	0.68	
	CO6	0.68	0.68	0.68	0.68	
	CO1	0.64	0.64	0.64	0.64	
Name of the Subject: HVDC	CO2	0.64			0.64	
TRANSMISSION	CO3	0.64			0.64	
Subject Code: PE EE	CO4	0.64			0.64	
601B	CO5	0.64	0.64	0.64	0.64	
	CO6	0.64	0.64	0.64	0.64	
	CO1	NA	NA	NA	NA	NA
Name of the Subject:	CO2	NA	NA	NA	NA	NA
ELECTRICAL MACHINE DESIGN	соз	NA	NA	NA	NA	NA
Subject Code: PE EE	CO4	NA	NA	NA	NA	NA
601C	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
	CO1	0.61	0.61	0.61	0.61	
Name of the Subject: POWER QUALITY AND	CO2	0.61	0.61	0.61	0.61	
FACTS Subject Code: PE	CO3	0.61	0.61			
EE 602	CO4	0.61	0.61			
В	CO5	0.61	0.61	0.61	0.61	
	CO6	0.61	0.61	0.61	0.61	
Name of the Subject:	CO1	NA	NA	NA	NA	NA
DIGITAL SIGNAL	CO2	NA	NA	NA	NA	NA
PROCESSING	соз	NA	NA	NA	NA	NA
Su bject Code: OE	CO4	NA	NA	NA	NA	NA
EE 601	CO5	NA	NA	NA	NA	NA

A	CO6	NA	NA	NA	NA	NA
	CO1	0.62	0.62	0.62	0.62	
Name of the Subject: COMMUNICATION	CO2	0.62	0.62	0.62	0.62	
ENGINEERING Subject	CO3	0.62			0.62	
Code: OE EE 601	CO4	0.62	0.62	0.62	0.62	
В	CO5	0.62				
	CO6	0.62	0.62	0.62	0.62	
	CO1	0.57	0.57	0.57	0.57	
Name of the Subject:	CO2	0.57	0.57	0.57	0.57	
ECONOMICS FOR ENGINEERS	CO3	0.57	0.57	0.57	0.57	
Subject Code: HM EE	CO4	0.57	0.57		0.57	
601	CO5	0.57	0.57		0.57	
	CO6	0.57	0.57		0.57	
	CO1	0.61	0.61	0.61	0.61	0.61
	CO2	0.61	0.61			0.61
Name of the Subject: ELECTRIC DRIVE	CO3	0.61				0.61
Subject Code: PC EE 701	CO4	0.61	0.61	0.61	0.61	0.61
/*!	CO5	0.61	0.61	0.61		
	CO6	0.61	0.61	0.61		0.61
November 6 Head	CO1	0.95	0.95	0.95	0.95	0.95
Name of the Subject: ELECTRIC DRIVE	CO2	0.95	0.95			0.95
LABORATORY Subject Code:	CO3	0.95				0.95
PC EE	CO4	0.95	0.95	0.95	0.95	0.95
791	CO5	0.95	0.95	0.95		
	CO6	0.95	0.95	0.95		0.95
	CO1	NA	NA	NA	NA	NA
Name of the Subject: CONTROL SYSTEM	CO2	NA	NA	NA	NA	NA
DESIGN Subject Code: PE	CO3	NA	NA	NA	NA	NA
EE 701	CO4	NA	NA	NA	NA	NA
Α	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
Name of the Subject:	CO1	NA	NA	NA	NA	NA
ELECTRICAL ENERGY	CO2	NA	NA	NA	NA	NA

AUDITING	соз	NA	NA	NA	NA	NA
Subject Code: PE EE 701	CO4	NA	NA	NA	NA	NA
В	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
	CO1	0.76	0.76	0.76		0.76
Name of the Subject: POWER GENERATION	CO2	0.76	0.76	0.76		0.76
ECONOMICS Subject	CO3	0.76	0.76	0.76		
Code: PE EE 701	CO4	0.76	0.76	0.76		
	CO5	0.76	0.76	0.76		0.76
	CO6	0.76	0.76	0.76		0.76
Name of the Subject:	CO1	0.74	0.74	0.74	0.74	0.74
ARTIFICIAL	CO2	0.74	0.74	0.74	0.74	
INTELLIGENCE	CO3	0.74				0.74
Subject Code: OE EE 701	CO4	0.74				0.74
	CO5	0.74	0.74	0.74	0.74	0.74
Α	CO6	0.74	0.74	0.74	0.74	0.74
Name of the Subject: INTERNET OF	CO1	0.61	0.61	0.61		
	CO2	0.61	0.61		0.61	0.61
THINGS	CO3	0.61	0.61		0.61	0.61
Subj ect Code: OE EE	CO4	0.61	0.61		0.61	0.61
701	CO5	0.61	0.61			0.61
В	CO6	0.61	0.61	0.61	0.61	0.61
Name of the	CO1	NA	NA	NA	NA	NA
Subject: —— COMPUTER	CO2	NA	NA	NA	NA	NA
GRAPHICS	соз	NA	NA	NA	NA	NA
Subject Code:	CO4	NA	NA	NA	NA	NA
OE EE 701	CO5	NA	NA	NA	NA	NA
c	CO6	NA	NA	NA	NA	NA
Name of the	CO1	0.63	0.63	0.63		
Subject: — EMBEDDED	CO2	0.63	0.63	0.63	0.63	
SYSTEM	соз	0.63		0.63	0.63	
Subj ect Code: OE EE	CO4	0.63	0.63		0.63	
702	CO5	0.63	0.63	0.63		

A	CO6	0.63	0.63		0.63	
Name of the Subject:	CO1	NA	NA	NA	NA	NA
DIGITAL IMAGE	CO2	NA	NA	NA	NA	NA
PROCESSING	CO3	NA	NA	NA	NA	NA
S ubject Code: OE	CO4	NA	NA	NA	NA	NA
EE 702	CO5	NA	NA	NA	NA	NA
В	CO6	NA	NA	NA	NA	NA
Name of the	CO1	NA	NA	NA	NA	NA
Subject: — COMPUTER	CO2	NA	NA	NA	NA	NA
NETWORK	CO3	NA	NA	NA	NA	NA
Su bject Code: OE	CO4	NA	NA	NA	NA	NA
EE 702	CO5	NA	NA	NA	NA	NA
c	CO6	NA	NA	NA	NA	NA
Name of the	CO1	0.7	0.7			
Subject: - PRINCIPLE OF	CO2	0.7	0.7			
MANAGEMENT	CO3	0.7	0.7			
S ubject Code: HM	CO4	0.7	0.7			
EE	CO5	0.7	0.7			
701	CO6	0.7	0.7			
Name of the	CO1	0.92	0.92	0.92	0.92	0.92
Subject:	CO2	0.92	0.92	0.92	0.92	
PROJECT STAGE	CO3	0.92	0.92	0.92	0.92	
Subject Code:	CO4	0.92	0.92	0.92	0.92	
PW EE 781	CO5	0.92	0.92	0.92		
	CO6	0.92	0.92	0.92	0.92	
Name of the	CO1	0.9	0.9	0.9	0.9	0.9
Subject: SEMINAR	CO2	0.9	0.9	0.9	0.9	
Seminak Su	CO3	0.9	0.9	0.9	0.9	
bject Code: PW	CO4	0.9	0.9	0.9	0.9	
781	CO5	0.9	0.9	0.9	0.9	
	CO6	0.9	0.9	0.9	0.9	
Name of the	CO1	0.65	0.65			
Subject: UTILISATION OF	CO2	0.65	0.65			

ELECTRIC	соз	0.65	0.65			
POWER Subject	CO4	0.65	0.65			0.65
Code: PC EE	CO5	0.65	0.65			0.65
801	CO6	0.65	0.65			0.65
Name of the Subject: POWER -	CO1	0.69	0.69	0.69	0.69	
SYSTEM	CO2	0.69	0.69	0.69	0.69	
DYNAMICS AND	CO3	0.69	0.69	0.69	0.69	0.69
CONTROL	CO4	0.69	0.69	0.69	0.69	
Subject Code: PE	CO5	0.69	0.69	0.69	0.69	
EE 801 B	CO6	0.69	0.69	0.69	0.69	
Name of the Subject:	CO1	0.62	0.62			
SENSORS AND	CO2	0.62	0.62		0.62	
TRANSDUCERS	CO3	0.62	0.62			0.62
	CO4	0.62	0.62		0.62	
Subject Code: OE	CO5	0.62	0.62		0.62	
EE 801 D	CO6	0.62	0.62		0.71	0.71
Name of the	CO1	0.94	0.94	0.94	0.94	0.94
Subject:	CO2	0.94	0.94	0.94	0.94	
PROJECT STAGE – II Subject Code: PW EE – 881	CO3	0.94	0.94	0.94	0.94	
	CO4	0.94	0.94	0.94	0.94	
	CO5	0.94	0.94	0.94	0.94	
	CO6	0.94	0.94	0.94	0.94	
AVEDACE		0.727742244	0.725026446	0.742057442	0.722707402	0.7656

AVERAGE 0.737713311 0.735826446 0.742857143 0.732707182 0.7656

РО	PO1	PO2	PO3	PO4	PO5	PO6
AVERAGE	0.737713311	0.738617572	0.736899277	0.744404762	0.733626151	0.7656
PERCENTAGE(%)	73	73	73	74	73	76

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onents or processes that meet the specified needs with appropriate consideration for public health and
cperiments, analysis and sions.
gineering and IT tools, including prediction and modelling to complex engineering activities, with an
alth, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional
nd anvironmental contexts, and demonstrate the knowledge of and need for sustainable development

na chvironinental contexts, and acmonstrate the knowledge of, and need for sustainable development.

; and norms of the engineering practice

ams, and in multidisciplinary settings.

ng community and with the society at large, such as, being able to comprehend and write effective reports ve clear instructions.

ment principles and apply these to one's own work, as a member and leader in a team, to manage projects

dependent and life-long learning in the broadest context of technological change.

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	0.92	0.92				
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	0.89	0.89		0.89		
				0.89		
0.68	0.68					
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0.68	0.68		0.68			
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0.64	0.64					
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NA	NA	NA	NA	NA	NA	NA
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0.61	0.61					
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0.62	0.62	0.62				
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0.57					0.57	0.76
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	0.76	0.76				
0.76	0.76	0.76			0.76	
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0.76	0.76	0.76				
0.74	0.74					
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0.61	0.61					
NA	NA	NA	NA	NA	NA	NA
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NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
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						0.76
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						0.76
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			0.92		0.92	
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						0.69
				0.94		
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		0.94				
						0.94
0.731506849	0.728064516	0.774166667	0.736969697	0.79777778	0.737	0.766315789

PO7	PO8	PO9	PO10	PO11	PO12
0.731506849	0.728064516	0.774166667	0.736969697	0.79777778	0.737
73	72	77	73	79	73

CALCUTTA INSTITUTE OF ENGINEERING AND MANAGEMENT DEPARTMENT OF INFORMATION TECHNOLOGY CO-PO ATTAINMENT REPORT 2022_23

Paper Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P9	P10	P11	P12
	CO1	0.81											
	CO2		0.72	0.72									
DC DII 101	CO3	0.75			0.75								
BS PH-101	CO4					0.83							
	CO5		0.69		0.69								
	CO6			0.79	0.79								
	CO1	0.75	0.75										
BS-M(101)	CO2	0.9		0.9									
	CO3	0.72	0.72										
	CO1	0.7	0.7										
ES-EE101	CO2	0.75											
	CO3	0.7						0.7					
	CO1			0.72	0.72								
	CO2			0.8	0.8								
BS PH-191	CO3			0.78	0.78								
	CO4		0.85	0.85	0.85								
	CO5		0.75	0.75									
	CO1	0.75											
ES-EE191	CO2		0.65	0.65									
	CO3		0.7	0.7				0.7					
	CO1			0.7									
ES - ME 192	CO2	0.7		0.7									
ES - ME 192	CO3			0.65									
	CO4	0.7	0.7			·						_	
	CO1		0.69	0.69									
	CO2	0.72											
BS CH-201	CO3	0.78											
	CO4	0.81											

	CO5			0.82	0.82	0.82				
	CO1	0.9								
BS-M201	CO2	0.75	0.75	0.75						
BS-W1201	CO3					0.7				
	CO4								0.85	
	CO1		0.75	0.75						
ES-CS201	CO2	0.62	0.62	0.62						
ES-CS201	CO3	0.65	0.65	0.65	0.65	0.65				
	CO4		0.65		0.65					
	CO1	0.62							0.62	
HM-HU201	CO2	0.58								
11171-110201	CO3	0.75	0.75							
	CO4	0.64	0.64							
	CO1		0.72	0.72						
	CO2			0.78	0.78		0.78			
BS CH-291	CO3		0.83	0.83						
	CO4		0.76	0.76						
	CO5		0.84	0.84						
	CO1		0.9							
	CO2			0.9						
	CO3			0.8						
ES-CS291	CO4		0.85	0.85						
LS CS271	CO5			0.75						
	CO6			0.8						
	CO7		0.8	0.8						
	CO8	0 ==		0.8						
	CO1	0.75								
ES-ME291	CO2	0.7		0.7						
	CO3	0.65	0.45							
	CO4	0.65	0.65	+	+					
	CO1	0.55		+					0.54	
HM HI1901	CO2								0.54	

11111-110471	CO3		0.77	0.77						
	CO4	0.67	0.67							
	CO1	0.6		0.6						
ESC301	CO2	0.62	0.62	0.62						
	CO3		0.55	0.55						
	CO1	0.79	0.79							
	CO2		0.83	0.83						
PCC-CS301	CO3			0.8	0.8					
<u> </u>	CO4		0.82		0.82					
	CO5		0.71	0.71						
<u> </u>	CO1	0.7	0.7							
PCC-CS302	CO2			0.75						
1 CC-C5502	CO3		0.7		0.7					
	CO4			0.65	0.65	0.65				
<u> </u>	CO1	0.7	0.7							
<u> </u>	CO2	0.72	0.72	0.72						
BSC-301	CO3			0.75	0.75					
_	CO4			0.7	0.7					
	CO5		0.74			0.74				
_	CO1		0.58	0.58						
HSMC 301	CO2		0.59						0.59	0.59
	CO3						0.61			
	CO1			0.7						
ESC391	CO2			0.65	0.65					
	CO3			0.7						
	CO1	0.85		0.85		0.85				
PCC-CS391	CO2	0.8		0.8		0.8				
	CO3				0.82	0.82				0.82
	CO1		0.8							
PCC CS-392	CO2			0.8		·				
100 03-392	CO3			0.8		0.8	_			
	CO4			0.8		0.8				
	CO1	0.83				0.83				

DCC CC202	CO2		0.85	0.85					0.85		
PCC-CS393	CO3	0.82		0.82		0.82					
	CO4	0.74	0.74	0.74	0.74						
	CO1	0.75									
	CO2	0.8	0.8								
PCC-CS401	CO3	0.75	0.75								
	CO4	0.8	0.8								
	CO5			0.75		0.75					
	CO1	0.75	0.75	0.75		0.75					
PCC-CS402	CO2	0.85	0.85	0.85		0.85					
	CO3	0.85	0.85	0.85	0.85	0.85				0.8	
	CO1	0.66									
PCC-CS403	CO2		0.62	0.62							
100-03403	CO3			0.56							
	CO4				0.72						0.72
	CO1	0.6	0.85								
	CO2		0.75	0.75							
	CO3		0.8	0.8							
PCC-CS404	CO4		0.75	0.75							
1 CC-C5404	CO5		0.85	0.85							
	CO6		0.7	0.7							
	CO7		0.65			0.65					
	CO8		0.65			0.65					
	CO1	0.82	0.82		0.82						
	CO2	0.81	0.81								
BSC 401	CO3		0.78		0.78						
D 5C 401	CO4		0.83		0.83						
	CO5		0.75	0.75				0.75			
	CO6	0.79	0.79								
	CO1			0.8			0.8	0.8			
	CO2			0.82			0.82	0.82			
MC 401	CO3			0.84		0.84	0.84	0.84			

101 701	CO4			0.8	0.8			0.8				
	CO5		0.88	0.88				0.88	0.88	0.88		
	CO6						0.89	0.89	0.89	0.89		
PCC-CS 492	CO1		0.95	0.95		0.95						
PCC-CS 492	CO2		0.8	0.8								
	CO1			0.8	0.85							
	CO2		0.75								0.75	
PCC-CS494	CO3			0.7		0.7						
	CO4			0.75	0.75						0.75	
	CO5		0.6	0.6								
	CO1	0.85	0.85	0.85								
	CO2	0.8	0.8									
ESC-501	CO3			0.9		0.9						
	CO4	0.7										
	CO5			0.65	0.65	0.65					0.65	
	CO1	0.9	0.9	0.9								
PCC-CS501	CO2			0.85		0.85						
100-05501	CO3			0.8						0.8		
	CO4			0.75	0.75							
	CO1	0.6	0.6									
PCC-CS502	CO2		0.7	0.7	0.7							
FCC-C5302	CO3	0.65		0.65								0.65
	CO4		0.6		0.6							
	CO1	0.7	0.7									
PCC-CS503	CO2			0.8	0.8							
100-05303	CO3		0.65	0.65	0.65							
	CO4			0.8		0.8						
	CO1	0.59	0.59					0.59				
HSMC 501	CO2		0.61	0.61								
	CO3		0.62							0.62		
	CO1	0.6				0.6	0.6					
	CO2			0.7	0.7					0.7		

PEC-IT501B	CO3							0.75					
	CO4		0.7					0.7					
	CO5			0.6	0.6						0.6		
	CO1	0.7		0.7								0.7	
	CO2	0.85	0.85		Ì								
PEC-IT501C	CO3	0.75	0.75										
	CO4		0.7	0.7	0.7								
	CO5		0.65	0.65		0.65							
MC-CS501	CO1								0.72	0.72	0.72		0.72
	CO1	0.85	0.85										
ESC-591	CO2	0.9		0.9		0.9							
ESC-371	CO3			0.6	0.6								
	CO4	0.75	0.75										
	CO1	0.6		0.6									
PCC-CS592	CO2	0.7		0.7									
	CO3	0.65		0.65									
	CO1	0.93				0.93							
PCC-CS593	CO2	0.92		0.92		0.92							
	CO3			0.95	0.95	0.95							0.95
	CO1	0.9	0.9			0.9							
	CO2		0.62	0.62	0.62								
PCC-CS601	CO3		0.71		0.71								
	CO4		0.69	0.69									
	CO5	0.65		0.65									
	CO6		0.8				0.8						0.8
	CO1	0.7	0.7	0.7	0.7								
PCC-CS602	CO2		0.7	0.7	0.7								
	CO3		0.75		0.75	0.75							0.75
	CO1		0.65		0.65								
PEC-IT601A	CO2												0.6
LC-11001A	CO3							0.6					
	CO4		0.55					0.55					

	CO1							0.9				
-	CO2		0.55		0.55							
PEC-IT602D	CO3	0.86				0.86	0.86				0.86	
	CO4	0.6				0.6	0.6					
	CO5				0.75							
	CO1				0.75							
	CO2				0.6							
OEC-IT601B	CO3	0.7				0.7	0.7				0.7	
OEC-11001B	CO4								0.75			
	CO5		0.6									
	CO6			0.6	0.6							
	CO1		0.78									
	CO2				0.82	0.82						
PROJ-CS601	CO3								0.67			
THOU COUL	CO4						0.79					
-	CO5						0.75					
	CO6							0.85				
-	CO1	0.9		0.9		0.9						
DGG GGGA1	CO2			0.92		0.92						
PCC-CS691	CO3			0.9		0.9						
_	CO4	0.55		0.7		0.7						0.77
	CO5	0.75	0.0			0.75						0.75
-	CO1	0.0	0.9									
PCC-CS692	CO2	0.9	0.9	0.9								
-	CO4			0.9	0.8							
	CO1		0.85	0.0	0.0							
-	CO2	0.75	0.75									
PEC-IT701C	CO ₂	0.75	0.73					0.65				
	CO4	0.03		+		+		0.03				0.7
	CO1	0.77	0.77	0.77		+						0.7
 	CO2	33,7		0.76	0.76	0.76				+		
PFC_IT707 &	C 0 2			0.70	0.70	0.70						

1 20-11 /02/1	CO3				0.73							
	CO4		0.72		0.72						0.72	
	CO1					0.83						
OEC-IT701C	CO2								0.81			0.81
OEC-II /UIC	CO3							0.74	0.74			
	CO4					0.68				0.68		
	CO1					0.58	0.58					
HSMC 701	CO2									0.59	0.59	0.59
	CO3	0.6									0.6	0.6
	CO1			0.77					0.77			
	CO2	0.78							0.78	0.78		
PROJ-IT 781	CO3	0.8	0.8									
1 KOJ-11 /01	CO4		0.81	0.81								
	CO5						0.82				0.82	
	CO6								0.82	0.82	0.82	
	CO1	0.8										
PEC-IT801B	CO2	0.7										
1 EC-11001D	CO3	0.78										
	CO4		0.82	0.82								
<u>.</u>	CO1						0.55					
<u>.</u>	CO2	0.5					0.5					
OEC-IT801A	CO3			0.6								
_	CO4			0.55								
	CO5			0.5								
-	CO1	0.75										
OEC-IT802A	CO2	0.65	0.65		0.65							
0201100211	CO3				0.7							0.7
	CO4		0.7	0.7								
]	CO1		0.78		0.78						0.78	
]	CO2				0.82				0.82			
PROJ CS 881	CO3				0.81		0.81		0.81			
	CO4							0.8			0.8	0.8
	CO5								0.82	0.82		

	CO6						0.85	0.85	0.85			0.85	0.85
Average PO Atta	inment	0.741446	0.73513	0.751984	0.725333	0.784706	0.759333	0.7308	0.7875	0.794	0.727333	0.73625	0.729412

2018 Odd Semester:	СО	Attainment
MB 101 Managerial Economics (Micro)	CO1:To explain and demonstrate the diff types of markets and their features – determination under different markets along other concepts like Law of Variable Propor and Returns to Scale, Producers equilibrium the help of Isoquants, Expansion path and Elasticity of Substitution.	83%
	CO2: To acquire knowledge and develop ideas these concepts in detail and analyse the applicability in real life situations.	85%
MB 102 ORGANIZATIONAL BEHAVIOUR	CO1: The student will be able to evaluate and analyze the various facets of organization behavior including personality, perception, and attitude and job satisfaction.	72%
	CO2: The student will be able to understand the various organization theories and analyze group behavior, conflict, change and leadership concepts.	72%
MB 103 Business Communication	CO 1 To demonstratecompetenceinverbalbusinessco mmunication &"ProcessofCommunicationinanorganizatio n"	83%
	CO2 Todemonstratecompetenceinthefundament alsofbusiness writing & willenablethestudentstoaugmenttheirreport writingskills	84%

	CO3Itwillhelpthemtoidentifythe'BarriersofC ommunication and measures to overcome.	83%
	CO4Itwillenable themtoapply the expertise to frame professional cover letter and professional resume.	82%
MB 104	CO1: Student will develop an understanding of different conditions & warranties, the passing of ownership rights by applying the knowledge of the Sale of goods Act and different types of negotiable instruments in different socio environmental situations.	80%
	CO2: Analysis of companies formation, memorandum, articles, and prospectus will be done to the students for their proper understanding of the Companies Act. Consumer protection act is analyzed to them for them to remember and if required to apply in real-life scenarios. Illustration of inflation and its impact on business, unfair trade practice for better understanding of the business	79%
MB 105	CO1 Students will be able to contemplate the ethical standards to be maintained in professional set ups.	60%
	CO 2:Students will be able to analyze Indian values related to business enterprises and merge them with relevant global concepts.	60%
	CO3: Students will be able to work comfortably in the professional world.	60%
	CO4: Students will be able to emerge as successful Managers/ leaders and lead a bright life	60%
MB 106	CO1 Understanding the concept of	65%

business or industry related operational problems and then applying the knowledge of Operations Research to solve those problems.	
CO2 Understanding the concept of	65%
Probability and Statistics to analyze	
the problems of Business processes.	

3rd Semester

Subject Code & Subject Name	CO	Attainment
MB 301 ENTREPRENEURSHIP & PROJECT MANAGEMENT	CO 1: Understand the concept of management, Organization, planning,	79%

	Staffing and learn	
	the Project	
	evaluation,	
	termination, and	
	controlling process	
	controlling process	
	CO2 To a distribu	
	CO2: To evaluate the	80%
	role of entrepreneurs in	
	economic development,	
	and barriers, Identification of	
	business opportunities,	
	and feasibility studies	
MP 202 Corporato Stratogy	CO1To understand	81%
MB 302 Corporate Strategy		O170
	and apply the	
	methods of	
	environmental	
	scanning, strategic	
	planning techniques &	
	formulation strategies	
	for holistic strategic	
	management in	
	organization.	
		000/
	CO2 To analyze and	83%
	evaluate the strategic	
	actions, strategic	
	implementation and	
	evaluation strategies.	
HRM 301 TEAM DYNAMICS AT WORK	CO!: The student will	83%
	be able to understand	
	the meaning of group	
	dynamics and evaluate	
	the concepts and	
	theories behind the	
	group formations	
	including the Schachter	
	Study and its implications	
	CO2: The student will	020/
	be able to evaluate	83%
	effective team building	
	strategies and apply	
	knowledge in solving	

	contemporary issues	
	related with teams in	
	modern organisations.	
HRM 304 Organizational Design	CO1: To apply organization theory	83%
	for better	
	understanding of	
	organizational	
	structure and design	
	CO2: To analyze different	82%
	organizational models	
	for reshaping	
	organizations.	
NANA 202. Digital & Casial Nasalia	CO1. To co1-1-	010/
MM 302: Digital & Social Media	CO1: To explain	81%
Marketing	the understanding	
	of digital & social	
	media marketing	
	plan that will	
	address common	
	marketing	
	challenges	010/
	CO2: Applying	81%
	concepts,	
	approaches & the	
	practical aspects of	
	various digital &	
	social media	
	marketing tools	
	like SEO, Paid Search, Social,	
	Mobile, Email &	
	Display media &	
	marketing	
	analytics	
	CO3: Analyze key	78%
	performance	7070
	indicators tied to	
	any digital &	
	any digital &	

	social Media program &	
	Develop return on	
	investment model	
	for any digital &	
	social marketing	
	program	
	CO4: Apply	82%
	creative ideas or	
	evolve with	
	existing ideas for	
	development of	
	effective digital &	
	social marketing communication	
MM 303 :Integrated Marketing	CO1: To explain	82%
Communication	the understanding	0270
Communication	of essential	
	concepts &	
	techniques for the	
	development &	
	designing of an	
	effective IMC	
	program	
	CO2: Applying	82%
	concepts,	
	approaches & the	
	practical aspects of	
	various	
	communication	
	tools	770/
	CO3: Analyze	77%
	effectiveness of	
	different IMC tools	
	for business firms	82%
	CO4: Apply creative ideas for	OZ 70
	development of	

	effective	
	marketing	
	communication	
FM 302 Project Appraisal and Finance	CO1: To define the Pr	77%
1111 302 Troject rippraisar and I manee	life cycle, the role	
	stakeholders and pr	
	management processes	
	to explain the concep	
	project specificat	
	financial projections, s	
	and team in Pr	
	management.	
	CO2: To describe and	75%
	evaluate the risks involv	
	in projects and associate	
	costs as demonstrate the	
	control and closure proc	
	related to project	
	management.	
FM 304 Corporate Finance	CO1:To define and	77%
_	discuss the concepts	
	& theories related to	
	financial	
	management.	
	CO2:To describe	75%
	and apply the	
	various theories,	
	tools and techniques	
	of Corporate	
	Finance to resolve	
	real life financial	
	problems	

2019 Even Semester

2ND Semester

Subject Code & Subject	СО	Attainment
Name		

MB 201 Indian Economy and Policy	CO1: To Explain and design concepts of circular flow, theor income determination, inflatinemployment, LPG model, as we banking, trade policy and mon reforms.	
	CO2: To Develop ideas of the Indian Economy and grasp the importance planning undertaken by the government of India.	
MB 202 Financial Reporting, Statement and Analysis	CO1: To explain the understanding the concepts and apply them in practific like basic financial account concept, preparing books of account introduction of Accounting Standard preparation of financial statements its analysis.	
	CO2: To Summarize the final transactions in terms of Final Statements and interpret Final Statements by using different final tools and techniques.	
MB 203: Marketing Management	CO1: To identify & analyze the scope & significance of marketing in Domain Industry	80%
	CO2: To Analyze & examine marketing concepts & phenomenon to current business events in the industry	79%
	CO3: Map the various marketing environment variables & demonstrate them for designing marketing strategies for business firms	80%
	CO4: Demonstrate market	79%

	analysis skill for developing innovative marketing strategies for firms	
MB 204 OPERATIONS MANAGEMENT	CO1: To understand the suitable control technique in stores, Inventory, and vendor management is adopted for the production is identified.	81%
	CO2: To analyze the scheduling techniques applied in the operations were learned by the students	79%
MB 205 MANAGEMENT INFORMATION SYSTEM	CO1:To identify the technologies and methods used for effective decision-making in an organization	81%
	CO2: Make students understand the concepts and terminologies used in Database Management, Systems, SQL, Concurrency Management, and the extended part of data storage technology, Data Warehousing.	83%
MB 206 HUMAN RESOURCE MANAGEMENT	CO1: The student will be able to understand and apply the various concepts behind Human Resource Management and development including planning, Performance Appraisal Systems and strategic HR management.	82%
	CO2: The student will be able to understand and apply the theories and strategic concepts behind compensation Management, Industrial Relations and discipline including workers participation in management.	81%

4th Semester

Subject Code & Subject Name	СО	Attainment
HR 401: MANPOWER PLANNING, RECRUITMENT& SELECTION	CO1: Student will be able to understand and analyze the various manpower planning mechanisms in an	80%

	organization including forecasting techniques, management information systems and human resources audits.	
	CO2: Student will be able to apply and exercise various HRM implementation strategies including recruitment and solve case studies pertaining to real life organisational issues and situations.	70%
HR402Employee Relations &Labour Laws	CO1:To understand EPM,WPM ,concept of collective bargaining,trade unionism in India	84%
	CO2:To apply the various labour legislations in real life industrial scenario	79%
HR 404Performance Management System	CO1: To identify and apply performance planning, monitoring, appraisal techniques & strategies for better performance management.	83%
	CO2: To understand balance scorecard, competency mapping for application in reward management, employee engagement and potential appraisal	82%
HR 406: INTERNATIONAL HRM	CO1: Student will be able to understand	80%

	International human	
	resources management	
	and development	
	including the recruitment	
	processes of such	
	candidates.	
	CO2: The student will	70%
	be able to remember and	7070
	apply legislative	
	measures meant for	
	industrial relations,CSR	
	and employee	
	representation in the	
	international sector and	
	create compensation	
	plans commensurate	
	with the same.	
MM 401	CO1:Analysis consumer	72%
	behaviour and its	
	Impact on marketing	
	strategies. Illustration of	
	consumer decision	
	process.Studednts will	
	be understanding	
	demographic and	
	psychographic	
	characteristics and	
	market	
	segmentation.Analysis	
	of the relation	
	between consumer	
	perception with	
	marketing	
	stimuli.Students will	
	learn to apply the	
	knowledge of	
	consumer motivation	
	for marketing strategy	
	and its relation with	
	corporate social	
	responsibility.	
	CO2: Students will	78%
	develop the	
	understanding of	
	characteristics and	
	and determents and	

	functions of attitude, cross-cultural understanding of consumer behaviour and data analysis for consumer feedback researches.Students	
	will comprehend and write effective technical reports. They will be able to analyse case studies, explain relevant	
	materials, communicate effectively, identify the appropriate key words, use grammatically correct English for documentation.	
MM 403: Sales & Distribution	CO1: To explain the	77%
Management	understanding of	,
Widnagement	sales & distribution	
	processes in	
	Organization	
	To get familiarized	75%
	with concepts,	7370
	approaches & the	
	practical aspects of	
	the key decision-	
	making variables in	
	sales management	
	& distribution	
	channel	
	management	
	CO3: To explain	78%
	market analysis	
	methods & selling	
	concepts	
	CO4: To develop	76%
	Performance	

	avaluation mathada	
	evaluation methods,	
	ethics, trends in	
	sales & distribution	
	management	
MM 404: Service Marketing	CO1: To explain the	77%
	understanding of	
	types, nature,	
	classification &	
	marketing mix of	
	service marketing	
	CO2: Analyze	75%
	service product	
	concept, branding &	
	service positioning	
	that transforming	
	service marketing to	
	a great extent	
	CO3: To explain	78%
	market analysis	
	methods of service	
	marketing	
	CO4: Demonstrate	76%
	the role of	
	identifying the	
	people in service &	
	the role of customer	
	in service delivery	
MM 406: International Marketing	CO1: To explain the	77%
	understanding of	
	global business	
	activities, marketing	
	processes in	
	international	
	business	
	To get familiarized	75%
	with concepts,	, 5,0
	approaches & the	
	practical aspects of	
	the key decision-	
	the key decision-	

	making variables & global forces that transforming international marketing CO3: To develop general perspective about managing international	76%
	marketing CO4: To develop evaluation methods for International Marketing both in operational as well as strategic context	78%
OM 402 Behavioral Operations Management	CO1: To apply experimental learning theories & organizational behavior to ensure performance in work design	83%
	CO2: To understand emotional intelligence in operations management & supply chain management	82%
FM 401 Investment Analysis & Portfolio Management	CO1To explain the understanding of the concer and apply them like portfolio diversification, Construction, portfolio management, portfolio reviportfolio evaluation, portfolio protect and portfolio performance measures.	
	CO2To implement strategies to make an impact on the students in taking investment decisions, and properly manage the portfolio.	75%

FM402 Managing Banks & Financial Institutions	CO1To explain the understanding of the concer and apply them like banking industry models, be support mechanism, Basel committee I & II, interest rarisk management, liquidity management and credit risk management. CO2 Evaluate and analyse the fundamentals & technical aspects of managing banks and financial institutions.	79%
FM405International Finance	CO1To explain the understanding of the concepts and apply them like international financial management, international monetary System, balance of payments, exchange rate determination and foreign exchange market.	75%
	CO2Evaluate and analyse the fundamentals & technical aspects of International financial market.	72%
FM406 Financial Markets and Services	CO1To Discuss the Indian Financial System and multiplicity of Financial Instruments and understand the Indian finan system, money market, secondary market, SEBI, m Funds and credit rating agencies.	
	CO2 Examine Mutual Fund Merchant Banking under th nodal agency SEBI.	80%

2019 odd semester

	СО	Attainment
Subject Code & Subject Name		
MB 101 Managerial Economics (Micro)	CO1:To explain and demonstrate the diff types of markets and their features — determination under different markets along other concepts like Law of Variable Propor and Returns to Scale, Producers equilibrium the help of Isoquants, Expansion path Elasticity of Substitution.	83%
	CO2: To acquire knowledge and develop ideas these concepts in detail and analyse the applicability in real life situations.	85%
MB 102: ORGANIZATIONAL BEHAVIOUR	CO1: The student will be able to evaluate and analyze the various facets of organization behavior including personality, perception, and attitude and job satisfaction.	81%
	CO2: The student will be able to understand the various organization theories and analyse group behavior, conflict, change and leadership concepts.	82%
MB 103 Business Communication	CO 1 To demonstratecompetenceinverbalbusinesscom munication & "ProcessofCommunicationinanorganizatio n"	83%
	CO2 To demonstratecompetenceinthefundamentalsof	84%

	business writing & willenablethestudentstoaugmenttheirreportw ritingskills	
	CO3 It will help them to identify the 'Barriers of Communication and measures to overcome.	83%
	CO4 Itwillenable themtoapply the expertise to frame professional cover letter and professional resume.	82%
MB 104	CO1: Student will develop an understanding of different conditions & warranties, the passing of ownership rights by applying the knowledge of the Sale of goods Act and different types of negotiable instruments in different socio environmental situations.	80%
	CO2: Analysis of companies formation, memorandum, articles, and prospectus will be done to the students for their proper understanding of the Companies Act. Consumer protection act is analyzed to them for them to remember and if required to apply in real-life scenarios. Illustration of inflation and its impact on business, unfair trade practice for better understanding of the business	81%
MB 105	CO1 Students will be able to contemplate the ethical standards to be maintained in professional set ups	80%
	CO2 Students will be able to contemplate the ethical standards to be maintained in professional set ups	80%
	CO3 Students will be able to work comfortably in the professional world	80%

	CO4 Students will be able to emerge as successful Managers/ leaders and lead a bright life	80%
MB 106	CO1 Understanding the concept of business or industry related operational problems and then applying the knowledge of Operations Research to solve those problems.	65%
	CO2 Understanding the concept of Probability and Statistics to analyze the problems of Business processes.	65%

3rd Semester

Subject Code & Subject Name	СО	Attainment
MB 301	CO1: Understand	67%
ENTREPRENEURSHIP & PROJECT	the concept of	
MANAGEMENT	management,	
	Organization,	
	planning,	
	Staffing and learn	
	the Project	
	evaluation,	
	termination, and	

	. 11:	Γ
	controlling process	
	CO2: To evaluate the	61%
	role of entrepreneurs in	
	economic development,	
	and barriers,	
	Identification of	
	business opportunities,	
MD 202 Corporate Strategy	and feasibility studies.	81%
MB 302 Corporate Strategy	CO1To understand	81%
	and apply the	
	methods of	
	environmental scanning, strategic	
	planning techniques &	
	formulation strategies	
	for holistic strategic	
	management in	
	organization.	
	CO2 m 1 1	83%
	CO2 To analyze and	0370
	evaluate the strategic	
	actions, strategic	
	implementation and	
	evaluation strategies.	
HRM 301	The student will be able	69%
TEAM DYNAMICS AT WORK	to understand the	0370
TEAM DINAMICS AT WORK	meaning of group	
	dynamics and evaluate	
	the concepts and	
	theories behind the	
	group formations	
	including the Schachter	
	Study and its	
	implications.	670/
	CO2: The student will be able to evaluate	67%
	effective team building	
	strategies and apply	
	knowledge in solving	
	contemporary issues	
	related with teams in	
	modern organisations	
HRM 304 Organizational Design	CO1: To apply	83%
TIINIVI 304 OI BAIIIZAUOHAI DESIBH	COI. TO apply	03/0

	organization theory for better understanding of organizational structure and design CO2: To analyze different organizational models for reshaping organizations.	82%
MM 302: Digital & Social Media Marketing	co1: To explain the understanding of digital & social media marketing plan that will address common marketing challenges	81%
	concepts, approaches & the practical aspects of various digital & social media marketing tools like SEO, Paid Search, Social, Mobile, Email & Display media & marketing analytics	81%
	CO3: Analyze key performance indicators tied to any digital & social Media program & Develop return on investment model	78%

	for any distal 0	
	for any digital &	
	social marketing	
	program	
	CO4: Apply	82%
	creative ideas or	
	evolve with	
	existing ideas for	
	development of	
	effective digital &	
	social marketing	
	communication	
NAMA 202 Untograted Marketing		82%
MM 303 :Integrated Marketing	CO1: To explain	OZ 70
Communication	the understanding	
	of essential	
	concepts &	
	techniques for the	
	development &	
	designing of an	
	effective IMC	
	program	
	CO2: Applying	82%
	concepts,	
	approaches & the	
	practical aspects of	
	various	
	communication	
	tools	
		77%
	CO3: Analyze effectiveness of	/ / /0
	different IMC tools	
	for business firms	
	CO4: Apply	82%
	creative ideas for	
	development of	
	effective	
	marketing	
	communication	
FM 302 Project Appraisal and Finance	CO1: To define the Pr	77%
5 52 1 Tojout Tippianour and I mande		/ -

	life cycle, the role stakeholders and promanagement processes to explain the concept project specificate financial projections, and team in Promanagement.	
	CO2: To describe and evaluate the risks involving projects and associate costs as demonstrate the control and closure producted to project management.	
FM 304 Corporate Finance	CO1:To define and discuss the concepts & theories related to financial management.	77%
	CO2:To describe and apply the various theories, tools and techniques of Corporate Finance to resolve real life financial problems	75%

2020 Even Semester

2ND Semester

Subject Code & Subject	СО	Attainment
Name		
MB 201 Indian Economy and Policy	CO1: To Explain and design concepts of circular flow, theo income determination, inflation unemployment, LPG model, as as banking, trade policy	

	monetary reforms.	
	CO2: To Develop ideas of the In Economy and grasp the importa of planning undertaken by the government of India.	83%
MB 202 Financial Reporting, Statement and Analysis	CO1: To explain the understar of the concepts and apply the practical life like basic fina accounting concept, preparing to of accounts, introduction Accounting Standard, preparatic financial statements and its analysis	
	CO2: To Summarize the fina transactions in terms of Fina Statements and interpret Fina Statements by using diff financial tools and techniques.	
MB 203: Marketing Management	CO1: To identify & analyze the scope & significance of marketing in Domain Industry	80%
	CO2: To Analyze & examine marketing concepts & phenomenon to current business events in the industry	79%
	CO3: Map the various marketing environment variables & demonstrate them for designing marketing strategies for business firms	80%
	CO4: Demonstrate market analysis skill for developing innovative marketing strategies for	79%

	firms	
MB 204 OPERATIONS MANAGEMENT	CO1 :To understand the suitable control technique in stores, Inventory, and vendor management is adopted for the production is identified.	75%
	CO2: To analyze the scheduling techniques applied in the operations were learned by the students	91%
MB 205 : MANAGEMENT INFORMATION SYSTEM	CO1: To identify the technologies and methods used for effective decision-making in an organization	75%
	CO2: Make students understand the concepts and terminologies used in Database Management, Systems, SQL, Concurrency Management, and the extended part of data storage technology, Data Warehousing.	92%
MB 206 HUMAN RESOURCE MANAGEMENT	The student will be able to understand and apply the various concepts behind Human Resource Management and development including planning, Performance Appraisal Systems and strategic HR management.	91%
	The student will be able to understand and apply the theories and strategic concepts behind compensation Management, Industrial Relations and discipline including workers participation in management.	67%

4th Semester

Subject Code & Subject Name	СО	Attainment
HR 401	CO1 : Student will be	94%
MANPOWER PLANNING, RECRUITMENT&	able to understand and	

CELECTION	analisa tha side i	
SELECTION	analyze the various manpower planning mechanisms in an organization including forecasting techniques, management information systems and human resources audits.	
	CO2: Student will be able to apply and exercise various HRM implementation strategies including recruitment and solve case studies pertaining to real life organisational issues and situations.	81%
HR402Employee Relations &Labour Laws	CO1:To understand EPM,WPM ,concept of collective bargaining,trade unionism in India	84%
	CO2:To apply the various labour legislations in real life industrial scenario	79%
HR 404Performance Management System	CO1: To identify and apply performance planning ,monitoring, appraisal techniques & strategies for better performance management.	83%
	CO2: To understand balance scorecard, competency mapping for application in reward management, employee engagement and potential appraisal	82%

HR 406 INTERNATIONAL HRM	CO1: Student will be able to understand International human resources management and development including the recruitment processes of such candidates.	94%
	CO2: The student will be able to remember and apply legislative measures meant for industrial relations ,CSR and employee representation in the international sector and create compensation plans commensurate with the same.	81%
MM 401	CO1:Analysis consumer behaviour and its Impact on marketing strategies. Illustration of consumer decision process. Studednts will be understanding demographic and psychographic characteristics and market segmentation. Analysis of the relation between consumer perception with marketing stimuli. Students will learn to apply the knowledge of consumer motivation for marketing strategy and its relation with corporate social responsibility.	82%
	CO2: Students will develop the	83%

	understanding of	
	characteristics and	
	functions of attitude,	
	cross-cultural	
	understanding of consumer behaviour	
	and data analysis for	
	consumer feedback	
	researches.Students	
	will comprehend and	
	write effective	
	technical reports. They	
	will be able to analyse	
	case studies, explain	
	relevant	
	materials,communicate	
	effectively, identify the	
	appropriate key	
	words,use	
	grammatically correct	
	English for	
	documentation.	
MM 403: Sales & Distribution	CO1: To explain the	77%
Management	understanding of	
	sales & distribution	
	processes in	
	Organization	
	To get familiarized	75%
	with concepts,	
	approaches & the	
	practical aspects of	
	the key decision-	
	making variables in	
	sales management	
	& distribution	
	channel	
	management	700/
	CO3: To explain	78%
	market analysis	
	methods & selling	
	concepts	
	CO4: To develop	76%

	Performance	
	evaluation methods,	
	ethics, trends in	
	sales & distribution	
	management	
MM 404: Service Marketing	CO1: To explain the	77%
	understanding of	
	types, nature,	
	classification &	
	marketing mix of	
	service marketing	
	CO2: Analyze	75%
	service product	
	concept, branding &	
	service positioning	
	that transforming	
	service marketing to	
	a great extent	
	CO3: To explain	78%
	market analysis	
	methods of service	
	marketing	
	CO4: Demonstrate	76%
	the role of	7070
	identifying the	
	people in service &	
	the role of customer	
NANA AOG. International Marketina	in service delivery	770/
MM 406: International Marketing	CO1: To explain the	77%
	understanding of	
	global business	
	activities, marketing	
	processes in	
	international	
	business	
	To get familiarized	75%
	with concepts,	
	approaches & the	
	practical aspects of	

	T	
	the key decision-	
	making variables &	
	global forces that	
	transforming	
	international	
	marketing	
	CO3: To develop	76%
	general perspective	7070
	about managing	
	international	
	marketing	
	CO4: To develop	78%
	evaluation methods	
	for International	
	Marketing both in	
	operational as well	
	as strategic context	
FM 401 Investment Analysis &	CO1To explain the	77%
Portfolio Management	understanding of the conce	
1 ortiono ivianagement	and apply them like	
	portfolio diversification, Construction, portfolio	
	management, portfolio revi	
	portfolio	
	evaluation, portfolio protec	
	and portfolio	
	performance measures.	/
	CO2To implement strategies to make an	75%
	impact on the students in	
	taking investment	
	decisions, and properly	
	manage the portfolio.	
FM402 Managing Banks & Financial	CO1To explain the	80%
Institutions	understanding of the concer and apply them like	
	banking industry models, b	
	support mechanism, Basel	
	committee I & II, interest ra	
	risk management, liquidity	
	management and credit risk management.	
	CO2 Evaluate and analyse	
	the fundamentals &	700/
	technical aspects of	79%

	managing banks and financial institutions.	
	imanetal institutions.	
FM405International Finance	CO1To explain the understanding of the concepts and apply them like international financial management, international monetary System, balance of payments, exchange rate determination and foreign exchange market.	75%
	CO2Evaluate and analyse the fundamentals & technical aspects of International financial market.	72%
FM406 Financial Markets and Services	CO1To Discuss the Indian Financial System and multiplicity of Financial Instruments and understand the Indian finan system, money market, secondary market, SEBI, m Funds and credit rating agencies.	
	CO2 Examine Mutual Fund Merchant Banking under th nodal agency SEBI.	

2020 odd semester

	СО	Attainment
Subject Code & Subject Name		

MB 101 Managerial Economics (Micro)	CO1:To explain and demonstrate the difference of markets and their features — determination under different markets along other concepts like Law of Variable Propose and Returns to Scale, Producers equilibrium the help of Isoquants, Expansion path Elasticity of Substitution.	83%
	CO2: To acquire knowledge and develop ideas these concepts in detail and analyse the applicability in real life situations.	85%
MB 102 ORGANIZATIONAL BEHAVIOUR	CO1: The student will be able to evaluate and analyse the various facets of organisationbehaviour including personality, perception, and attitude and job satisfaction.	95%
	CO2: The student will be able to understand the various organisation theories and analyse group behaviour, conflict, change and leadership concepts.	85%
MB 103 Business Communication	CO 1 To demonstratecompetenceinverbalbusinesscom munication &"ProcessofCommunicationinanorganizatio n"	83%
	CO2 To demonstratecompetenceinthefundamentalsof business writing & willenablethestudentstoaugmenttheirreportwritingskills	84%
	CO3 Itwillhelpthemtoidentifythe BarriersofCom munication and measures to overcome.	83%
	CO4 Itwillenable themtoapply the expertise to frame professional cover letter and professional resume.	82%
MB 104	CO1: Student will develop an understanding of different conditions & warranties, the	79%

	passing of ownership rights by applying the knowledge of the Sale of goods Act and different types of negotiable instruments in different socio environmental situations. CO2: Analysis of companies formation, memorandum, articles, and prospectus will be done to the students for their proper understanding of the Companies Act. Consumer protection act is analyzed to them for them to remember and if required to apply in real-life	82%
	scenarios.Illustration of inflation and its impact on business, unfair trade practice for better understanding of the business	
MB 105	CO1 Students will be able to contemplate the ethical standards to be maintained in professional set ups.	85%
	CO2 Students will be able to analyze Indian values related to business enterprises and merge them with relevant global concepts	85%
	CO3 Students will be able to analyze Indian values related to business enterprises and merge them with relevant global concepts	85%
	CO4 Students will be able to emerge as successful Managers/ leaders and lead a bright life.	86%
MB 106	CO1 Understanding the concept of business or industry related operational problems and then applying the knowledge of Operations Research to solve those problems.	65%
	CO2 Understanding the concept of Probability and Statistics to analyze the problems of Business processes.	65%

3rd Semester

Subject Code & Subject Name	СО	Attainment
MB 301 ENTREPRENEURSHIP & PROJECT MANAGEMENT	CO1: Understand the concept of management, Organization, planning, Staffing and learn the Project evaluation, termination, and controlling process	72%
	CO2: To evaluate the role of entrepreneurs in economic development, and barriers, Identification of business opportunities, and feasibility studies.	69%
MB 302 Corporate Strategy	CO1To understand and apply the methods of environmental scanning, strategic planning techniques & formulation strategies for holistic strategic	81%

	management in organization. CO2 To analyze and evaluate the strategic actions, strategic implementation and evaluation strategies.	83%
HRM 301 TEAM DYNAMICS AT WORK	CO1: The student will be able to understand the meaning of group dynamics and evaluate the concepts and theories behind the group formations including the Schachter Study and its implications.	72%
	CO2: The student will be able to evaluate effective team building strategies and apply knowledge in solving contemporary issues related with teams in modern organisations	69%
HRM 304 Organizational Design	CO1: To apply organization theory for better understanding of organizational structure and design	83%
	CO2: To analyze different organizational models for reshaping organizations.	82%
MM 302: Digital & Social Media Marketing	CO1: To explain the understanding of digital & social media marketing	81%

	plan that will	
	address common	
	marketing	
	challenges	
	CO2: Applying	81%
	concepts,	
	approaches & the	
	practical aspects of	
	various digital &	
	social media	
	marketing tools	
	like SEO, Paid	
	Search, Social,	
	Mobile, Email &	
	Display media &	
	marketing	
	analytics	
	CO3: Analyze key	78%
	performance	. 6,7
	indicators tied to	
	any digital &	
	social Media	
	program &	
	Develop return on	
	investment model	
	for any digital &	
	social marketing	
	•	
	program	
	CO4: Apply	82%
	creative ideas or	
	evolve with	
	existing ideas for	
	development of	
	effective digital &	
	social marketing	
	communication	
MM 303 :Integrated Marketing	CO1: To explain	82%
The second second second	the understanding	<u></u>
	the understanding	

	-C1	
Communication	of essential	
	concepts &	
	techniques for the	
	development &	
	designing of an	
	effective IMC	
	program	
	CO2: Applying	82%
	concepts,	
	approaches & the	
	practical aspects of	
	various	
	communication	
	tools	
	CO3: Analyze	77%
	effectiveness of	
	different IMC tools	
	for business firms	
	CO4: Apply	82%
	creative ideas for	
	development of	
	effective	
	marketing	
	communication	
FM 302 Project Appraisal and Finance	CO1: To define the Pr	77%
J 11	life cycle, the role	
	stakeholders and pr	
	management processes	
	to explain the concep project specificat	
	financial projections, s	
	and team in Pr	
	management.	
	CO2: To describe and	75%
	evaluate the risks involv	
	in projects and associate	
	costs as demonstrate the	
	control and closure proc	
	related to project	

	management.	
FM 304 Corporate Finance	CO1:To define and	77%
•	discuss the concepts	
	& theories related to	
	financial	
	management.	
	CO2:To describe	75%
	and apply the	
	various theories,	
	tools and techniques	
	of Corporate	
	Finance to resolve	
	real life financial	
	problems	

2021 Even Semester

2ND Semester

Subject Code & Subject Name	СО	Attainment
MB 201 Indian Economy and Policy	CO1: To Explain and design concepts of circular flow, theo income determination, inflat unemployment, LPG model, as as banking, trade policy monetary reforms. CO2: To Develop ideas of the In Economy and grasp the importat of planning undertaken by the government of India.	83%
MB 202 Financial Reporting, Statement and Analysis	CO1: To explain the understar of the concepts and apply the practical life like basic fina accounting concept, preparing to accounts, introduction Accounting Standard, preparatification financial statements and its analysis.	

	CO2: To Summarize the final transactions in terms of Final Statements and interpret Final Statements by using difficult financial tools and techniques.	
MB 203: Marketing Management	CO1: To identify & analyze the scope & significance of marketing in Domain Industry	80%
	concepts & phenomenon to current business events in the industry	79%
	CO3: Map the various marketing environment variables & demonstrate them for designing marketing strategies for business firms	80%
	CO4: Demonstrate market analysis skill for developing innovative marketing strategies for firms	79%
MB 204 OPERATIONS MANAGEMENT	CO1: To understand the suitable control technique in stores, Inventory, and vendor management is adopted for the production is identified.	78%
	CO2: To analyze the scheduling techniques applied in the operations were learned by the students	80%
MB 205 : MANAGEMENT INFORMATION SYSTEM	CO1: To identify the technologies and methods used for effective decision-making in an organization	85%

	CO2:Make students understand the concepts and terminologies used in Database Management, Systems, SQL, Concurrency Management, and the extended part of data storage technology,Data Warehousing.	85%
MB 206 HUMAN RESOURCE MANAGEMENT	CO1: The student will be able to understand and apply the various concepts behind Human Resource Management and development including planning, Performance Appraisal Systems and strategic HR management	93%
	CO2: The student will be able to understand and apply the theories and strategic concepts behind compensation Management, Industrial Relations and discipline including workers participation in management.	93%

4th Semester

Subject Code & Subject Name	СО	Attainment
HR 401 MANPOWER PLANNING, RECRUITMENT& SELECTION	CO1: Student will be able to understand and analyze the various manpower planning mechanisms in an organization including forecasting techniques, management information systems and human resources audits.	82%
	CO2: Student will be able to apply and exercise various HRM implementation strategies including recruitment and solve case studies pertaining to real life organisational	74%

	issues and situations.	
HR402Employee Relations &Labour Laws	CO1:To understand EPM,WPM ,concept of collective bargaining,trade unionism in India	84%
	CO2:To apply the various labour legislations in real life industrial scenario	79%
HR 404Performance Management System	CO1: To identify and apply performance planning, monitoring, appraisal techniques & strategies for better performance management.	83%
	CO2: To understand balance scorecard, competency mapping for application in reward management, employee engagement and potential appraisal	82%
HR 406 INTERNATIONAL HRM	CO1: Student will be able to understand International human resources management and development including the recruitment processes of such candidates.	86%
	CO2: The student will be able to remember and apply legislative measures meant for industrial relations, HRM ,CSR and employee representation in the international sector and create compensation	77%

	plans commensurate	
	with the same.	
MM 401	CO1:Analysis consumer behaviour and its Impact on marketing strategies. Illustration of consumer decision process. Studednts will be understanding demographic and psychographic characteristics and market segmentation. Analysis of the relation between consumer	82%
	perception with marketing stimuli. Students will learn to apply the knowledge of consumer motivation for marketing strategy and its relation with corporate social responsibility.	
	CO2: Students will develop the understanding of characteristics and functions of attitude, cross-cultural understanding of consumer behaviour and data analysis for consumer feedback researches. Students will comprehend and write effective technical reports. They will be able to analyse case studies, explain relevant	84%

• •	
•	
	770/
_	77%
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sales & distribution	
processes in	
Organization	
To get familiarized	75%
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•	
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-	
<u>-</u>	700/
-	78%
<u> </u>	
methods & selling	
concepts	
CO4: To develop	76%
Performance	
evaluation methods.	
	77%
-	/ / /0
•	
• 1	
_	
service marketing	
CO2: Analyze	75%
service product	
concept, branding &	
	Organization To get familiarized with concepts, approaches & the practical aspects of the key decision-making variables in sales management & distribution channel management CO3: To explain market analysis methods & selling concepts CO4: To develop Performance evaluation methods, ethics, trends in sales & distribution management CO1: To explain the understanding of types, nature, classification & marketing mix of service marketing CO2: Analyze

	service positioning	
	that transforming	
	service marketing to	
	a great extent	
	CO3: To explain	78%
	market analysis	
	methods of service	
	marketing	
	CO4: Demonstrate	76%
	the role of	
	identifying the	
	people in service &	
	the role of customer	
	in service delivery	
MM 406: International Marketing	CO1: To explain the	77%
	understanding of	
	global business	
	activities, marketing	
	processes in	
	international	
	business	
	To get familiarized	75%
	with concepts,	
	approaches & the	
	practical aspects of	
	the key decision-	
	making variables &	
	global forces that	
	transforming	
	international	
	marketing	
	CO3: To develop	76%
	general perspective	
	about managing	
	international	
	marketing	
	CO4: To develop	78%
	evaluation methods	
	for International	

	N/L 1 . / 1 . / 1	
	Marketing both in	
	operational as well	
	as strategic context	
FM 401 Investment Analysis & Portfolio Management	co1To explain the understanding of the concer and apply them like portfolio diversification, Construction, portfolio management, portfolio revi portfolio evaluation, portfolio protec and portfolio	77%
	performance measures. CO2To implement strategies to make an impact on the students in taking investment decisions, and properly manage the portfolio.	75%
FM402 Managing Banks & Financial Institutions	CO1To explain the understanding of the concer and apply them like banking industry models, be support mechanism, Basel committee I & II, interest rarisk management, liquidity management and credit risk management. CO2 Evaluate and analyse	80%
	the fundamentals & technical aspects of managing banks and financial institutions.	79%
FM405International Finance	CO1To explain the understanding of the concepts and apply them like international financial management, international monetary System, balance of payments, exchange rate determination and foreign exchange market.	75%
	CO2Evaluate and analyse the fundamentals & technical aspects of International financial market.	72%

FM406 Financial Markets and Services	CO1To Discuss the Indian Financial System and multiplicity of Financial Instruments and understand the Indian finan system, money market, secondary market, SEBI, m Funds and credit rating agencies.	
	CO2 Examine Mutual Fund Merchant Banking under th nodal agency SEBI.	

2021 Odd Semester

	СО	Attainment
Subject Code & Subject Name		
MB 101 Managerial Economics (Micro)	CO1:To explain and demonstrate the diff types of markets and their features – determination under different markets along other concepts like Law of Variable Propor and Returns to Scale, Producers equilibrium the help of Isoquants, Expansion path Elasticity of Substitution.	
	CO2: To acquire knowledge and develop ideas these concepts in detail and analyse the applicability in real life situations.	85%

MB 102 ORGANIZATIONAL BEHAVIOUR	CO1: The student will be able to evaluate and analyse the various facets of organisationbehaviour including personality, perception, and attitude and job satisfaction.	92%
	CO2: The student will be able to understand the various organisation theories and analyse group behaviour, conflict, change and leadership concepts.	83%
MB 103 Business Communication	CO 1 To demonstratecompetenceinverbalbusinesscom munication &"ProcessofCommunicationinanorganizatio n"	83%
	CO2 To demonstratecompetenceinthefundamentalsof business writing & willenablethestudentstoaugmenttheirreportw ritingskills	84%
	CO3 Itwillhelpthemtoidentifythe BarriersofCom munication and measures to overcome.	83%
	CO4 Itwillenable themtoapply the expertise to frame professional cover letter and professional resume.	82%
MB 104	CO1: Student will develop an understanding of different conditions & warranties, the passing of ownership rights by applying the knowledge of the Sale of goods Act and different types of negotiable instruments in different socio environmental situations.	80%
	CO2: Analysis of companies formation, memorandum, articles, and prospectus will be done to the students for their proper understanding of the Companies Act. Consumer protection act is analyzed to them for them to remember and if required to apply in real-life scenarios. Illustration of inflation and its impact on business, unfair trade practice for better understanding of the business	81%

MB 105	CO1 Students will be able to contemplate the ethical standards to be maintained in professional set ups.	85%
	CO2 Students will be able to analyze Indian values related to business enterprises and merge them with relevant global concepts.	84%
	CO3 Students will be able to work comfortably in the professional world.	86%
	CO4 Students will be able to emerge as successful Managers/ leaders and lead a bright life.	84%
MB 106	CO1 Understanding the concept of business or industry related operational problems and then applying the knowledge Operations Research to solve it.	
	CO2 Understanding the concept of Probability and Statistics to analyze the problems of Business processes.	65%

3rd Semester

Subject Code & Subject Name	СО	Attainment
MB 301 : ENTREPRENEURSHIP & PROJECT MANAGEMENT	CO1: Understand the concept of management, Organization, planning, Staffing and learn the Project evaluation, termination, and controlling process	82%
	CO2: To evaluate the role of entrepreneurs in economic development, and barriers, Identification of business opportunities, and feasibility studies.	98%
MB 302 Corporate Strategy	colTo understand and apply the methods of environmental scanning, strategic planning techniques & formulation strategies for holistic strategic management in organization.	81%
	CO2 To analyze and evaluate the strategic actions, strategic implementation and	83%

	evaluation strategies.	
HRM 301 TEAM DYNAMICS AT WORK	CO1: be able to understand the meaning of group dynamics and evaluate the concepts and theories behind the group formations including the Schachter Study and its implications.	93%
	CO2: The student will be able to evaluate effective team building strategies and apply knowledge in solving contemporary issues related with teams in modern organisations	93%
HRM 304 Organizational Design	CO1: To apply organization theory for better understanding of organizational structure and design	83%
	CO2: To analyze different organizational models for reshaping organizations.	82%
MM 302: Digital & Social Media Marketing	co1: To explain the understanding of digital & social media marketing plan that will address common marketing challenges	81%
	CO2: Applying concepts,	81%

	approaches & the	
	practical aspects of	
	various digital &	
	social media	
	marketing tools	
	like SEO, Paid	
	Search, Social,	
	Mobile, Email &	
	Display media &	
	marketing	
	analytics	
	CO3: Analyze key	78%
	performance	
	indicators tied to	
	any digital &	
	social Media	
	program &	
	Develop return on	
	investment model	
	for any digital &	
	social marketing	
	program	
	CO4: Apply	82%
	creative ideas or	
	evolve with	
	existing ideas for	
	development of	
	effective digital &	
	social marketing	
	communication	
MM 303 :Integrated Marketing	CO1: To explain	82%
Communication	the understanding	
	of essential	
	concepts &	
	techniques for the	
	development &	
	designing of an	
	effective IMC	

	nrogram	
	program	020/
	CO2: Applying concepts,	82%
	approaches & the	
	practical aspects of	
	various	
	communication	
	tools	 0/
	CO3: Analyze	77%
	effectiveness of	
	different IMC tools	
	for business firms	
	CO4: Apply	82%
	creative ideas for	
	development of	
	effective	
	marketing	
	communication	
FM 302 Project Appraisal and Finance	CO1: To define the Pr	T
	life cycle, the role	
	stakeholders and promanagement processes	
	to explain the concep	
	project specificat	
	financial projections, s	
	and team in Pr	
	management.	
	CO2: To describe and	75%
	evaluate the risks involv	
	in projects and associate	
	costs as demonstrate the control and closure production	
	related to project	
	management.	
FM 304 Corporate Finance	CO1:To define and	77%
1	discuss the concepts	
	& theories related to	
	financial	
	management.	

CO2:To describe	75%
and apply the	
various theories,	
tools and techniques	
of Corporate	
Finance to resolve	
real life financial	
problems	

2022 Even Semester

2ND Semester

Subject Code & Subject	СО	Attainment
MB 201 Indian Economy and Policy	CO1: To Explain and design concepts of circular flow, theo income determination, inflat unemployment, LPG model, as as banking, trade policy monetary reforms.	
	CO2: To Develop ideas of the In Economy and grasp the importa of planning undertaken by the government of India.	83%
MB 202 Financial Reporting, Statement and Analysis	CO1: To explain the understar of the concepts and apply the practical life like basic fina accounting concept, preparing to of accounts, introduction Accounting Standard, preparatic financial statements and its analysis.	
	CO2: To Summarize the fina transactions in terms of Fina Statements and interpret Fina Statements by using diff financial tools and techniques.	
MB 203: Marketing	CO1: To identify &	80%

Management	analyze the scope & significance of marketing in Domain Industry	
	co2: To Analyze & examine marketing concepts & phenomenon to current business events in the industry	79%
	CO3: Map the various marketing environment variables & demonstrate them for designing marketing strategies for business firms	80%
	CO4: Demonstrate market analysis skill for developing innovative marketing strategies for firms	79%
MB 204 : OPERATIONS MANAGEMENT	CO1: To understand the suitable control technique in stores, Inventory, and vendor management is adopted for the production is identified.	80%
	CO2: To analyze the scheduling techniques applied in the operations were learned by the students	75%
MB 205 MANAGEMENT INFORMATION SYSTEM	CO1: To identify the technologies and methods used for effective decision-making in an organization	92%
	CO2: Make students understand the concepts and terminologies used in Database Management, Systems, SQL, Concurrency Management, and the extended part of data storage technology, Data Warehousing.	96%
MB 206	CO1: The student will be able	95%

: HUMAN RESOURCE	to understand and apply the	
MANAGEMENT	various concepts behind Human	
	Resource Management and	
	development including planning,	
	Performance Appraisal Systems	
	and strategic HR management.	
	CO2: The student will be able	85%
	to understand and apply the	
	theories and strategic concepts	
	behind compensation	
	Management, Industrial	
	Relations and discipline including	
	workers participation in	
	management.	

4th Semester

Subject Code & Subject Name	СО	Attainment
HR 401 MANPOWER PLANNING, RECRUITMENT& SELECTION	CO1: Student will be able to understand and analyze the various manpower planning mechanisms in an organization including forecasting techniques, management information systems and human resources audits.	93%
	CO2: Student will be able to apply and exercise various HRM implementation strategies including recruitment and solve case studies pertaining to real life organisational issues and situations.	93%
HR402Employee Relations &Labour Laws	CO1:To understand EPM,WPM ,concept of collective bargaining,trade unionism in India	84%

	CO2:To apply the various labour legislations in real life industrial scenario	79%
HR 404Performance Management System	CO1: To identify and apply performance planning, monitoring, appraisal techniques & strategies for better performance management.	83%
	CO2: To understand balance scorecard, competency mapping for application in reward management, employee engagement and potential appraisal	82%
HR 406 INTERNATIONAL HRM	CO1: Student will be able to understand International human resources management and development including the recruitment processes of such candidates.	93%
	CO2: The student will be able to remember and apply legislative measures meant for industrial relations, CSR and employee representation in the international sector and create compensation plans commensurate with the same.	93%
MM 401	CO1:Analysis consumer behaviour and its Impact on marketing	82%

strategies. Illustration of consumer decision process.Studednts will be understanding demographic and psychographic characteristics and market segmentation.Analysis of the relation between consumer perception with marketing stimuli.Students will learn to apply the knowledge of consumer motivation for marketing strategy and its relation with corporate social responsibility.

85%

CO2: Students will develop the understanding of characteristics and functions of attitude, cross-cultural understanding of consumer behaviour and data analysis for consumer feedback researches.Students will comprehend and write effective technical reports. They will be able to analyse case studies, explain relevant materials, communicate effectively, identify the appropriate key words,use grammatically correct **English** for

	documentation.	
MM 403: Sales & Distribution	CO1: To explain the	77%
Management	understanding of	
	sales & distribution	
	processes in	
	Organization	
	To get familiarized	75%
	with concepts,	
	approaches & the	
	practical aspects of	
	the key decision-	
	making variables in	
	sales management	
	& distribution	
	channel	
	management	
	CO3: To explain	78%
	market analysis	
	methods & selling	
	concepts	
	CO4: To develop	76%
	Performance	
	evaluation methods,	
	ethics, trends in	
	sales & distribution	
	management	
MM 404: Service Marketing	CO1: To explain the	77%
	understanding of	
	types, nature,	
	classification &	
	marketing mix of	
	service marketing	
	CO2: Analyze	75%
	service product	
	concept, branding &	
	service positioning	
	that transforming	
	service marketing to	
	a great extent	

	CO3: To explain market analysis methods of service marketing CO4: Demonstrate the role of identifying the	78%
	people in service & the role of customer in service delivery	
MM 406: International Marketing	CO1: To explain the understanding of global business activities, marketing processes in international business	77%
	To get familiarized with concepts, approaches & the practical aspects of the key decision-making variables & global forces that transforming international marketing	75%
	CO3: To develop general perspective about managing international marketing	76%
	CO4: To develop evaluation methods for International Marketing both in operational as well as strategic context	78%
OM 401		

OM 402 Behavioral Operations Management	CO1: To apply experimental learning theories & organizational behavior to ensure performance in work design	83%
	CO2: To understand emotional intelligence in operations management & supply chain management	82%
FM 401 Investment Analysis & Portfolio Management	CO1To explain the understanding of the conce and apply them like portfolio diversification, Construction, portfolio management, portfolio reviportfolio evaluation, portfolio protect and portfolio performance measures.	
	CO2To implement strategies to make an impact on the students in taking investment decisions, and properly manage the portfolio.	75%
FM402 Managing Banks & Financial Institutions	CO1To explain the understanding of the conce and apply them like banking industry models, b support mechanism, Basel committee I & II, interest risk management, liquidity management and credit risk management.	
	CO2 Evaluate and analyse the fundamentals & technical aspects of managing banks and financial institutions.	79%
FM405International Finance	CO1To explain the understanding of the concepts and apply them like international	75%

	financial management, international monetary System, balance of payments, exchange rate determination and foreign exchange market. CO2Evaluate and analyse the fundamentals & technical aspects of International financial	72%
	market.	
FM406 Financial Markets and Services	CO1To Discuss the Indian Financial System and multiplicity of Financial Instruments and understand the Indian finan system, money market, secondary market, SEBI, m Funds and credit rating agencies. CO2 Examine Mutual Fund	
	Merchant Banking under the nodal agency SEBI.	80%
	noun agency seem	

					2022 OI	DD AND 2	2023 EVEN	SEMEST
PAPER NAME	cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CE/ES\202	CO1		0.72					
CE(ES)302	CO2			0.73	0.69	0.67		
CE(HS)302	CO1	0.68	0.67					
CE(ES)392	CO1		0.69	0.72	0.75			
CE/EC)404	CO1	0.70	0.68					
CE(ES)401	CO2		0.68	0.75	0.75			
CE(EC)403)	CO1		0.65			0.65	0.65	
CE(ES)402)	CO2	0.73	0.65				0.60	0.65
CE(PC)401	CO1		0.63			0.71	0.67	
CL(FC)401	CO2		0.70				0.63	0.71
CE(PC)402	CO1	0.69		0.64		0.65	0.64	
CL(F C)402	CO2		0.66					0.66
CE(PC)403	CO1		0.65		0.76		0.65	0.70
CL(1 C)+03	CO2		0.64					
CE(PC)404	CO1		0.71	0.61	0.78	0.62	0.63	
CL(I C)+O+	CO2		0.68		0.75		0.62	
CE(HS)401	CO1		0.65	0.64	0.76			
CE(H3)401 CO	CO2		0.62		0.76	0.60		
CE(ES)491	CO1	0.69	0.70	0.63		0.68		0.67
CE(ES)492	CO1		0.75			0.65	0.62	
CL(L3)492	CO2		0.74	0.63			0.60	0.68
CE(ES)493	CO1		0.68			0.69	0.61	
CE(PC)493	CO1		0.70			0.65	0.66	
CE(PC)494	CO1	0.69	0.75			0.64	0.63	0.67
CE/DC\E01	CO1	0.65	0.67		0.75		0.65	
CE(PC)501	CO2		0.70	0.61	0.75			0.60
CE(PC)502	CO1		0.68					
CE(PC)502	CO2			0.65		0.69	0.68	
CE(PC)503	CO1		0.66					
CL(PC/303	CO2	0.68			0.76	0.68		
CE(PC)504	CO1		0.69			0.64	0.70	
CL(PC)304	CO2		0.72			0.63	0.64	
CE(PC)505	CO1		0.70	0.67	0.75		0.70	
CL(FC)JUJ	CO2	0.69	0.67					
	CO1		0.65			0.61	0.69	
CE(PC)506	CO2		0.64		0.74		0.65	0.67
	CO3				0.73			
CE(PC)591	CO1		0.66			0.73	0.65	

CE(PC)594	CO1		0.63			0.72	0.61	
				0 = 0		0.72	0.01	
CE(PC)595	CO1		0.60	0.76				
CE(PC)596	CO1		0.64	0.72	0.71			
CE(PC)597	CO1		0.68					
CE(PC)601	CO1		0.65			0.68	0.63	
CE(I C)OOI	CO2		0.63				0.65	0.69
CE(PC)602	CO1		0.67			0.63	0.63	
CE(1 C)002	CO2		0.64				0.64	0.63
CE(PC)603	CO1		0.68			0.64	0.60	
	CO2		0.73				0.67	0.68
CE(PC)604	CO1		0.72	0.65	0.66			0.68
CE(1 C)004	CO2		0.71	0.61	0.64			0.64
CE(PE)601B	CO1		0.69		0.65			
CE(1 E)001B	CO2		0.70				0.62	
CE(PE)602A	CO1		0.67			0.69	0.64	
CE(1 E)00ZA	CO2		0.66				0.66	0.67
CE(PC)693	CO1	0.70	0.71	0.70	0.66	0.68	0.70	0.70
CE(PC)694	CO1	0.71	0.68					
CE(PC)695	CO1		0.65					
CE/OE\701 A	CO1	0.62	0.69	0.68	0.65	0.67	0.70	0.69
CE(OE)701A	CO2	0.61	0.70	0.70	0.67	0.65	0.69	0.70
CE/DE\701C	CO1	0.75	0.71	0.65	0.69	0.68	0.70	0.68
CE(PE)701C	CO2	0.73	0.74	0.69	0.67	0.69	0.69	0.67
CE(PE)702A	CO1	0.66	0.73	0.68	0.66	0.65	0.68	0.65
CE(PE)/UZA	CO2	0.65	0.72	0.66	0.68	0.66	0.64	0.66
CE(PE)703A	CO1	0.70	0.71	0.65	0.68	0.72	0.65	0.67
CE(PE)/USA	CO2	0.74	0.70	0.64	0.64	0.70	0.61	0.63
CE(PE)704C	CO1	0.73	0.69	0.62	0.62	0.69	0.63	0.64
CL(PL)704C	CO2	0.71	0.65	0.59	0.62	0.68	0.64	0.60
CE(PE)705A	CO1	0.69	0.68	0.60		0.79	0.65	0.65
CL(PL)703A	CO2	0.67		0.61	0.60	0.79	0.66	0.64
CE(CV)891	CO1	0.73	0.70	0.76	0.71	0.76	0.74	
CE(PROJ)892	CO1	0.75	0.74	0.74	0.73	0.75	0.72	0.70
CE/DE\901D	CO1	0.70	0.74	0.62	0.64	0.74		0.62
CE(PE)801D	CO2		0.73	0.69	0.66	0.73		0.64
CE(0E)801C	CO1	0.70	0.68	0.70	0.65	0.72		0.68
DEEP	CO2		0.67			0.75		0.70
CE(CV)891	CO1	0.78	0.74	0.76	0.75	0.75	0.78	
CE(PROJ)892	CO1	0.79	0.78	0.80	0.78	0.79	0.76	0.78
Average)	0.70	0.68	0.67	0.70	0.70	0.63	0.67

Average Attainment(%)	70	68	67	70	70	63	67
7110148071004111110110(70)							

R_CE		_			
PO7	PO8	PO9	PO10	P11	P12
			0.70		
			0.73		
0.71					
	0.72				
0.67	0.72	0.71	0.71		
0.07	0.61	0.62	0.71		
	5.52				
		0.64		0.65	
	0.74				0.68
0.69					
0.70					
				0.66	
0.67	0.68				0.63
	0.55	0.69			
	0.67				
0.64	0.67		0.68		0.69
0.04			0.08		0.09
				0.68	
			0.67		
0.67			0.00		
0.62			0.68		
0.02		0.66	0.67		
		0.00	0.07		

				0.66	
0.64					0.72
		0.70			
0.67			0.71		
	0.61				
			0.65		
	0.68				
		0.74	0.64		
0.69	0.63	0.70			
0.70			0.70		
0.63	0.68	0.62			
0.65	0.65	0.66	0.70	0.69	0.66
0.68		0.68			
0.62					
0.68	0.68	0.65	0.71	0.67	0.63
0.64	0.64	0.64	0.68	0.65	0.70
0.70	0.70	0.68	0.71	0.71	0.72
0.60	0.69	0.61	0.69	0.61	0.69
0.66	0.68	0.69	0.67	0.68	0.65
0.71	0.69	0.68	0.66	0.66	0.66
0.63	0.59	0.62	0.61	0.63	0.72
0.67	0.66	0.63	0.60	0.68	0.70
0.56	0.63	0.64	0.62	0.67	0.69
0.66	0.62	0.68	0.67	0.65	0.66
0.60	0.66	0.69	0.66	0.65	
0.61	0.70	0.67	0.61		
0.71	0.71	0.62	0.71	0.75	0.71
	0.65	0.64			
	0.63	0.66	0.64	0.71	0.69
0.64	0.65	0.68	0.64	0.66	0.70
0.65	0.61	0.65	0.70	0.70	0.71
0.75	0.74	0.78	0.79	0.80	0.79
0.66	0.66	0.64	0.68	0.68	0.69

		_			
66	66	L 61	60	L 60	I 60
66	66	64	68	68	69
		.		-	

ECE PO Attainment

2022 Odd and 2023 Even Semester

Paper Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P9	P10	P11	P12
	CO1	0.70											
EC301	CO2		0.70										
	600	0.70											
	CO3	0.70											
	CO1	0.71		0.74									
EC302	CO2	0.71		0.71									
	CO3	0.71											
	CO1	0.55	0.55										
	CO2	0.55											
EC303	CO3	0.55											
	CO4	0.55											
	CO1	0.70											
EC304	CO2	0.70	0.70										
	CO3	0.70											
ESCS301	CO1	0.75		0.75									
	CO2			0.75									
	CO3	0.75											
BSM301	CO1	.73											
	CO2		.73										

	CO3			.73					
	CO1	0.81		0.81					
	COI	0.81		0.81					
	CO2	0.81		0.81	0.81				
EC391	CO3	0.81	0.81						
EC391	COS	0.81	0.61						
	CO4	0.81		0.81					
	CO5	0.81		0.81					
	CO1	0.88		0.88					
	CO2	0.88		0.88	0.88				
EC392	CO3		0.88						
	CO4	0.88		0.88					
	CO5	0.88		0.88					
	CO1			0.81					
	CO2	0.81							
ESCS391	CO3	0.81							
	CO4	0.81							
	CO1			0.72					
	CO2	0.72							
EC401	CO3	0.72							
	CO4	0.72							
EC402	CO1	0.75							
LC402	CO2	0.75							

	CO1	0.78		0.78						
EC403	CO2	0.78	0.78							
	CO1	0.75	0.75							
	CO2	0.75	0.75							
ECS401	CO3	0.75								
	CO4	0.75		0.75						
	CO5	0.75								
	CO1	0.75				0.75				
	CO2	0.75								
BSM401	CO3	0.75	0.75							
	CO4	0.75								
	CO1	0.85		0.85						
	CO2	0.85		0.85	0.85					
EC491	CO3		0.85							
	CO4	0.85		0.85						
	CO5	0.85		0.85						
	CO1	0.85		0.85						
EC492	CO2	0.85		0.85	0.85					
20732	CO3		0.85							
	CO4	0.85		0.85						

	CO5	0.85		0.85						
	CO1	0.90		0.90						
	CO2	0.90		0.90	0.90					
	CO2	0.90		0.30	0.90					
EC493	CO3		0.90							
	CO4	0.90		0.90						
	CO5	0.90		0.90						
	CO1	0.63		0.63						
	CO2	0.63		0.63						
BSMCS491	CO3	0.63		0.63						
	CO4	0.63		0.63						
	CO1	0.7								
	CO2	0.7								
EC 501	CO3	0.7								
	CO4			0.7						
	CO5	0.7								
	CO1	0.74								
	CO2			0.74						
EC502	CO3			0.74						
	CO4					0.74		1		
	CO1	0.64								
EC503	CO2		0.64							
EC3U3	CO3			0.64						

	CO4			0.64					
	CO1	0.6		0.6					
EC504	CO2	0.6		0.6					
	CO3	0.8		0.6					
PEEC505A	CO1	0.60							
PEECSUSA	CO2	0.60							
	CO1	0.91		0.91					
	CO2	0.91		0.91	0.91				
EC591	CO3		0.91						
20001	CO4	0.91	0.51	0.91					
	CO5	0.91		0.91					
	CO1	0.93		0.93					
	CO2	0.93		0.93	0.93				
EC592	CO3		0.93						
	CO4	0.93		0.93					
	CO5	0.93		0.93					
	CO1	0.94		0.94					
	CO2	0.94		0.94	0.94				
EC593	CO3		0.94						
	CO4	0.94		0.94					
	CO5	0.94		0.94					

	601	0.72							
	CO1	0.72							
EC601	C-2	0.72							
	Co2	0.72							
	601	74	74						
	CO1	.74	.74						
EC602	CO2	.74	.74						
	C02	./4	./4						
	CO1	0.70							
	001	0.70							
	CO2	0.70							
PEEC603D	002	0.70							
	CO3	0.70							
	CO1	0.7			0.7				
	CO2	0.7							
EC604C									
	CO3	0.7	0.7	0.7					
	CO4	0.7			0.7				
	CO1	0.90		0.90					
	CO2	0.90		0.90	0.90				
EC691	CO3		0.90						
	CO4	0.90		0.90					
	CO5	0.90		0.90					
	CO1	0.90		0.90					
	CO2	0.90		0.90	0.90				
EC692	0.7.7								
	CO3		0.90				 		
	CO4	0.90		0.90					

EC681 CO1 0.90					0.90		0.90	CO5	
EC681 CO2 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.9									
EC702C CO3									
EC701B CO4 0.90 0.90 0.90 0.90 0.90 0.90 CO5 0.90 0.90 0.90 0.90 0.90 0.90 EC701B CO2 0.71 0.71 0.71 0.71 0.71 0.71 0.71 0.71				0.90	0.90		0.90	CO2	
EC701B CO4 0.90 0.90 0.90 0.90 0.90 0.90 CO5 0.90 0.90 0.90 0.90 0.90 0.90 EC701B CO2 0.71 0.71 0.71 0.71 0.71 0.71 0.71 0.71						0.90		CO3	56604
EC701B CO1 0.71 0.71 CO2 0.71 0.71 CO3 0.72 0.72 CO2 0.72 0.72 CO3 0.72 0.72 CO4 0.72 0.72 CO4 0.72 0.72 CO4 0.72 0.72 CO5 0.74 0.74					0.90		0.90		EC081
EC701B CO1 0.71 0.71 CO2 0.71 0.71 CO3 0.72 0.72 CO2 0.72 0.72 CO3 0.72 0.72 CO4 0.72 0.72 CO4 0.72 0.72 CO4 0.72 0.72 CO5 0.74 0.74	0.00	0.00	0.00		0.00		0.00	COE	
EC701B	0.90	0.90	0.90		0.90		0.90	COS	
CO3						0.71	0.71	CO1	
CO3						0.71	0.71	CO2	FC701B
EC702C CO1 0.72 0.72						0.71	0.71	CO2	Levois
EC702C CO2 0.72 0.72				0.71					
CO3 0.72 0.72						0.72	0.72	CO1	
CO3 0.72 0.72						0.72	0.72	CO2	FC703C
CO1 0.74 0.74						0.72	0.72	CO3	EC/U2C
CO1 0.74 0.74									
FC703A						0.72	0.72	CO4	
EC703A				0.74			0.74	CO1	
CO2 0.74 0.74					0.74		0.74	CO2	EC703A
CO1 0.73							0.73	CO1	
CO2 0.73 0.73						0.73	0.73	CO2	
OEEC704A CO3 0.73 0.73					0.72		0.72	603	OFFC704A
GEEC/04A CO3 0.73 0.73					0.73		0.73	LU3	OEEC/U4A
CO4 0.73 0.73					0.73		0.73	CO4	
CO5 0.73 0.73					0.73		0.73	CO5	

	CO1	0.93		0.93									
	CO2	0.93		0.93	0.93								
EC781	CO3		0.93										
	CO4	0.93		0.93									
	CO5	0.93		0.93			0.93	0.93			0.93		
	CO1	0.92											
	CO2		0.92										
	CO3			0.92									
	CO4				0.92								
	CO5					0.92							
	CO6						0.92						
EC782	CO7							0.92					
	CO8								0.92				
	CO9									0.92			
	CO10										0.92		
	CO11											0.92	
	CO12												0.92
DEEC004.D	CO1	0.73	0.73										
PEEC801B	CO2	0.73	0.73										

	CO1	0.74											
OEEC802C	CO2	0.74											
	CO3	0.74		0.74									
	CO1		0.75										
OEEC804C	CO2		0.75										
	CO3			0.75									
	CO1	0.93											
	CO2		0.93										
	CO3			0.93									
	CO4				0.93								
	CO5					0.93							
	CO6						0.93						
EC881	CO7							0.93					
	CO8								0.93				
	CO9									0.9			
	CO10										0.93		
	CO11											0.93	
	CO12												0.93
EC882	CO1	0.95											

Attainment		78%	77%	75%	78%	80%	81%	84%	78%	85%	73%	85%	85%
Average PO		0.78	0.73	0.75	0.78	0.80	0.81	0.84	0.78	0.85	0.73	0.85	0.85
	CO12												0.95
	CO11											0.95	
	CO10										0.95		
	CO9									0.95			
	CO8								0.95				
	CO7							0.95					
	CO6						0.95						
	CO5					0.95							
	CO4				0.95								
	CO3			0.95									
	CO2		0.95										

PO NO.	BROAD	ELABORATE
1	Engineering	Apply the knowle
	knowledge	engineering fundan
2	Problem	Identify, formulate, research literature, and analyse complex
_	analysis:	engineering problems reaching substantiated conclusions usi
3	Design/devel	Design solutions for complex engineering problems and design
	opment of	public health and safety, and cultural, societal, and environme
4	Conduct	Use research-based knowledge and research methods include
	investigation	interpretation of data, and synthesis of the information to prov
	s of	
5	Modern tool	Create, select, and apply appropriate techniques, resources, a
	usage:	activities, with an understanding of the limitations.
6	The	Apply reasoning informed by the contextual knowledge to ass
	engineer	the professional engineering practice.
	and society:	
7	Environment	Understand the impact of the professional engineering solutio
	and	sustainable development.
	sustainabilit	
	v·	
8	Ethics:	Apply ethical principles and commit to professional ethics and
9	Individual	Function effectively as an individual, and as a member or lea

	and team work:	
10		Communicate effectively on complex engineering activities wi
	ion:	write effective reports and design documentation, make effect
11	Project	Demonstrate knowledge and understanding of t h e engineer
	management	to manage projects and in multidisciplinary environments
12	Life-long	Recognise the need for, and have the preparation and ability
	learning:	

PROGRAM SPECIFIC OUTCOMES

PSO1: Ability to apply the knowledge of Basic Computing, Basic Sciences and Social Sciences in the field of electrical engineering to identify, analyze and so life problems faced in industries and/or during research work.

PSO2: Ability to model, test, analyze and design components or processes releadern power system involving both conventional and renewable energy resolvoltage systems and energy management.

PSO3: Ability to apply the concept of circuit theory, electromagnetic field thec and basic electronics to solve complex problems of electrical machines and dripower electronic converters and electrical system design.

PSO4: Ability to identify and analyze the role of measurement, instrumentatic modern control engineering to enhance sustainability, reliability and efficiency electrical systems.

PSO5: Ability to demonstrate proficiency in operating and handling modern er tools to cop up with dynamic industrial environment.

PSO6: Ability to work and communicate effectively in the corporate life keepir responsible outlook towards socio-economic and environmental issues.

JRSE OUTCOMES

Name

CO1	describe different type of networks, sources and signals with examples.
CO2	explain different network theorems, coupled circuit and tools for solution
CO3	apply network theorems and different tools to solve network problems.
CO4	select suitable techniques of network analysis for efficient solution.
CO5	estimate parameters of two-port networks.
CO6	design filter circuits.

Nai

CO1	1. describe analog electronic components and analog electronics circuits
------------	--

	Name of
CO6	6. construct operational amplifier based circuits for different applications.
CO5	5. distinguish different types amplifier and different types oscillators base
CO4	4. determine response of analog electronic circuits.
CO3	3. compute parameters and operating points of analog electronic circuits.
CO2	2. explain principle of operation of analog electronic components, filters,

CO1	1. Relate different coordinate systems for efficient solution of electromagi
CO2	2. describe mathematical s tools to solve electromagnetic problems.
CO3	3. explain laws applied to electromagnetic field.
CO4	4. apply mathematical tools and laws to solve electromagnetic problems.
CO5	5. analyze electromagnetic wave propagation
CO6	6 estimate transmission line parameters

Nam

Course	After completing this course, the students will be able to:
CO1	explain the co-ordinate system, principle of three dimensional rotation,kir
CO2	elaborate the theory of general motion, bending moment, torsional motio
CO3	develop free body diagram of different arrangements.
CO4	solve problems with the application of theories and principle of motion , fi
CO5	analyze torsional motion and bending moment.

cos explain basics of probability theories, rules, distribution and properties of describe different methods of numerical analysis.
cos solve numerical problems based on probability theories, numerical analysis apply numerical methods to solve engineering problems.
cos 5. solve engineering problems using z transform and probability theory.

Nam

Course	Upon completion of this course, students will be able to:
CO1	Describe with examples the biological observations lead to major discover
CO2	Explain the classification of kingdom of life the building blocks of life
CO3	Different techniques of bio physics used to study biological phenomena.
CO4	The role of imaging in the screening, diagnosis, staging, and treatments of
CO5	Identify DNA as a genetic material in the molecular basis of information t
CO6	Analyze biological processes at the reductionistic level.
CO7	Apply thermodynamic principles to biological systems.
CO8	Identify microorganisms
	Na _i

Course	After completing this course, the students will be able to:
CO1	Describe different features of Indian constitution. Power and functioning of
CO2	Identify authority to redress a problem in the profession and in the societ
	Name of

Course	Up
CO1	Determine transient response of different electrical circuit, frequency res
CO2	Generate different signals in both discrete and analog form
CO3	Analyze amplitude and phase spectrum of different signals.
CO4	Verify network theorems.
CO5	Construct circuits with appropriate instruments and safety precautions.
CO5	Simulate electrical circuit experiments using suitable software.

Name

Course	Up
	At
CO1	Determine characteristics of full wave rectifier with filter and without filte
CO2	Verify function of DAC and ADC
CO3	Construct function generator using IC, R-C coupled amplifier, linear voltage
CO4	Work in a team
CO5	Validate theoretical learning with practical Special Remarks: The above-m
	Name

Name (

Course	Upon successful completion of the course, student will have:
CO1	Solve problems with Newton forward /backward, Lagrange's interpolation
CO2	problems of numerical integration using Trapezoidal rule, Simpson's 1/3
CO3	rule, Weddle's rule problems to find numerical solution of a system of line
CO4	Gauss elimination and Gauss-Seidel iterations. problems to find numerical
CO5	Ordinary differential equation by Euler's and Runga-Kutta methods.
CO6	Find appropriate numerical methods to solve engineering problems.
CO7	Use software package to solve numerical problems.

Na

Course	Up
CO1	Describe the function of different components of magnetic circuit, DC ma
CO2	Explain the principle of operation of different types of DC machines and tr
CO3	Solve numerical problems of DC machines and transformers.
CO4	Estimate the parameters and efficiency of transformer.
CO5	Determine the characteristics of DC machines
CO6	recommend methods to control output of DC machines.

Nan

Course	Up
CO1	Describe the function of different building blocks of digital electronics, ser
CO2	Explain the principle of operation of combinational and sequential digital of
CO3	Solve numerical problems of Boolean algebra, number system, combinati
CO4	Specify applications of combinational and sequential digital circuits.
CO5	Determine specifications of different digital circuits.
CO6	Design combinational and sequential digital circuits

Name of the S

Course	Up
CO1	Explain the terms accuracy, precision, resolution, speed of response, erro
CO2	Describe methods of measurement of power, energy by instruments and
CO3	Explain the principle of operation of analog meters, instrument transform
CO4	Explain the different building block, principle of operation of oscilloscope a
CO5	Solve numerical problems related to analog meters, instrument transform
CO6	Specify applications of analog and digital measuring instruments, sensors
	Name o
Course	Upon successful completion of the course, student will have:
CO1	Describe the function of different components of boilers. Engines and turk
CO2	Explain the principle of operation of different types of boilers, turbines, IC
CO3	Solve numerical problems of boilers, turbines, IC engines and Gas turbine
CO4	Analyze the performance of boilers, engines and turbines.
CO5	Determine efficiency of boilers, engines and turbines.
CO6	Explain methods to control boiler, engines and turbines parameters.
	Name of t
Course	Upon successful completion of the course, student will have:
CO1	1. Illustrate different aspects of human values, ethics, engineers' respons

Name

Course	Upon successful completion of the course, student will have:
CO1	Understand the natural environment and its relationships with human ac
CO2	Apply the fundamental knowledge of science and engineering to assess ϵ
CO3	Develop guidelines and procedures for health and safety issues obeying the
CO4	Acquire skills for scientific problem-solving related to air, water, noise& la
	Name of

4. Correlate ethics of different work environment.

5. Explain the need for intellectual property rights.

2. Explain different principles, different theories and laws of engineering €3. Identify different factors in the light of Engineers' responsibility toward

CO2

CO3

CO5

Course	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment.
CO2	Test the instrument for application to the experiment.
CO3	Construct circuits with appropriate instruments and safety precautions
CO4	Validate different characteristics of DC machine, methods of speed contr
CO5	Work effectively in a team

Name of t

Upon successful completion of the course, student will have:
Identify appropriate equipment and instruments for the experiment
2. Test the instruments for application to the experiment
3. Construct decoder, multiplexer, adder and subtractor circuits with app
4. Realize RS-JK and D flip flop, universal register with gates, multiplexer
5. Validate the operation of code conversion circuit –BCD to Excess 3 & v
Work effectively in a team

Name of the Subject

Course	Upon successful completion of the course, student will have:
	1. identify appropriate equipment and instruments for the experiment
	2. test the instrument for application to the experiment
	3. construct circuits with appropriate instruments and safety precautions
	4. evaluate and adjust the precision and accuracy of AC energy meter, m
	5. measure voltage, current, power, energy, phase, frequency, resistance
	6. work effectively in a team

Name of the 5

Course	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment
CO2	Construct experimental setup with appropriate instruments and safety pr
CO3	Identify different parts of Lanchashire Boiler, Bahcock & Willcox Boiler, Co
CO4	Test 4 stroke petrol engine by electrical load box and diesel engine by ele
CO5	Find calorific value, flash point, fire point, cloud point, pour point of fuel.
C06	Work effectively in a team

Name of t

Course	On successful completion of the course the student will be able to:
	1. To understand the arrangement of windings of AC machines.
	2. To understand the principle of production of pulsating and revolving m
	3. To understand the principle of operation and characteristics of three pl
	4. To understand the principle of operation and characteristics of single p
	5. To understand the principle of operation and characteristics of synchro

 6. To understand the principle of operation and characteristics of special (
7. To solve problems of Induction machines, synchronous machines and s

Course	After completion of this course the students will be able to:
CO1	To understand the basic principle of generation of Electricity from differer
CO2	To find parameters and characteristics of overhead transmission lines and
CO3	To find different parameters for the construction of overhead transmission
CO4	To determine the performance of transmission lines.
CO5	To understand the principle tariff calculation.
CO6	To solve numerical problems on the topics studied.

Course	On completion of this course a student will be in a position to:
CO1	1. To find mathematical representation of LTI systems.
CO2	2. To find time response of LTI systems of different orders
CO3	3. To find the frequency response of LTI systems of different orders
CO4	4. To understand stabilityof differentLTI systems.
CO5	5. To analyze LTIsystems with state variables.
CO6	6. To solve problems of mathematical modelling and stability of LTI syste

CourseOn completion of this course a students will be able toCO1To understand the functioning and characteristics of power switching devCO2To understand the principle of operation of converters.CO3To understand different triggering circuits and techniques of commutationCO4To find external performance parameter of converters.CO5To analyze methods of voltage control, improvement of power factor andCO6To solve numerical problems of converters

CO1 After completion of the course, the students will be able to:
identify appropriate equipment and instruments for the experiment.

CO2 test the instrument for application to the experiment.

CO3 construct circuits with appropriate instruments and safety precautions.

CO4 validate different characteristics of single phase Induction motor, three pl
CO5 work effectively in a team

Course On completion of this course a students will be able to identify appropriate equipment and instruments for the experiment. test the instrument for application to the experiment.

Name (

Name of

Na

CO3	3. construct circuits with appropriate instruments and safety precautions.
CO4	4. validate different characteristics of transmission line.
CO5	5. determine earth resistance, dielectric strength of insulating oil, breakde
CO6	6. analyze an electrical transmission line circuit with the help of software
CO7	7. work effectively in a team

Name c

Course	After completion of this course the students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
CO3	construct circuits with appropriate instruments and safety precautions.
CO4	use MAT-Lab control system tool box, MAT-Lab- simulink tool box & PSP1
CO5	5. determinecontrol system specifications of first and second order syster

Name of

Course	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
CO3	construct circuits with appropriate instruments and safety precautions
<u>CO3</u>	construct circuits with appropriate instruments and safety precautions

Name o

Course	On completion of this course a student will be in a position to:
CO1	differentiate how the choices of data structure & algorithm methods enha
CO2	solve problems based upon different data structure & also write programs
CO3	write programs based on different data structure
CO4	identify appropriate data structure & algorithmic methods in solving probl
CO5	discuss the computational efficiency of the principal algorithms for sorting
CO6	comparethe benefits of dynamic and static data structures implementatio

Name of

Year: 3rd

	i car. sia
Course	After completion of this course the students will be able to
CO1	specify simple abstract data types.
CO2	recognise features of object-oriented design such as encapsulation, polyn
CO3	inheritance, and composition of systems based on object identity.
CO4	apply common object-oriented design patterns
CO5	specify uses of common object oriented design patterns with examples.
CO6	design applications with an event-driven graphical user interface.
	N
Course	After completion of the course, the students will be able to:
CO1	Represent power system components in line diagrams.
	-

CO2	Determine the location of distribution substation.
CO3	Determine the performance of power system with the help of load flowv s
CO4	Analyse faults in Electrical systems.
CO5	Determine the stabilty of Power system.
CO6	Explain principle of operation of different power system protection equipn
CO7	Solve numerical problems related to representation, load flow, faults, stal
	Name of the

Year: 3 rd	
Course	After completion of the course, the students will be able to
CO1	1. explain the architecture of 8086 and 8051.
CO2	2. do assembly language programming of 8086, 8051
CO3	3. interface different peripheral with 8086 and 8051
CO4	4. develop micro processor/ microcontroller based systems.
CO5	5. compare microprocessor, microcontroller, PIC and ARM processors

Name

Course	On completion of this course a students will be able to
CO1	explain the principle of sampling and reconstrction of analog signal. syst
CO2	perform Z-transformation and inverse Z-tranaformation of systems.
CO3	analyse and design digital control
CO4	design compensators for digital control system to achieve desired specific
CO5	represent digital control systems using state space models.
CO6	analyze the effect sampling on stability, controllability and observability

Na

choose intelligently AC and DC transmissio	A
	n systems for the dedicated a
identify the suitable two-level/multilevel co	onfiguration for high power cor
cos select the suitable protection method for v	arious converter faults.
4. identify suitable reactive power comp	ensation method.
5. decide the configuration for harmonic mi	tigation on both AC and DC sic
6. solve numerical problems related to conv	verters, power flow analysis, re

Name

·	Nama
CO5	5. use software tools to do design calculations.
CO4	4. explain the construction and performance characteristics of electrical n
CO3	3. determine the various factors which influence the design of electrical, r
CO2	explain the principles of electrical machine design and carry out basic des
CO1	specify the rating of electrical machines with standard specifications.
Course	After completion of this course the students will be able to

Name of

Course	On completion of this course a students will be able to
CO1	explain the principle of Electric traction.
CO2	choose a suitable drive scheme for developing an electric hybrid vehicle d
CO3	design and develop basic schemes of electric vehicles and hybrid electric
CO4	choose proper energy storage systems for vehicle applications
CO5	implement different energy management strategies for hybrid vehicle.

Nam(

Course	analyse uncompensated AC transmission line.
Outcomes	explain the working principles of FACTS devices and their operating chara
	3. apply FACTS devices for power flow control and stabilty.
	4. identify different issues of power quality in distribution system.
	5. apply different compensation and control techniques for DSTATCOM6.
Name of the	Subject: INDUSTRIAL ELECTRICALSYSTEMS
Subject Cod	le: PE-EE-602C
Year: 3 rd	
Course	1. Represent electrical wiring system for residential, commercial and indu
Outcomes	2. Determine the rating of components of residential and commercial elec-
	3. Design lighting scheme for a residential and commercial premises.
	4. Select transformer, switchgear, protection equipments for industrial ele
	5. explain methods of automation of Industrial Electrical Systems
	6. Solve numerical problems related to earthing system, lighting scheme,
Name of the	e Subject: DIGITAL SIGNALPROCESSING
Subject Cod	le: PE-EE-601A
Year: 3 rd	
Course	1. represent signals mathematically in continuous and discrete-time and
Outcomes	2. analyse discrete-time systems using z-transform.
	3. explain the Discrete-Fourier Transform (DFT) and the FFT algorithms.
	4. design digital filters for various applications.
	5. apply digital signal processing for the analysis of real-life signals.
	e Subject: COMMUNICATION ENGINEERING
Subject Cod	le: PE-EE-601B
Year: 3 rd	
Course	1. compare the performance of AM, FM and PM schemes with reference to
Outcomes	2. explain noise as a random process and its effect on communication rec
	3. evaluate the performance of ASK, FSK, PSK, BPSK, QPSK in a digital co
	4. identify source coding and channel coding schemes for a given commu
	5. analyze various digital modulation methods
	6. compute band width requirement and probability of error in various di
	e Subject: VLSI AND MICROELECTRONICS
	le: PE-EE-603C
Vanus ard	

Year: 3rd

Course Outcomes

- 1. explain the principle of design of VLSI circuits
- 2. explain different MOS structure with characteristics
- 3. apply different processes for VLSI fabrication
- 4. use programming language for the design of logic circuits

	5. draw the stick diagram and layout for simple MOS circuits
Name of the	Subject: ECONOMICS FOR ENGINEERS
Subject Cod	le: HM-EE-601
Year: 3 rd	
Course	1. evaluate the economic theories, cost concepts and pricing policies
Outcomes	2. explain the market structures and integration concepts
	3. apply the concepts of financial management for project appraisal
	4. explain accounting systems , the impact of inflation, taxation, deprecia
	5. analyze financial statements using ratio analysis
	6. explain financial planning, economic basis for replacement, project sch
Name of the	Subject: POWER SYSTEM-II LABORATORY
	le: PC-EE 691
Year: 3 rd	
Course	1. Identify appropriate equipment and instruments for the experiment.
Outcomes	2. Test the instrument for application to the experiment.
	3. Construct circuits with appropriate instruments and safety precautions
	4. Validate the characteristics of under voltage relay, over current relay,
	5. Validate protection schemes of transformer, generator, motor and feed
	7. work effectively in a team
Name of the	Subject: MICRO PROCESSOR AND MICRO CONTROLLERLABORATORY
	le: : PC-EE 692
Year: 3 rd	
Course	1. identify appropriate equipment and instruments for the experiment
Outcomes	2. test the instrument for application to the experiment
• date • mes	3. construct circuits with appropriate instruments and safety precautions
	4. program 8086 for arithmatic operation, sorting of array, searching for
	5. interface ADC/DAC, 8255, 8251 to 8086 and LCD, keyboard to 8051
	6. program 8051 using arithmatic, logical and bit manipulation instruction
	7. work effectively in a team
Name of the	Subject: ELECTRICAL AND ELECTRONICS DESIGNLABORATORY
	le: PC-EE 681
Year: 3 rd	Cite LE 001
Course	1. explain basic concept of measurement, noise in electronic system, sens
Outcomes	2. implement PC based data acquisition systems
outcomes	3. construct circuits with appropriate instruments and safety precautions
	4. design heating elements, air core grounding reactor, power distribution
	5. do wiring and installation design of a multistoried residential building w
	6. design electronic hardware for controller of lift, speed of AC/DC motor,
Name of the	Subject: ELECTRIC DRIVE
	le: PC-EE 701
Year: 4 TH	e. PC-LL 701
Course	1. Explain the principle of operation of Electric Drive.
Outcomes	2. Describe different methods of starting and braking of Electric Drive.
Jutcomes	3. Model and control DC Drive
	4. Control speed of Induction and Synchronous motors.
	5. Recommend drives for different applications.
	6. Estimate ratings, variables and parameters of Electric Drives.

Name of the Subject: CONTROL SYSTEM DESIGN
Subject Code: PE-EE 701 A
Year: 4TH

Course Outcomes

- 1. explain the effect of gain, addition of pole and zeros on system's performance of the system's performance of t
- 2. describe time domain and frequency domain design specifications.
- 3. demonstrate the effect of nonlinearity on system performance.
- 4. design control system in time domain, in frequency domain and in sta
- 5. design PID controllers.
- 6. select appropriate method for design of control system.

Name of the Subject: ELECTRICAL ENERGY CONSERVATION& AUDITING

Subject Code: : PE-EE 701B

Year: 4TH Course Outcomes

- 1. explain the basic of energy resources, energy security, energy conserv
- 2. quantify the energy conservation opportunities in different thermal sys
- 3. quantify the energy conservation opportunities in different electrical sy
- 4. identify the common energy conservation opportunities in different ene
- 5. explain the methods of energy management and audit.
- 6. analyse and report the outcome of energy audit

Name of the Subject: POWER GENERATION ECONOMICS

Subject Code: : PE-EE 701C

Year: 4TH

Course Outcomes

- 1. explain the different terms e.g. load factor etc for economics of genera
- 2. apply different types of tariff for electricity pricing.
- 3. optimize the operation of power system with unit commitment.
- 4. determine generation levels such that the total cost of generation beco
- 5. determine the state of the system given by the voltage magnitudes and
- 6. predict the power or energy needed to balance the supply and load del

Name of the Subject: ARTIFICIAL INTELLIGENCE

Subject Code: OE-EE-701A

Year: 4[™]

Course Outcomes

- 1. explain the concept of knowledge representation and predicate logic ar
- 2. describe state space and its searching strategies
- 3. demonstrate proficency in applying scientific method to models of mach
- 4. apply the machine learning concepts in real life problems
- 5. demonstrate an ability to share in discussions of AI, its current scope ϵ

Name of the Subject: INTERNET OF THINGS

Subject Code: OE-EE-701B

Year:4[™]

Course Outcomes

- 1. explain the definition and usage of the term "Internet of Things" in diffe
- 2. explain the key components that make up an IoT system.
- 3. differentiate between the levels of the IoT stack and be familiar with tl
- 4. build and test a IoT system involving prototyping, programming and da
- 5. apply cloud computing and data analytics in a typical IoT system

Name of the Subject: COMPUTER GRAPHICS

Subject Code: OE-EE-701C

Year: 4[™]

Course 1. explain Computer graphics and graphic systems. **Outcomes** 2. test and implement line drawing algorithm, circle and ellipse drawing a 3. Perform 2D and 3D transformation and viewing. 4. apply algorithms for visible surface determination. 5. explain colors and shading models and ray tracing. Name of the Subject: EMBEDDED SYSTEM **Subject Code:** OE-EE 702A Year: 4[™] Course 1. discuss the definition, purpose, application, classification, quality chara **Outcomes** 2. explain the internal structure of the Embedded system. 3. interface IO devices and other peripherals with micro controllers in Em 4. write programs for Micro controllers in Embedded systems. 5. apply the concept of Embedded firmware in design of Embedded system Name of the Subject: DIGITAL IMAGE PROCESSING Subject Code: OE-EE 702B Year: 4[™] 1. explain the fundamental concepts of a digital image processing system Course Outcomes 3. apply different image segmentation techniques. 4. categorize various compression techniques. 5. implement image process and analysis algorithms. 6. apply image processing algorithms in practical applications. Name of the Subject: COMPUTER NETWORK **Subject Code:** : OE-EE 702C Year: 4[™] 1. explain the concepts of data communication and networking. Course Outcomes 2. identify the different types of network topologies and protocols. 3. describe the function of a network system with OSI and TCP/IP model. 4. differentiate different types of routing protocol. 5. apply principles of congestion control. 6. implement different schemes for security of the networks. Name of the Subject: PRINCIPLE OF MANAGEMEENT **Subject Code:** : HM-EE 701 Year: 4TH 1. explain the concepts and approaches of management. Course Outcomes 2. demonstrate the roles, skills and functions of management. 3. diagnose and solve organizational problems. 4. identify the complexities associated with management of human resou 5. apply different methods of Customer, Operation and Technology mana 6. acquire skills of good leader in an organization. Name of the Subject: ELECTRIC DRIVE LABORATORY **Subject Code:** PC-EE 791 Year: 4[™]

Course Outcomes

- 1. identify appropriate equipment and instruments for the experiment.
- 2. test the instrument for application to the experiment.
- 3. construct circuits with appropriate instruments and safety precautions.
- 4. apply different methods of control of Electric Drive in the laboratory.
- 5. analyse experimental data obtained in the laboratory.

	6. work effectively in a team
Name of the	e Subject: UTILIZATION OF ELECTRIC POWER
	e: : PC-EE 801
Year: 4 [™]	
Course	1. explain the fundamentals of illumination and different lighting schemes
Outcomes	3. able to select appropriate lighting, heating and welding techniques for
	4. apply different electrolysis process for different applications.
	5. explain the principle of different aspect of Electric traction and control
	e Subject: LINE COMMUTATED AND ACTIVE PWM RECTIFIERS
	e: PE-EE 801A
Year: 4 [™]	
Course	1. explain the principle of operation of different converters.
Outcomes	2. suggest the application of different filters.
	3. apply converters for different applications.
	4. analyze converter circuits.
	5. develop appropriate scheme for control of different converters.
	6. solve numerical problems relating to different converters.
	Subject: POWER SYSTEM DYNAMICS AND CONTROL
	e: PE-EE 801B
Year: 4 TH	It sometimes the consideration of the construction of the construc
Course	1. explain the model of power system components
Outcomes	2. select the appropriate model for required analysis.
	3. analyze the performance of the system with small signal analysis.
	4. evaluate the stability of the single and multi machine systems.
	5. develop measures for enhancing the stability of the system.
Name of the	6. Solve numerical problems of linear dynamical system, modeling of diffe
	Subject: ADVANCED ELECTRIC DRIVE
Year: 4 TH	e: PE-EE 801C
Course	1. explain the principle of operation of converters for AC drives.
Outcomes	2. model Induction and Synchronous motor by reference frame theory.
Outcomes	3. apply different control methods to control speed and torque of Induction
	4. explain the configurations and method of speed control of BLDC, PMSN
	5. realize basic blocks for DSP based motion control.
	6. develop appropriate scheme for speed control of Induction and Synchr
Name of the	Subject: INDUSTRIAL AUTOMATION AND CONTROL
	e: : PE-EE 801D
Year: 4 TH	CITTE LL GOID
Course	1. explain the basic structure of industrial automation and control
Outcomes	2. classify different types of control actions of controllers.
	3. analyze control strategies of different processes of industry.
	4. illustrate the construction and use of different types of actuators and c
	5. use PLC, DCS and SCADA in advanced industrial control.
Name of the	Subject: SOFT COMPUTING TECHNIQUES
	le: OE-EE 801A
Year: 4 TH	
Course	1. explain soft computing techniques and their roles in building intelligent
	J J J J J J J J J J J J J J J J J J

Outcomes	2 anlyse the fensibility of application of soft computing techniques for a r
Outcomes	2. anlyse the feasibility of application of soft computing techniques for a professional and the solution an
	3. effectively use existing software tools to solve real problems using a sc
	4. evaluate solutions by various soft computing approaches for a given pr
Name of the	5. apply different soft computing techniques to solve Engineering problem
	Subject: BIOMEDICAL INSTRUMENTATION
	e: OE-EE 801B
Year: 4 [™]	
Course	1. describe the principle of medical transducers for temperature, pressure
Outcomes	2. explain the principle of operation of Biomedical recorders, Medical Image
	3. use different Medical laboratory equipments for different tests .
	4. analyze any measurement application and suggest suitable measurem
	5. suggest suitable imaging methodology for a specific ailment.
	Subject: INTRODUCTION TO MACHINE LEARNING
	e: OE-EE 801C
Year: 4 [™]	
Course	1. explain the basics concepts and classification of Machine Learning.
Outcomes	2. write simple programs using python.
	3. describe Supervised Learning concepts.
	4. explain the concept of Support Vector Machine.
	5. describe unsupervised learning concepts and dimensionality reduction
	6. apply Machine Learning in a range of real-world applications.
	Subject: SENSORS AND TRANSDUCERS
	e: OE-EE 801D
Year: 4 [™]	
Course	1. explain the basic principle of operation of Transducers and Sensors.
Outcomes	2. distinguish different sensors and transducers.
	3. identify suitable transducer by comparing different industrial standards
	4. estimate the performance of different transducers.
	5. design real life electronics and instrumentation measurement systems
	PROGRAMME OUTCOMES (PO) BASED ON G.A.
	PROGRAMME OUTCOMES (FO) BASED ON G.A.
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		PO1	PO2	PO3	PO4
Course	CO1	0.67	0.67	0.67	0.67
Outcomes	CO2	0.67	0.67	0.67	0.67
	СОЗ	0.67	0.67	0.67	
	CO4	0.67	0.67	0.67	0.67
	CO5	0.67	0.67	0.67	
	CO6	0.67	0.67	0.67	0.67
Course	CO1	0.66	0.66	0.66	0.66
Outcomes	CO2	0.66	0.66	0.66	0.66
	СОЗ	0.66	0.66	0.66	
	CO4	0.66	0.66	0.66	0.66
	CO5	0.66	0.66	0.66	
	CO1	0.74	0.74	0.74	0.74
Course	CO2	0.74	0.74	0.74	0.74
Outcomes	CO3	0.74	0.74	0.74	0.74
	CO4	0.74	0.74	0.74	0.74
	CO5	0.74	0.74	0.74	0.74
	CO6	0.74	0.74	0.74	0.74
	CO1	0.77	0.77	0.77	0.77
Course	CO2	0.77	0.77	0.77	0.77
Outcomes	СОЗ	0.77	0.77	0.77	0.77
	CO4	0.77	0.77	0.77	0.77
	CO5	0.77	0.77	0.77	0.77
	CO1	0.78	0.78		0.78
	CO2	0.78	0.78		0.78
Course	CO3	0.78	0.78		0.78
Outcomes	CO4	0.78	0.78		0.78
	CO5	0.78	0.78		0.78
	CO6	0.78	0.78		0.78
	CO1	0.75			
	CO2	0.75			0.75
Course	CO3	0.75			0.75
Outcomes	CO4	0.75			0.75
	CO5	0.75			0.75
	CO6	0.75			0.75
	CO1	0.92			
	CO2				
Course	CO1	0.9			0.9
Outcomes	CO2	0.9	0.9	0.9	0.9
	CO3	0.9			
	CO4	0.9	0.9	0.9	0.9
	CO5	0.9	0.9	0.9	

	CO6	0.9	0.9	0.9	0.9
Course	CO1	0.89	0.89	0.89	0.89
Outcomes	CO2	0.89	0.89	0.89	0.89
	соз	0.89	0.89	0.89	
	CO4	0.89	0.89	0.89	0.89
	CO5	0.89	0.89	0.89	
	CO1	0.84	0.84		0.84
Course	CO2	0.84	0.84		0.84
Outcomes	соз	0.84	0.84		0.84
	CO4	0.84	0.84		0.84
	CO5	0.84	0.84		0.84
	CO6	0.84	0.84		0.84
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	0.87
Outcomes	CO3	0.87	0.87		
	CO4	0.87	0.87		
	CO5	0.87	0.87		
	CO6	0.87	0.87	0.87	0.87
	CO1	0.76	0.76	0.76	0.76
Course	CO2	0.76	0.76	0.76	0.76
Outcomes	CO3	0.76	0.76	0.76	
	CO4	0.76	0.76	0.76	
	CO5	0.76	0.76	0.76	0.76
	CO6	0.76 0.72	0.76 0.72	0.76 0.72	0.76 0.72
	CO1	0.72	0.72	0.72	0.72
Course	CO2	0.72	0.72	0.72	
Outcomes	CO4	0.72	0.72	0.72	
	CO5	0.72			0.72
	CO6	0.72	0.72	0.72	0.72
	CO1	0.71	0.71	0.71	0.71
Course	CO2	0.71	0.71	0.71	0.71
Outcomes	CO3	0.71	0.71	0.71	
Outcomes	CO4	0.71	-		
	CO5	0.71			0.71
	CO6	0.71	0.71	0.71	0.71
	CO1	0.88	0.88	0.88	0.88
Course	CO2	0.88	0.88	0.88	
Outcomes	соз	0.88	0.88	0.88	
Outcomes	CO4	0.88			
	CO5	0.88			0.88
	CO6	0.88	0.88	0.88	0.88
	CO1	0.95	0.95	0.95	0.95
Course	CO2	0.95	0.95	0.95	
Outcomes	CO3	0.95	0.95	0.95	
	CO4	0.95			
	CO5	0.95			0.95

	CO6	0.95	0.95	0.95	0.95
	CO1	0.76	0.76	0.76	0.76
Course	CO2	0.76	0.76		
Outcomes	CO3	0.76	0.76	0.76	
	CO4	0.76			
	CO5	0.76			0.76
	CO6	0.76	0.76	0.76	0.76
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92	0.92	
Outcomes	CO3	0.92	0.92	0.92	
	CO4	0.92			
	CO5	0.92			0.92
	CO6	0.92	0.92	0.92	0.92
	CO1	0.91	0.91	0.91	0.91
Course	CO2	0.91	0.91	0.91	
Outcomes	соз	0.91	0.91	0.91	
	CO4	0.91			
	CO5	0.91			0.91
	CO6	0.91	0.91	0.91	0.91
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	
Outcomes	CO3	0.87	0.87	0.87	
	CO4	0.87			
	CO5	0.87			0.87
	CO6	0.87	0.87	0.87	0.87
	CO1	0.67	0.67	0.67	
Course	CO2	0.67			0.67
Outcomes	CO3	0.67			0.67
	CO4				0.67
	CO5		0.67	0.67	
	CO6	0.67	0.67		
_	CO1	0.84	0.84	0.84	
Course	CO2	0.84			0.84
Outcomes	CO3	0.84			0.84
	CO4		0.04	0.04	0.84
	CO5	0.04	0.84	0.84	
	CO6	0.84	0.84 0.71	0.84 0.71	
		0.71	0.71	0.71	0.71
Course	CO2				
Outcomes	CO3	0.71			0.71
	COF		0.74	0.74	0.71
	CO5	0.74	0.71	0.71	
		0.71	0.71	0.71	
	CO1		0.92	0.92	0.00
Course	CO2	0.92			0.92 0.92
Outcomes		0.92			
	CO4				0.92

	CO5	I	0.92	0.92	
	CO6	0.92	0.92	0.92	
	CO1	0.63	0.63	0.63	
Course	CO2	0.63			0.63
Outcomes	соз	0.63			0.63
	CO4				0.63
	CO5		0.63	0.63	
	CO6	0.63	0.63	0.63	
	CO1	0.87	0.87	0.87	
Course	CO2	0.87			0.87
Outcomes	соз	0.87			0.87
	CO4				0.87
	CO5		0.87	0.87	
	CO6	0.87	0.87	0.87	
	CO1	0.68	0.68	0.68	
Course	CO2	0.68			
Outcomes	CO3	0.68			
Jaconics	CO4				
	CO5		0.68	0.68	
	CO6	0.68		0.68	
	CO1	0.83	0.83	0.83	
Course	CO2	0.83			
Outcomes	CO3	0.83			
Outcomes	CO4				
	CO5		0.83	0.83	
	CO6	0.83		0.83	
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
Outcomes	CO4	NA	NA	NA	NA
	CO5			NA	NA
	CO6	NA	NA	NA	NA
	CO1		0.83	0.83	
Course	CO2	0.83		0.00	0.00
Course	CO3	0.83			
Outcomes	CO4	0.83			
	CO5	0.83		0.83	0.83
	CO6	0.83		0.83	
	CO1	0.71	0.71	0.71	
	CO2	0.71	0.71	0.71	0.71
Course	CO3	0.71			
Outcomes	CO4	0.71			
	CO5	0.71		0.71	0.71
	CO6	0.71	0.71	0.71	
	CO1	0.71		0.71	
	CO2	0.68		0.68	0.68
Course		0.68			
Outcomes	CO3	0.68	U.68		

Cocourse		CO4	0.68			
COL		CO5	0.68		0.68	0.68
Course Outcomes CO2 NA		CO6	0.68	0.68	0.68	0.68
Outcomes CO3 NA		CO1	NA	NA	NA	NA
Outcomes Co3 NA	Course	CO2	NA	NA	NA	NA
Cod		CO3	NA	NA	NA	NA
Col		CO4	NA	NA	NA	NA
Course Outcomes		CO5	NA	NA	NA	NA
Course Outcomes CO2 0.73 0.73 0.73 CO4 0.73 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89		CO6	NA	NA	NA	NA
Outcomes CO3 0.73 0.73 0.73 CO4 0.73 0.73 0.73 0.73 CO5 0.73 0.73 0.73 0.73 CO1 0.89 0.89 0.89 0.89 CO1 0.89 0.89 0.89 0.89 CO3 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO1 0.65 0.65 0.65 0.65 CO1 0.65 0.65 0.65 0.65 CO2 0.66 0.65 0.65 0.65 CO3 0.65 0.65 0.65 0.65 CO4 0.66 0.65 0.65 0.65 CO5 0.65 0.65 0.65 0.65 CO5 0.66 0.65 0.65 0.65		CO1	0.73	0.73	0.73	0.73
Outcomes CO3 0.73 0.73 0.73 CO4 0.73 0.73 0.73 0.73 CO6 0.73 0.73 0.73 0.73 CO1 0.89 0.89 0.89 0.89 CO2 0.89 0.89 0.89 0.89 CO4 0.039 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.8 CO6 0.69 0.65 0.65 0.65 0.6 CO1 0.65 0.65 0.65 0.65 0.6 0.	Course	CO2	0.73	0.73		
CO4		CO3	0.73	0.73		
Course Outcomes		CO4	0.73			
Course Outcomes		CO5	0.73		0.73	0.73
Course Outcomes CO2 0.89 0.89 0.89 CO4 0.89		CO6	0.73	0.73	0.73	0.73
Course Outcomes CO2 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 0.89 0.89 CO1 0.65 0.66 0.65 0.65 0.65 0.66 0.65 0.66 0.65 0.66 0.65 0.66 0.65 0.66 0.65 0.66 0.65 0.66 0.66 0.66 0.66 0.66 0.66		CO1				
Outcomes CO3 0.89 0.89 CO4 0.89 0.89 0.89 CO5 0.89 0.89 0.89 CO6 0.89 0.89 0.89 CO1 0.65 0.65 0.65 0.65 CO1 0.65 0.65 0.65 0.65 CO4 0.65 0.65 0.65 0.65 CO5 0.65 0.65 0.65 0.65 CO6 0.65 0.65 0.65 0.65 CO6 0.65 0.65 0.65 0.65 CO6 0.65 0.65 0.65 0.65 CO4 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.92	Course	CO2	0.89	0.89		
CO4		CO3	0.89	0.89		
Col		CO4	0.89			
Course Outcomes Co2 Co3 Co4 Co5 Co6 Co6 Co7 Co1 Co8 Co7 Co8 Co7 Co8 Co8 Co8 Co8		CO5	0.89		0.89	0.89
Course Outcomes CO2 0.65 0.66 CO3 0.65 0.65 0.65 CO4 0.65 0.65 0.65 CO5 0.65 0.65 0.65 0.65 CO6 0.65 0.65 0.65 0.65 CO1 0.89 0.89 0.89 0.89 CO3 0.89 0.89 0.89 CO4 0.89 0.89 0.89 CO5 0.89 0.89 0.89 CO6 0.89 0.89 0.89 CO6 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO8 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO1 0.92 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.92 CO5		CO6	0.89	0.89	0.89	0.89
Outcomes CO3 0.65 0.65 CO4 0.65 0.65 0.65 CO5 0.65 0.65 0.65 0.65 CO6 0.65 0.65 0.65 0.65 CO1 0.89 0.89 0.89 0.89 CO2 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO1 0.92 0.92 0.92 0.92 CO2 0.92 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 0.92 0.92 CO6 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 <td></td> <td>CO1</td> <td>0.65</td> <td>0.65</td> <td>0.65</td> <td>0.65</td>		CO1	0.65	0.65	0.65	0.65
Outcomes CO3 0.65 0.65 CO4 0.65 0.65 0.65 CO5 0.66 0.65 0.65 0.66 CO6 0.66 0.65 0.65 0.66 CO1 0.89 0.89 0.89 0.89 CO2 0.89 0.89 0.89 0.89 CO3 0.89 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.89 CO1 0.92 0.92 0.92 0.92 Outcomes CO2 0.92 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Course	CO2	0.65	0.65		
CO4 0.65		CO3	0.65	0.65		
Code Code		CO4	0.65	0.65		
Course CO2 0.89 0.89 0.89 Outcomes CO3 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.8 CO1 0.92 0.92 0.92 0.92 CO2 0.92 0.92 0.92 CO3 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 CO1 0.68 0.68 0.68 0.68 CO2 0.68 0.68 0.68 0.68 CO4 0.68 0.68 0.68 0.68 CO4 0.68 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO6		CO5	0.65	0.65	0.65	0.65
Course Outcomes CO2 0.89 0.89 0.89 CO3 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 0.89 CO6 0.89 0.99 0		CO6	0.65	0.65	0.65	0.65
Outcomes CO3 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.89 CO6 0.89 0.89 0.89 0.8 CO1 0.92 0.92 0.92 0.92 CO3 0.92 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 CO6 0.92 0.92 0.92 0.9 CO1 0.68 0.68 0.68 0.6 CO2 0.68 0.68 0.6 0.6 CO3 0.68 0.68 0.6 0.6 CO4 0.68 0.68 0.6 0.6 CO5 0.68 0.68 0.6 0.6 CO5 0.68 0.68 0.68 0.6 CO6 0.68 0.68 0.68 0.6 <		CO1	0.89	0.89	0.89	0.89
Outcomes CO3 0.89 0.89 0.89 CO4 0.89 0.89 0.89 0.89 CO5 0.89 0.89 0.89 0.8 CO6 0.89 0.89 0.89 0.8 CO1 0.92 0.92 0.92 0.92 CO3 0.92 0.92 0.92 0.92 CO4 0.92 0.92 0.92 0.9 CO5 0.92 0.92 0.92 0.9 CO6 0.92 0.92 0.92 0.9 CO1 0.68 0.68 0.68 0.6 CO2 0.68 0.68 0.6 0.6 CO3 0.68 0.68 0.6 0.6 CO4 0.68 0.68 0.6 0.6 CO5 0.68 0.68 0.6 0.6 CO5 0.68 0.68 0.68 0.6 CO5 0.68 0.68 0.68 0.6	Course	CO2	0.89	0.89		
Cos 0.89 0.89 0.89 0.89 0.89 0.80 0.80 0.80		соз	0.89	0.89		
CO6 0.89 0.89 0.89 0.8 CO1 0.92 0.92 0.92 0.92 COurse CO2 0.92 0.92 0.92 CO3 0.92 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 0.92 CO6 0.92 <		CO4	0.89	0.89		
Course Outcomes CO2 0.92 0.92 CO3 0.92 0.92 CO4 0.92 0.92 CO5 0.92 0.92 CO6 0.92 0.92 0.92 CO1 0.68 0.68 0.68 CO2 0.68 0.68 CO3 0.68 0.68 CO4 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 0.68		CO5	0.89	0.89	0.89	0.89
Course Outcomes CO2 0.92 0.92 0.92 CO3 0.92 0.92 0.92 CO4 0.92 0.92 0.92 CO5 0.92 0.92 0.92 CO6 0.92 0.92 0.92 CO1 0.68 0.68 0.68 CO2 0.68 0.68 0.6 CO3 0.68 0.68 0.6 CO4 0.68 0.68 0.6 CO5 0.68 0.68 0.68 0.6 CO6 0.68 0.68 0.68 0.6 CO6 0.68 0.68 0.68 0.6 CO1 NA NA NA NA NA		CO6	0.89	0.89	0.89	0.89
Outcomes CO3 0.92 0.92 CO4 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 CO6 0.92 0.92 0.92 0.92 CO1 0.68 0.68 0.68 0.68 CO2 0.68 0.68 0.68 0.66 CO3 0.68 0.68 0.68 0.68 CO4 0.68 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO1 NA NA NA NA NA		CO1	0.92	0.92	0.92	0.92
Outcomes CO3 0.92 0.92 CO4 0.92 0.92 0.92 CO5 0.92 0.92 0.92 0.92 CO6 0.92 0.92 0.92 0.92 CO1 0.68 0.68 0.68 0.68 CO2 0.68 0.68 0.6 0.6 CO3 0.68 0.68 0.6 0.6 CO4 0.68 0.68 0.6 0.6 CO5 0.68 0.68 0.68 0.6 CO6 0.68 0.68 0.68 0.6 CO1 NA NA NA NA NA	Course	CO2	0.92	0.92		
Cos 0.92 0.92 0.92 0.92 0.92 0.92 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96		CO3	0.92	0.92		
Course Outcomes Cos 0.92 0.92 0.92 0.92 0.92 Col 0.68 0.68 0.68 0.68 Cos 0.68 0.68 0.68 Cos 0.68 0.68 0.68 Cos 0.68 0.68 0.68 Cos 0.68 0.68 0.68 0.68		CO4	0.92	0.92		
Course Outcomes		CO5	0.92	0.92	0.92	0.92
Course Outcomes CO2 0.68 0.68 CO3 0.68 0.68 CO4 0.68 0.68 CO5 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO1 NA NA NA NA NA		CO6	0.92	0.92	0.92	0.92
Outcomes CO3 0.68 0.68 CO4 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO1 NA NA NA NA NA		CO1	0.68	0.68	0.68	0.68
CO3 0.68 0.68 CO4 0.68 0.68 CO5 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO1 NA NA NA NA NA	Course	CO2	0.68			0.68
CO4 0.68 0.68 0.68 0.68 CO5 0.68 0.68 0.68 0.68 CO6 0.68 0.68 0.68 0.68 CO1 NA NA NA NA		CO3	0.68			0.68
CO6 0.68 0.68 0.68 0.68 0.68 CO1 NA NA NA NA	_	CO4	0.68			0.68
CO1 NA NA NA NA		CO5	0.68	0.68	0.68	0.68
		CO6	0.68	0.68	0.68	0.68
Course CO2 NA NA NA NA		CO1	NA	NA	NA	NA
	Course	CO2	NA	NA	NA	NA

Outcomes	соз	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.9	0.9	0.9	0.9
Course	CO2	0.9	0.9	0.9	0.9
Outcomes	CO3	0.9	0.9		
	CO4	0.9	0.9		
	CO5	0.9	0.9	0.9	0.9
	CO6	0.9	0.9	0.9	0.9
	CO1	NA	NA	NA	NA
Course	CO2	NA	NA	NA	NA
Outcomes	CO3	NA	NA	NA	NA
	CO4	NA	NA	NA	NA
	CO5	NA	NA	NA	NA
	CO6	NA	NA	NA	NA
	CO1	0.87	0.87	0.87	0.87
Course	CO2	0.87	0.87	0.87	0.87
Outcomes	CO3	0.87			0.87
	CO4	0.87	0.87	0.87	0.87
	CO5	0.87			
	CO6	0.87	0.87	0.87	0.87
	CO1	0.86	0.86	0.86	0.86
Course	CO2	0.86	0.86	0.86	0.86
Outcomes	CO3	0.86	0.86	0.86	0.86
	CO4	0.86	0.86		0.86
	CO5	0.86	0.86		0.86
	CO6	0.86	0.86		0.86
	CO1	0.83	0.83	0.83	0.83
Course	CO2	0.83	0.83		
Outcomes	CO3	0.83			
	CO4	0.83	0.83	0.83	0.83
	CO5	0.83	0.83	0.83	
	CO6	0.83	0.83	0.83	
	CO1	0.92	0.92	0.92	0.92
Course	CO2	0.92	0.92		
Outcomes	CO3	0.92			
	CO4	0.92	0.92	0.92	0.92
	CO5	0.92	0.92	0.92	
	CO6	0.92	0.92	0.92	
	CO1	NA	NA	NA	NA

Course	002	NA	NA	NA	NA
	03	NA	NA	NA	NA
	004	NA	NA	NA	NA
C	05	NA	NA	NA	NA
C	006	NA	NA	NA	NA
C		NA	NA	NA	NA
Course		NA	NA	NA	NA
	03	NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
	01	0.82	0.82	0.82	
	002	0.82	0.82	0.82	
Course	03	0.82	0.82	0.82	
Outcomes	004	0.82	0.82	0.82	
	005	0.82	0.82	0.82	
_	206	0.82	0.82	0.82	
	001	0.84	0.84	0.84	0.84
	202	0.84	0.84	0.84	0.84
Course	203	0.84	0.04	0.04	0.04
	004	0.84			
	005	0.84	0.84	0.84	0.84
	006				
		0.84 NA	0.84 NA	0.84 NA	0.84 NA
		NA NA	NA NA	NA NA	NA NA
Course		NA NA	NA NA	NA NA	NA NA
		NA NA	NA NA	NA NA	NA NA
			NA NA	NA NA	NA NA
		NA			
		NA	NA	NA	NA
		NA	NA	NA	NA
Course					NA
Outcomes		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
Course		NA	NA	NA	NA
Outcomes		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
Course		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
		NA	NA	NA	NA
C	06	NA	NA	NA	NA

	01	0.82	0.82		
Course C	002	0.82	0.82	0.82	
	03	0.82	0.82	0.82	
C	004	0.82	0.82	0.82	
С	05	0.82	0.82	0.82	0.82
С	006	0.82	0.82	0.82	0.82
C	01	0.86	0.86		
Course C	002	0.86	0.86		
	03	0.86	0.86		
С	004	0.86	0.86		
С	05	0.86	0.86		
С	06	0.86	0.86		
С	001	0.91	0.91	0.91	0.91
Course ^c	002	0.91	0.91	0.91	0.91
Outcomes C	003	0.91	0.91	0.91	0.91
C	004	0.91	0.91	0.91	0.91
C	005	0.91	0.91	0.91	
С	:06	0.91	0.91	0.91	0.91
C	01	0.92	0.92	0.92	0.92
Course C	002	0.92	0.92	0.92	0.92
Outcomes ^c	03	0.92	0.92	0.92	0.92
C	04	0.92	0.92	0.92	0.92
C	05	0.92	0.92	0.92	0.92
С	006	0.92	0.92	0.92	0.92
С	01	0.86	0.86		
Course	002	0.86	0.86		
Outcomes ^c	03	0.86	0.86		
С	04	0.86	0.86		
С	05	0.86	0.86		
_	006	0.86	0.86		
С	001	0.87			0.87
Course	002	0.87	0.87	0.87	0.87
Outcomes ^c	003	0.87	0.87	0.87	0.87
_	004	0.87	0.87	0.87	0.87
_	005	0.87	0.87	0.87	0.87
_	006	0.87	0.87	0.87	0.87
	001	0.85	0.85		
Course	002	0.85	0.85		0.85
	03	0.85	0.85		
_	004	0.85	0.85		0.85
_	005	0.85	0.85		0.85
	006	0.85	0.85		0.85
	001	0.94	0.94	0.94	0.94
Course	002	0.94	0.94	0.94	0.94
	03	0.94	0.94	0.94	0.94
_	004	0.94	0.94	0.94	0.94
С	05	0.94	0.94	0.94	0.94

CO6	0.94	0.94	0.94	0.94
AVERAGE	0.818013937	0.822268908	0.819392265	0.81755814
PERCENTAGE (%)	81	82	81	81

dge of mathematic nentals, and an eng	es, science, gineering specialisation for the solution of complex eng	ineering problem
ng first principles o	of mathematics, natural sciences, and engineering scien	nces.
gn system componental considerations	ents or processes that meet the specified needs with a s.	ppropriate consi
,	eriments, analysis and	
and modern engine	eering and IT tools, including prediction and modelling	to complex engir
ess societal, health	h, safety, legal, and cultural issues and the consequent	t responsibilities
ns in societal and	environmental contexts, and demonstrate the knowledo	ge of, and need f
d responsibilities a	nd norms of the engineering practice.	
der in diverse team	ns, and in multidisciplinary settings.	

th the engineering community and with the society at large, such as, being able to comprive presentations, and give and receive clear instructions.

ing and management principles and apply these to one's own work, as a member and leac

/ to engage in independent and life-long learning in the broadest context of technological

l olve real lated to urces, high ory ves, on and of agineering

e of the Subject: ELECTRIC CIRCUIT THEORY

Subject Code: : PC-EE 301 **Year:** 2nd (New Syllabus)

of networks.

me of the Subject: ANALOG ELECTRONICS

Subject Code: PC-EE 302 **Year:** 2nd (New Syllabus)

regulators and analog electronic circuits.
d on application.
the Subject: ELECTRO MAGNETIC FIELD THEORY Subject Code: PC-EE 303 Year: 2nd (New Syllabus)
netic problems.
e of the Subject: ENGINEERING MECHANICS Subject Code: ES-ME 301 Year: 2nd (New Syllabus)
nematics and kinetics of rigid bodies.
n and friction.
riction and rigid bodies.
Name of the Subject: MATHEMATICS-III Subject Code: BS- M 301 Year: 2nd (New Syllabus) Z transform
sis and Z transform
e of the Subject: BIOLOGY FOR ENGINEERS Subject Code: BS-EE- 301 Year: 2nd (New Syllabus)
ries.
of cancer. transfer
шинатег
me of the Subject: INDIAN CONSTITUTION Subject Code: : MC-FF 301

Year: 2nd (New Syllabus)
f Union, state and local self-government. Structure, jurisdiction and function of Indian .
χ.
f the Subject: : Electric circuit theory Laboratory
Subject Code: PC-EE391
Year: 2nd (New Syllabus)
on successful completion of the course, student will have:
ponse of filters, Laplace transform and inverse Laplace transform
of the Subject: : Analog Electronic laboratory
Subject Code: PC-EE392
Year: 2nd (New Syllabus)
on successful completion of the course, student will have:
fter completion of this course, the learners will be able to
er (A)characteristics of BJT and FET,(B)characteristics of Zener diode as voltage regula
ge regulator using regulator IC chip.timer circuit using 555 for monostable, astable an
nentioned outcomes are not limited. Institute may redefine outcomes based their progr
of the Subject: Numerical Methods laboratory
Subject Code: PC-CS 391
Year: 2nd (New Syllabus)
n
ear equations using
al solution of Algebraic Equation by Regularfalsi and Newton Raphson methods.
ar solution of Aligebraic Equation by Regularials and Newton Raphson methods.
me of the Subject: : ELECTRIC MACHINE-I
Subject Code: PC-EE-401
Year: 2nd (New Syllabus)
on successful completion of the course, student will have: chines and transformers
ransformers
ansionners

ne of the Subject: : DIGITAL ELECTRONICS

Subject Code: PC-EE-402 **Year:** 2nd (New Syllabus) on successful completion of the course, student will have: niconductor memories and programmable logic devices. circuits, A/D and D/A converter onal & sequential digital circuits and A/D and D/A converter. **ubject:** : ELECTRICAL & ELECTRONICS MEASUREMENTS **Subject Code:** PC-EE-403 **Year:** 2nd (New Syllabus) on successful completion of the course, student will have: ors in measurement, loading effect resistance, capacitance and inductance by bridges and potentiometer er, digital multimeter, digital voltmeter, digital frequency meter, signal generator, stra and measurement techniques of voltage, current, frequency and phase by oscilloscope ner, measurement of power, energy, resistance, inductance and capacitance and transducers f the Subject: : THERMAL POWER ENGINEERING **Subject Code:** ES-EE-401 Year: 2nd (New Syllabus) oines engines and Gas turbines. es. he Subject: : VALUES AND ETHICS IN PROFESSION **Subject Code:** HM-EE-401 Year: 2nd (New Syllabus) ibility and duties ethics and social experimentation s safety and risk • of the Subject: : ENVIRONMEMTAL SCIENCE **Subject Code:** MC-EE-401 **Year:** 2nd (New Syllabus)

tivities

environmental and health risk

he environmental laws and regulations

and pollution.

the Subject: : ELECTRIC MACHINE-I LABORATORY

Subject Code: PC-EE491
Year: 2nd (New Syllabus)
ol of DC motor and parallel operation of the transformer
· · · · · · · · · · · · · · · · · · ·
he Subject: : DIGITAL ELECTRONICS LABORATORY
Subject Code: PC-EE492
Year: 2nd (New Syllabus)
propriate instruments and precaution
and flip-flops and asynchronous and synchronous up down counters
ice versa, 4 bit parity generator & comparator circuits,
t:: ELECTRICAL & ELECTRONICS MEASUREMENT LABORATORY
Subject Code: PC-EE493
Year: 2nd (New Syllabus)
real: 2110 (New Syllabus)
oving iron and dynamometer type ammeter, voltmeter and wattmeter by potentiome
:e, inductance, capacitance
.c, madetanee, capacitanee
Subject: : THERMAL POWER ENGINEEING LABORATORY
Subject Code: ES-ME-491
Year: 2nd (New Syllabus)
rearr 2nd (New Syllabas)
ecautions
ochran Boiler, Vertical Tubular Boiler, Locomotive Boiler, 4S Diesel Engine, 4S Petrol E
ctrical load box and rope brake dynamometer
he Subject: ELECTRIC MACHINE-II PC-EE-501
Subject Code: PC-EE-501
Year: 3rd
agnetic fields.
nase Induction machines
hase Induction machines
nous machine

electromechanical devices.
special eletromechanical device.
Name of the Subject: POWER SYSTEM-I
Subject Code: : PC-EE-502
Year: 3rd (Old Syllabus)
Teal: 3rd (Old Syllabus)
nt sources
d cables.
n line
James of the Cubicate CONTROL SYSTEM
Name of the Subject: CONTROL SYSTEM
Subject Code: PC-EE-503
Year: 3rd
ms
me of the Subject: POWER ELECTRONICS
Subject Code: PC-EE-504
Year: 3rd
ices.
1 of SCR
reduction of harmonics of the converter
the Subject: ELECTRIC MACHINE-IILABORATORY
Subject Code: : PC-EE 591
Year: 3rd
hase Inductionmotor, Induction generator and synchronous motor, methods of speed
of the Subject: POWER SYSTEM-I LABORATORY
Subject Code: PC-EE 592
Year: 3rd
- I Cult Siu

own strength of solidinsulating material and dielectric constant of transformer oil.
of the Subject: CONTROL SYSTEMLABORATORY
THE Subjecti Continue Statementolination
6 1
Subject Code: PC-EE 593
Year: 3rd
ICC for simulation of quaterns
ICE for simulation of systems.
ns.
the Subject: POWER ELECTRONICSLABORATORY
Subject Code: PC-EE 594
Year: 3rd
of the Subject: DATA STRUCTURE & ALGORITHM
Subject Code: OE-EE-501A
Year: 3rd
nce the performanceof the program.
· · ·
<u>5.</u>
lem.
, searching, and hashing
ns.
the Subject: OBJECT ORIENTED PROGRAMMING
Subject Code: OE-EE-501B
Subject Code: OL-LL-301B
norphism,
lame of the Subject: POWER SYSTEM-II
Subject Code: PC-EE-601
Year: 3rd

studies.
nents.
bilty and protection ofpower system.
e Subject: MICROPROCESSOR & MICROCONTROLLER
Subject Code: PC-EE-602
Subject Godel Fe LE 002
e of the Subject: DIGITAL CONTROL SYSTEM
Subject Code: PE-EE-601A
Year: 3 rd
tems.
cations.
me of the Subject: HVDC TRANSMISSION
Subject Code: PE-EE-601B
Year: 3 rd
fter completion of this course the students will be able to
pplication(s).
iverters.
iverters.
<u>des.</u>
eactive power control.nts.
of the Subject: ELECTRICAL MACHINE DESIGN
Subject Code: PE-EE-601C
Year: 3 rd
ign of an ac machine
nagnetic and thermalloading of electrical machines
nachines.
the Subject: ELECTRICAL AND HYBRID VEHICLE
Subject Code: PE-EE-602A
Year: 3 rd
I Cali)

lepending on resources.
vehicles.
e of the Subject: POWER QUALITYANDFACTS
Subject Code: PE-EE-602B
Year: 3 rd
icteristics.
explain working principle of dynamic voltage restorer and UPQC
strial consumers.
trical systems.
tileal systems.
ectrical systems.
power factor correction.
in the frequencydomain.

n SNR c
ceivers
ommunication system
nication link
gital modulation systems
gical modulation systems

ıtion
eduling, legal andregulatory issues applied to economic investment and project-mana
caamig regar affaregulatory issues applied to economic investment and project mane
. earth fault relay, on loadtime delay relay, off load time delay relay, CT and PT. ler. 6. Apply software tools to find bus voltage, currents and power flows throughout
a number in a string and string manipulation
a number in a string andstring manipulation
ns of 8051
sor and signal conditioning circuits
; n system for small township, double circuit transmission line and Electric machines with lift and pump
and for an applicationwith analog, digital, mixed signal, microcontroller and PCB

rmance.
te space.
ation and pollution.
tems
rstems
ergy intensive industrialequipments
ition.
mes minimum for a definedlevel of load.
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Program Outcomes & Course Outcomes

PROGRAM OUTCOMES

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1	Engineering knowledge	Apply the knowledge of mathematics, science,
2	Problem analysis:	Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principle
3	Design/development of solutions:	Design solutions for complex engineering problems and design system compsafety, and cultural, societal, and environmental considerations.
	Conduct	I lee recearch-haced knowledge and recearch methods including design of ex-

12	Life-long learning:	Recognise the need for, and have the preparation and ability to engage in inc
11	Project management and	Demonstrate knowledge and understanding of the engineering and manage and in multidisciplinary environments
10	Communication:	Communicate effectively on complex engineering activities with the engineeri and design documentation, make effective presentations, and give and receive
9	Individual and team work:	Function effectively as an individual, and as a member or leader in diverse te
8	Ethics:	Apply ethical principles and commit to professional ethics and responsibilities
7	Environment and sustainability:	Understand the impact of the professional engineering solutions in societal a
6	The engineer and society:	Apply reasoning informed by the contextual knowledge to assess societal, he engineering practice.
5	Modern tool usage:	Create, select, and apply appropriate techniques, resources, and modern enquinderstanding of the limitations.
4	investigations of complex problems:	interpretation of data, and synthesis of the information to provide valid conclu

PROGRAM SPECIFIC OUTCOMES

PSO1: Ability to apply the knowledge of Basic Computing, Basic Sciences and

Social Sciences in the field of electrical engineering to identify, analyze and solve real life problems faced in industries and/or during research work.

PSO2: Ability to model, test, analyze and design components or processes related to

modern power system involving both conventional and renewable energy resources, high

voltage systems and energy management.

PSO3: Ability to apply the concept of circuit theory, electromagnetic field theory

and basic electronics to solve complex problems of electrical machines and drives, power electronic converters and electrical system design.

PSO4: Ability to identify and analyze the role of measurement, instrumentation and

modern control engineering to enhance sustainability, reliability and efficiency of electrical systems.

PSO5: Ability to demonstrate proficiency in operating and handling modern engineering

tools to cop up with dynamic industrial environment.

PSO6: Ability to work and communicate effectively in the corporate life keeping a

responsible outlook towards socio-economic and environmental issues.

COURSE OUTC	OMES & COURSE ATTAINMENTS
Name of the S	ubject: ELECTRIC CIRCUIT THEORY
Subject Code:	: PC-EE 301
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	After completion of this course the students will be able to
CO1	describe different type of networks, sources and signals with examples.
CO2	explain different network theorems, coupled circuit and tools for solution of networks.
СО3	apply network theorems and different tools to solve network problems.
CO4	select suitable techniques of network analysis for efficient solution.
CO5	estimate parameters of two-port networks.
CO6	design filter circuits.
Name of the S	ubject: ANALOG ELECTRONICS
Subject Code:	PC-EE 302
Year: 2nd (Ne	w Syllabus)
Course	After completion of this course the students will be able to

Course Outcomes:	After completion of this course the students will be able to
CO1	1. describe analog electronic components and analog electronics circuits
CO2	2. explain principle of operation of analog electronic components, filters, regulators and analog e
СО3	3. compute parameters and operating points of analog electronic circuits.
CO4	4. determine response of analog electronic circuits.
CO5	5. distinguish different types amplifier and different types oscillators based on application.

CO6	6. construct operational amplifier based circuits for different applications.
Name of the Subje	ect: ELECTRO MAGNETIC FIELD THEORY
Subject Code: PC-	EE 303
Year: 2nd (New S	yllabus)
Course Outcomes:	After completion of this course the students will be able to
	1. Relate different coordinate systems for efficient solution of electromagnetic problems.
CO2	2. describe mathematical s tools to solve electromagnetic problems.
соз	3. explain laws applied to electromagnetic field.
CO4	4. apply mathematical tools and laws to solve electromagnetic problems.
CO5	5. analyze electromagnetic wave propagation
CO6	6. estimate transmission line parameters
Name of the Subje	ect: ENGINEERING MECHANICS
Subject Code: ES-	ME 301
Year: 2nd (New S	yllabus)
Course Outcomes:	After completing this course, the students will be able to:
CO1	explain the co-ordinate system, principle of three dimensional rotation, kinematics and kinetics o
CO2	elaborate the theory of general motion, bending moment, torsional motion and friction.
СОЗ	develop free body diagram of different arrangements.
CO4	solve problems with the application of theories and principle of motion, friction and rigid bodies
CO5	analyze torsional motion and bending moment.
Name of the Subje	ect: MATHEMATICS-III
Subject Code: BS-	M 301
Year: 2nd (New Sy	/llabus)
Course Outcomes:	Upon completion of this course, students will be able to:
CO1	explain basics of probability theories, rules, distribution and properties of Z transform
	describe different methods of numerical analysis.
СОЗ	solve numerical problems based on probability theories , numerical analysis and Z transform
CO4	apply numerical methods to solve engineering problems.
CO5	5. solve engineering problems using z transform and probability theory.
Name of the Subje	ect: BIOLOGY FOR ENGINEERS
Subject Code: BS-	EE- 301
Year: 2nd (New S	yllabus)
Course Outcomes:	Upon completion of this course, students will be able to:

CO1	Describe with examples the biological observations lead to major discoveries.
CO2	Explain the classification of kingdom of life the building blocks of life
соз	Different techniques of bio physics used to study biological phenomena.
CO4	The role of imaging in the screening, diagnosis, staging, and treatments of cancer.
CO5	Identify DNA as a genetic material in the molecular basis of information transfer
CO6	Analyze biological processes at the reductionistic level.
CO7	Apply thermodynamic principles to biological systems.
CO8	Identify microorganisms
Name of the S	ubject: INDIAN CONSTITUTION
Subject Code:	: MC-EE 301
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	After completing this course, the students will be able to:
CO1	Describe different features of Indian constitution. Power and functioning of Union, state and local
CO2	Identify authority to redress a problem in the profession and in the society.
	ubject: : Electric circuit theory Laboratory
Subject Code:	PC-EE391
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Determine transient response of different electrical circuit, frequency response of filters, Laplace
CO2	Generate different signals in both discrete and analog form
СОЗ	Analyze amplitude and phase spectrum of different signals.
CO4	Verify network theorems.
CO5	Construct circuits with appropriate instruments and safety precautions.
CO5	Simulate electrical circuit experiments using suitable software.
Name of the S	ubject: : Analog Electronic laboratory
Subject Code:	PC-EE392
Year: 2nd (Nev	v Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
	After completion of this course, the learners will be able to
CO1	Determine characteristics of full wave rectifier with filter and without filter (A)characteristics of E
CO2	Verify function of DAC and ADC
CO3	Construct function generator using IC, R-C coupled amplifier, linear voltage regulator using regul

CO4	Work in a team
CO5	Validate theoretical learning with practical Special Remarks: The above-mentioned outcomes are
Name of the S	Subject: : Numerical Methods laboratory
Subject Code:	PC-CS 391
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Solve problems with Newton forward /backward, Lagrange's interpolation
CO2	problems of numerical integration using Trapezoidal rule, Simpson's 1/3
СО3	rule, Weddle's rule problems to find numerical solution of a system of linear equations using
CO4	Gauss elimination and Gauss-Seidel iterations. problems to find numerical solution of Algebraic I
CO5	Ordinary differential equation by Euler's and Runga-Kutta methods.
CO6	Find appropriate numerical methods to solve engineering problems.
C07	Use software package to solve numerical problems.
Name of the S	Subject: : ELECTRIC MACHINE-I
Subject Code:	PC-EE-401
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Describe the function of different components of magnetic circuit, DC machines and transformer
CO2	Explain the principle of operation of different types of DC machines and transformers
СО3	Solve numerical problems of DC machines and transformers.
CO4	Estimate the parameters and efficiency of transformer.
CO5	Determine the characteristics of DC machines
CO6	recommend methods to control output of DC machines.
Name of the S	Subject: : DIGITAL ELECTRONICS
Subject Code:	PC-EE-402
Year: 2nd (Ne	w Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Describe the function of different building blocks of digital electronics, semiconductor memories
CO2	Explain the principle of operation of combinational and sequential digital circuits, A/D and D/A combinational and sequential digital circuits.
CO3	Solve numerical problems of Boolean algebra, number system, combinational & sequential digital
CO4	Specify applications of combinational and sequential digital circuits.
CO5	Determine specifications of different digital circuits.
CO6	Design combinational and sequential digital circuits

Name of the Subj	ect: : ELECTRICAL & ELECTRONICS MEASUREMENTS
Subject Code: PC-	EE-403
Year: 2nd (New S	yllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Explain the terms accuracy, precision, resolution, speed of response, errors in measurement, loa
CO2	Describe methods of measurement of power, energy by instruments and resistance, capacitance
СО3	Explain the principle of operation of analog meters, instrument transformer, digital multimeter, or
CO4	Explain the different building block, principle of operation of oscilloscope and measurement tech
CO5	Solve numerical problems related to analog meters, instrument transformer, measurement of po
CO6	Specify applications of analog and digital measuring instruments, sensors and transducers
Name of the Subj	ect: : THERMAL POWER ENGINEERING
Subject Code: ES-	EE-401
Year: 2nd (New S	yllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Describe the function of different components of boilers. Engines and turbines
CO2	Explain the principle of operation of different types of boilers, turbines, IC engines and Gas turbi
соз	Solve numerical problems of boilers, turbines, IC engines and Gas turbines.
CO4	Analyze the performance of boilers, engines and turbines.
CO5	Determine efficiency of boilers, engines and turbines.
CO6	Explain methods to control boiler, engines and turbines parameters.
Name of the Subj	ect: : VALUES AND ETHICS IN PROFESSION
Subject Code: HM	-EE-401
Year: 2nd (New S	
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	1. Illustrate different aspects of human values, ethics, engineers' responsibility and duties
CO2	2. Explain different principles, different theories and laws of engineering ethics and social experi
CO3	3. Identify different factors in the light of Engineers' responsibility towards safety and risk
CO4	4. Correlate ethics of different work environment.
CO5	5. Explain the need for intellectual property rights.
	ect: : ENVIRONMEMTAL SCIENCE
Subject Code: MC	-EE-401
Year: 2nd (New S	
Course Outcomes:	Upon successful completion of the course, student will have:

CO1	Understand the natural environment and its relationships with human activities
CO1	Understand the natural environment and its relationships with human activities
CO2	Apply the fundamental knowledge of science and engineering to assess environmental and healt
СОЗ	Develop guidelines and procedures for health and safety issues obeying the environmental laws
CO4	Acquire skills for scientific problem-solving related to air, water, noise& land pollution.
	bject: : ELECTRIC MACHINE-I LABORATORY
Subject Code: P	
Year: 2nd (New	<u> </u>
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment.
CO2	Test the instrument for application to the experiment.
СО3	Construct circuits with appropriate instruments and safety precautions
CO4	Validate different characteristics of DC machine, methods of speed control of DC motor and par
CO5	Work effectively in a team
Name of the Su	bject: : DIGITAL ELECTRONICS LABORATORY
Subject Code: F	C-EE492
Year: 2nd (New	Syllabus)
Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment
CO2	2. Test the instruments for application to the experiment
СОЗ	3. Construct decoder, multiplexer, adder and subtractor circuits with appropriate instruments a
CO4	4. Realize RS-JK and D flip flop, universal register with gates, multiplexer and flip-flops and asyr
CO5	5. Validate the operation of code conversion circuit –BCD to Excess 3 & vice versa, 4 bit parity of
CO5	Work effectively in a team
Name of the Su	bject: : ELECTRICAL & ELECTRONICS MEASUREMENT LABORATORY
Subject Code: F	C-EE493
Year: 2nd (New	Syllabus)
Course	Upon successful completion of the course, student will have:
Outcomes:	1. identify appropriate equipment and instruments for the experiment
	2. test the instrument for application to the experiment
	3. construct circuits with appropriate instruments and safety precautions
	4. evaluate and adjust the precision and accuracy of AC energy meter, moving iron and dynamo
	5. measure voltage, current, power, energy, phase, frequency, resistance, inductance, capacita
	- 131 measure voicage, earrein, power, energy, phase, mequency, resistance, madetance, capacita

Name of the Subject: : THERMAL POWER ENGINEEING LABORATORY

Subject Code: ES-ME-491 Year: 2nd (New Syllabus)

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Course Outcomes:	Upon successful completion of the course, student will have:
CO1	Identify appropriate equipment and instruments for the experiment
CO2	Construct experimental setup with appropriate instruments and safety precautions
соз	Identify different parts of Lanchashire Boiler, Bahcock & Willcox Boiler, Cochran Boiler, Vertical
CO4	Test 4 stroke petrol engine by electrical load box and diesel engine by electrical load box and ro
CO5	Find calorific value, flash point, fire point, cloud point, pour point of fuel.
C06	Work effectively in a team

Name of the Subject: ELECTRIC MACHINE-II PC-EE-501

Subject Code: PC-EE-501

Year: 3rd

On successful completion of the course the student will be able to:
1. To understand the arrangement of windings of AC machines.
2. To understand the principle of production of pulsating and revolving magnetic fields.
3. To understand the principle of operation and characteristics of three phase Induction machine
4. To understand the principle of operation and characteristics of single phase Induction machine
5. To understand the principle of operation and characteristics of synchronous machine
6. To understand the principle of operation and characteristics of special electromechanical devices
7. To solve problems of Induction machines, synchronous machines and special eletromechanica

Name of the Subject: POWER SYSTEM-I

Subject Code: : PC-EE-502 Year: 3rd (Old Syllabus)

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Course Outcomes:	After completion of this course the students will be able to:	
CO1	To understand the basic principle of generation of Electricity from different sources	
CO2	To find parameters and characteristics of overhead transmission lines and cables.	
соз	To find different parameters for the construction of overhead transmission line	
CO4	To determine the performance of transmission lines.	
CO5	To understand the principle tariff calculation.	
CO6	To solve numerical problems on the topics studied.	

Name of the Subject: CONTROL SYSTEM

Subject Code: PC-EE-503

Year: 3rd	
Course Outcomes:	On completion of this course a student will be in a position to:
CO1	1. To find mathematical representation of LTI systems.
CO2	2. To find time response of LTI systems of different orders
соз	3. To find the frequency response of LTI systems of different orders
CO4	4. To understand stabilityof differentLTI systems.
CO5	5. To analyze LTIsystems with state variables.
CO6	6. To solve problems of mathematical modelling and stability of LTI systems
Name of the Si	ubject: POWER ELECTRONICS
Subject Code:	PC-EE-504
Year: 3rd	
Course	On completion of this course a students will be able to

Course
Outcomes:
On completion of this course a students will be able to
To understand the functioning and characteristics of power switching devices.

Co2 To understand the principle of operation of converters.

Co3 To understand different triggering circuits and techniques of commutation of SCR

Co4 To find external performance parameter of converters.

Co5 To analyze methods of voltage control, improvement of power factor and reduction of harmonics

Co6 To solve numerical problems of converters

Name of the Subject: ELECTRIC MACHINE-IILABORATORY

Subject Code: : PC-EE 591

Year: 3rd

Course Outcomes:	After completion of the course, the students will be able to:	
CO1	identify appropriate equipment and instruments for the experiment.	
CO2	test the instrument for application to the experiment.	
CO3	construct circuits with appropriate instruments and safety precautions.	
CO4	validate different characteristics of single phase Induction motor, three phase Inductionmotor, I	
CO5	work effectively in a team	

Name of the Subject: POWER SYSTEM-I LABORATORY

Subject Code: PC-EE 592

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.

соз	3. construct circuits with appropriate instruments and safety precautions.
CO4	4. validate different characteristics of transmission line.
CO5	5. determine earth resistance, dielectric strength of insulating oil, breakdown strength of soliding
CO6	6. analyze an electrical transmission line circuit with the help of software
C07	7. work effectively in a team
Name of the S	ubject: CONTROL SYSTEMLABORATORY
Subject Code:	PC-EE 593
Year: 3rd	
Course Outcomes:	After completion of this course the students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
соз	construct circuits with appropriate instruments and safety precautions.
CO4	use MAT-Lab control system tool box, MAT-Lab- simulink tool box & PSPICE for simulation of sys
CO5	5. determinecontrol system specifications of first and second order systems.
Name of the S	ubject: POWER ELECTRONICSLABORATORY
Subject Code:	PC-EE 594
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment.
CO2	test the instrument for application to the experiment.
СО3	construct circuits with appropriate instruments and safety precautions
Name of the S	ubject: DATA STRUCTURE & ALGORITHM
Subject Code:	OE-EE-501A
Year: 3rd	
Course Outcomes:	On completion of this course a student will be in a position to:
CO1	differentiate how the choices of data structure & algorithm methods enhance the performance of
CO2	solve problems based upon different data structure & also write programs.
СОЗ	write programs based on different data structure
CO4	identify appropriate data structure & algorithmic methods in solving problem.
CO5	discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing

comparethe benefits of dynamic and static data structures implementations.

Name of the Subject: OBJECT ORIENTED PROGRAMMING

Subject Code: OE-EE-501B

Year: 3rd	
Course Outcomes:	After completion of this course the students will be able to
CO1	specify simple abstract data types.
CO2	recognise features of object-oriented design such as encapsulation, polymorphism,
СО3	inheritance, and composition of systems based on object identity.
CO4	apply common object-oriented design patterns
C O 5	specify uses of common object oriented design patterns with examples.
CO6	design applications with an event-driven graphical user interface.
Name of the Su	bject: POWER SYSTEM-II
Subject Code: F	C-EE-601
Year: 3rd	
Course Outcomes:	After completion of the course, the students will be able to:
CO1	Represent power system components in line diagrams.
CO2	Determine the location of distribution substation.
CO3	Determine the performance of power system with the help of load flowv studies.
04	Analyse faults in Electrical systems.
CO5	Determine the stabilty of Power system.
06	Explain principle of operation of different power system protection equipments.
07	Solve numerical problems related to representation, load flow, faults, stabilty and protection ofp
lame of the Su	bject: MICROPROCESSOR & MICROCONTROLLER
ubject Code: F	C-EE-602
ear: 3rd	
Course Outcomes:	After completion of the course, the students will be able to
001	1. explain the architecture of 8086 and 8051.
002	2. do assembly language programming of 8086, 8051
:03	3. interface different peripheral with 8086 and 8051
04	4. develop micro processor/ microcontroller based systems.
CO5	5. compare microprocessor, microcontroller, PIC and ARM processors
Name of the Su	bject: DIGITAL CONTROL SYSTEM
Subject Code: F	E-EE-601A
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	explain the principle of sampling and reconstrction of analog signal. systems.

CO2	perform Z-transformation and inverse Z-tranaformation of systems.	
соз	analyse and design digital control	
CO4	design compensators for digital control system to achieve desired specifications.	
CO5	represent digital control systems using state space models.	
CO6	analyze the effect sampling on stability, controllability and observability	
Name of the Subject: HVDC TRANSMISSION		

Subject Code: PE-EE-601B

Year: 3rd

Course Outcomes:	After completion of this course the students will be able to
CO1	choose intelligently AC and DC transmission systems for the dedicated application(s).
CO2	identify the suitable two-level/multilevel configuration for high power converters.
соз	select the suitable protection method for various converter faults.
CO4	4. identify suitable reactive power compensation method.
CO5	5. decide the configuration for harmonic mitigation on both AC and DC sides.
CO6	6. solve numerical problems related to converters, power flow analysis, reactive power control, n

Name of the Subject: ELECTRICAL MACHINE DESIGN

Subject Code: PE-EE-601C

Year: 3rd

Course Outcomes:	After completion of this course the students will be able to
CO1	specify the rating of electrical machines with standard specifications.
CO2	explain the principles of electrical machine design and carry out basic design of an ac machine
CO3	3. determine the various factors which influence the design of electrical, magnetic and thermallo
CO4	4. explain the construction and performance characteristics of electrical machines.
CO5	5. use software tools to do design calculations.

Name of the Subject: ELECTRICAL AND HYBRID VEHICLE

Subject Code: PE-EE-602A

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	explain the principle of Electric traction.
CO2	choose a suitable drive scheme for developing an electric hybrid vehicle depending on resources
соз	design and develop basic schemes of electric vehicles and hybrid electric vehicles.
CO4	choose proper energy storage systems for vehicle applications
CO5	implement different energy management strategies for hybrid vehicle.

Name of the Sub	ject: POWER QUALITY AND FACTS
Subject Code: Pl	E-EE-602B
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	analyse uncompensated AC transmission line.
CO2	explain the working principles of FACTS devices and their operating characteristics.
CO3	apply FACTS devices for power flow control and stabilty.
CO4	identify different issues of power quality in distribution system.
CO5	apply different compensation and control techniques for DSTATCOM6. explain working principle
Name of the Sub	ject: INDUSTRIAL ELECTRICAL SYSTEMS
Subject Code: Pl	E-EE-602C
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	Represent electrical wiring system for residential, commercial and industrial consumers.
CO2	Determine the rating of components of residential and commercial electrical systems.
CO3	Design lighting scheme for a residential and commercial premises.
CO4	Select transformer, switchgear, protection equipments for industrial electrical systems.
CO5	explain methods of automation of Industrial Electrical Systems
CO6	Solve numerical problems related to earthing system, lighting scheme, power factor correction.

Name of the Subject: DIGITAL SIGNAL PROCESSING

Subject Code: OE-EE-601A

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	represent signals mathematically in continuous and discrete-time and in the frequencydomain.
CO2	analyse discrete-time systems using z-transform.
соз	explain the Discrete-Fourier Transform (DFT) and the FFT algorithms.
CO4	design digital filters for various applications.
CO5	apply digital signal processing for the analysis of real-life signals.

Name of the Subject: COMMUNICATION ENGINEERING

Subject Code: OE-EE-601B

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	compare the performance of AM, FM and PM schemes with reference to SNR

CO2	explain noise as a random process and its effect on communication receivers
CO3	evaluate the performance of ASK, FSK, PSK, BPSK, QPSK in a digital communication system
CO4	identify source coding and channel coding schemes for a given communication link
CO5	analyze various digital modulation methods
CO6	compute band width requirement and probability of error in various digital modulation systems

Name of the Subject: VLSI AND MICROELECTRONICS

Subject Code: PE-EE-603C

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	explain the principle of design of VLSI circuits
CO2	explain different MOS structure with characteristics
СО3	apply different processes for VLSI fabrication
CO4	use programming language for the design of logic circuits
CO5	draw the stick diagram and layout for simple MOS circuits

Name of the Subject: ECONOMICS FOR ENGINEERS

Subject Code: HM-EE-601

Year: 3rd

Course Outcomes:	On completion of this course a students will be able to
CO1	evaluate the economic theories, cost concepts and pricing policies
CO2	explain the market structures and integration concepts
соз	apply the concepts of financial management for project appraisal
CO4	explain accounting systems , the impact of inflation, taxation, depreciation
CO5	analyze financial statements using ratio analysis
CO6	explain financial planning, economic basis for replacement, project scheduling, legal andregulate

Name of the Subject: POWER SYSTEM-II LABORATORY

Subject Code: PC-EE 691

Year: 3rd

Course	On completion of this course a students will be able to
CO1	Identify appropriate equipment and instruments for the experiment.
CO2	Test the instrument for application to the experiment.
соз	Construct circuits with appropriate instruments and safety precautions.
CO4	Validate the characteristics of under voltage relay, over current relay, earth fault relay, on loadt
CO5	Validate protection schemes of transformer, generator, motor and feeder. 6. Apply software too

CO6	work effectively in a team
Name of the	Subject: MICRO PROCESSOR AND MICRO CONTROLLER LABORATORY
Subject Code	: : PC-EE 692
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	test the instrument for application to the experiment
CO3	construct circuits with appropriate instruments and safety precautions
CO4	program 8086 for arithmatic operation, sorting of array, searching for a number in a string ands
CO5	interface ADC/DAC, 8255, 8251 to 8086 and LCD, keyboard to 8051
CO6	program 8051 using arithmatic, logical and bit manipulation instructions of 8051
CO7	work effectively in a team
Name of the	Subject: ELECTRICAL AND ELECTRONICS DESIGN LABORATORY
Subject Code	: PC-EE 681
Year: 3rd	
Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	explain basic concept of measurement, noise in electronic system, sensor and signal conditionin
CO3	implement PC based data acquisition systems
CO4	construct circuits with appropriate instruments and safety precautions
CO5	design heating elements, air core grounding reactor, power distribution system for small townsh
CO6	do wiring and installation design of a multistoried residential building with lift and pump
C07	design electronic hardware for controller of lift, speed of AC/DC motor, and for an applicationwit
Name of the	Subject: ELECTRIC DRIVE
Subject Code	: PC-EE 701
Year: 4TH	
Course Outcomes:	On completion of this course a students will be able to
CO1	identify appropriate equipment and instruments for the experiment
CO2	Explain the principle of operation of Electric Drive.
CO3	Describe different methods of starting and braking of Electric Drive.
CO4	Model and control DC Drive
CO5	Control speed of Induction and Synchronous motors.
CO6	Recommend drives for different applications.

CO7	Estimate ratings, variables and parameters of Electric Drives.						
Name of the Subj	ect: CONTROL SYSTEM DESIGN						
Subject Code: PE-	EE 701 A						
Year: 4TH							
Course Outcomes:							
CO1	identify appropriate equipment and instruments for the experiment						
CO2	explain the effect of gain, addition of pole and zeros on system's performance.						
CO3	describe time domain and frequency domain design specifications.						
CO4	demonstrate the effect of nonlinearity on system performance.						
CO5	design control system in time domain , in frequency domain and in state space.						
CO6	design PID controllers.						
CO7	select appropriate method for design of control system.						
Name of the Subj	ect: ELECTRICAL ENERGY CONSERVATION& AUDITING						
Subject Code: : Pl	E-EE 701B						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	explain the basic of energy resources, energy security, energy conservation and pollution.						
CO2	quantify the energy conservation opportunities in different thermal systems						
CO3	quantify the energy conservation opportunities in different electrical systems						
CO4	identify the common energy conservation opportunities in different energy intensive industrialed						
CO5	explain the methods of energy management and audit.						
CO6	analyse and report the outcome of energy audit						
Name of the Subj	ect: POWER GENERATION ECONOMICS						
Subject Code: : Pl	E-EE 701C						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	explain the different terms e.g. load factor etc for economics of generation.						
CO2	apply different types of tariff for electricity pricing.						
CO3	optimize the operation of power system with unit commitment.						
CO4	determine generation levels such that the total cost of generation becomes minimum for a defin						
CO5	determine the state of the system given by the voltage magnitudes and phase angles at all buse						
CO6	predict the power or energy needed to balance the supply and load demand at all the times.						
Name of the Subj	ect: ARTIFICIAL INTELLIGENCE						

Year: 4TH								
Course								
Outcomes: On C	On completion of this course a students will be able to							
	explain the concept of knowledge representation and predicate logic and transform the real life							
co ₂ desc	ribe state space and its searching strategies							
co3 dem	onstrate profciency in applying scientifc method to models of machine learning							
co4 appl	y the machine learning concepts in real life problems							
cos dem	onstrate an ability to share in discussions of AI, its current scope and limitations, and societ							
Name of the Subject: IN	ITERNET OF THINGS							
Subject Code: OE-EE-70	1B							
Year:4TH								
Outcomes: On C	completion of this course a students will be able to							
	ain the definition and usage of the term "Internet of Things" in different contexts							
co ₂ expla	explain the key components that make up an IoT system.							
соз diffe	rentiate between the levels of the IoT stack and be familiar with the key technologies andpr							
co4 build	l and test a IoT system involving prototyping, programming and data analysis							
cos appl	y cloud computing and data analytics in a typical IoT system							
Name of the Subject: CO	DMPUTER GRAPHICS							
Subject Code: OE-EE-70	1C							
Year: 4TH								
Outcomes: On C	completion of this course a students will be able to							
	ain Computer graphics and graphic systems.							
co ₂ test	and implement line drawing algorithm, circle and ellipse drawing algorithm, areafilling algorithm							
co3 Perfo	orm 2D and 3D transformation and viewing.							
co4 appl	y algorithms for visible surface determination.							
cos expla	ain colors and shading models and ray tracing.							
Name of the Subject: EN	MBEDDED SYSTEM							
Subject Code: OE-EE 70	2A							
Year: 4TH								
CHITCHIIPS.	completion of this course a students will be able to							
co1 discu	uss the definition, purpose, application, classification, quality characteristics and attributeso							
	ain the internal structure of the Embedded system.							
co3 inter	face IO devices and other peripherals with micro controllers in Embedded systems.							

CO4	write programs for Micro controllers in Embedded systems.					
CO5	apply the concept of Embedded firmware in design of Embedded systems. 6. design RTOS based					
	ubject: DIGITAL IMAGE PROCESSING					
Subject Code:						
Year: 4TH						
Course	On completion of this course a students will be able to					
Outcomes: CO1	explain the fundamental concepts of a digital image processing system.					
CO2	enhance images in the spatial and frequency domain using various transforms.					
CO3	apply different image segmentation techniques.					
CO4	categorize various compression techniques.					
CO5	implement image process and analysis algorithms.					
CO6	apply image processing algorithms in practical applications.					
	ubject: COMPUTER NETWORK					
Subject Code:						
Year: 4TH	. 02 22 / 020					
Course	On completion of this course a students will be able to					
Outcomes: CO1	explain the concepts of data communication and networking.					
CO2	identify the different types of network topologies and protocols.					
CO3	describe the function of a network system with OSI and TCP/IP model.					
CO4	differentiate different types of routing protocol.					
CO5	apply principles of congestion control .					
CO6	implement different schemes for security of the networks.					
Name of the S	ubject: PRINCIPLE OF MANAGEMENT					
Subject Code:						
Year: 4TH						
Course	On completion of this course a students will be able to					
Outcomes: CO1	explain the concepts and approaches of management.					
CO2	demonstrate the roles, skills and functions of management.					
CO3	diagnose and solve organizational problems.					
CO4	identify the complexities associated with management of human resources in the organizationsa					
CO5	apply different methods of Customer, Operation and Technology management.					
CO6	acquire skills of good leader in an organization.					
Name of the S	ubject: ELECTRIC DRIVE LABORATORY					

Subject Code	e: PC-EE 791			
Year: 4TH				
Course Outcomes:	On completion of this course a students will be able to			
CO1	1. identify appropriate equipment and instruments for the experiment.			
CO2	2. test the instrument for application to the experiment.			
CO3	3. construct circuits with appropriate instruments and safety precautions.			
CO4	4. apply different methods of control of Electric Drive in the laboratory.			
CO5	5. analyse experimental data obtained in the laboratory.			
CO6	6. work effectively in a team			
Name of the	Subject: PROJECT STAGE-I			
Subject Code	e: PW-EE 781			
Year: 4TH				
Course Outcomes:	On completion of this course a students will be able to			
CO1	The students will be able to formulate the problem			

rear: 41H						
Course Outcomes:	On completion of this course a students will be able to					
CO1	The students will be able to formulate the problem					
CO2	The students will be able to develop or design a solution for the problem					
соз	Build up project prototype or model in hardware or software					
CO4	Analyze the experimental collected data					
CO5	Do investigation/research in the problem area					
CO6	Apply fundamental and specialized knowledge in the area of the problem					
CO7	Students will be able to self learn new methods, tools and techniques					
CO8	Students will be able to apply modern tools and techniques					
CO9	Students will be able to work individually and also in team					
CO10	Students will be able to communicate the details and findings of the project through Project report, Presentation, Viva					
CO11	Students will be able to apply project management and economics knowledge					
CO12	Students will be able to identify implications of the project in society and environment.					

Name of the Subject: ELECTRIC DRIVE LABORATORY

Subject Code: PC-EE 791

Year: 4TH

Course	On completion of this course a students will be able to
CO1	Students will be able to apply fundamental and specialized knowledge to under stand the real life pro
CO2	Students will be able to understand the design and implementation aspects of engineering systems/o
CO3	Students will be able to communicate the details of training through Training Report, Presentation ar
CO4	Students will be able to understand implication of engineering solutions in social and environment pe

Name of the Su	bject: UTILIZATION OF ELECTRIC POWER						
Subject Code: :	PC-EE 801						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	1. explain the fundamentals of illumination and different lighting schemes.						
CO2	2. explain the fundamental of Electrolytic processes, Electric heating and Welding.						
CO3	3. able to select appropriate lighting, heating and welding techniques for specific applications.						
CO4	4. apply different electrolysis process for different applications.						
CO5	5. explain the principle of different aspect of Electric traction and control of traction motor.						
Name of the Su	bject: LINE COMMUTATED AND ACTIVE PWM RECTIFIERS						
Subject Code: P	E-EE 801A						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	1. explain the principle of operation of different converters.						
CO2	2. suggest the application of different filters.						
соз	3. apply converters for different applications.						
CO4	4. analyze converter circuits.						
CO5	5. develop appropriate scheme for control of different converters.						
CO6	6. solve numerical problems relating to different converters.						
Name of the Su	bject: POWER SYSTEM DYNAMICS AND CONTROL						
Subject Code: P	E-EE 801B						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	1. explain the model of power system components						
CO2	2. select the appropriate model for required analysis.						
соз	3. analyze the performance of the system with small signal analysis.						
CO4	4. evaluate the stability of the single and multi machine systems.						
CO5	5. develop measures for enhancing the stability of the system.						
CO6	6. Solve numerical problems of linear dynamical system, modeling of different components and						
Name of the Su	bject: ADVANCED ELECTRIC DRIVE						
Subject Code: P	E-EE 801C						
Year: 4TH							

On completion of this course a students will be able to

Course

Outcomes

1. explain the principle of operation of converters for AC drives.
2. model Induction and Synchronous motor by reference frame theory.
3. apply different control methods to control speed and torque of Induction and Synchronous methods
4. explain the configurations and method of speed control of BLDC, PMSM and SRM.
5. realize basic blocks for DSP based motion control.
6. develop appropriate scheme for speed control of Induction and Synchronous motor.

Name of the Subject: INDUSTRIAL AUTOMATION AND CONTROL

Subject Code: : PE-EE 801D

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to
CO1	1. explain the basic structure of industrial automation and control
CO2	2. classify different types of control actions of controllers.
соз	3. analyze control strategies of different processes of industry.
CO4	4. illustrate the construction and use of different types of actuators and control valves.
CO5	5. use PLC, DCS and SCADA in advanced industrial control.

Name of the Subject: SOFT COMPUTING TECHNIQUES

Subject Code: OE-EE 801A

Year: 4TH

Course	On a montation of this service a students will be able to
Outcomes:	On completion of this course a students will be able to
CO1	1. explain soft computing techniques and their roles in building intelligent machines
CO2	2. anlyse the feasibility of application of soft computing techniques for a particular problem
соз	3. effectively use existing software tools to solve real problems using a soft computing approach
CO4	4. evaluate solutions by various soft computing approaches for a given problem.
CO5	5. apply different soft computing techniques to solve Engineering problems.

Name of the Subject: BIOMEDICAL INSTRUMENTATION

Subject Code: OE-EE 801B

Year: 4TH

Course Outcomes:	On completion of this course a students will be able to
CO1	1. describe the principle of medical transducers for temperature, pressure and respiration rate.
CO2	2. explain the principle of operation of Biomedical recorders, Medical Imaging equipments Surgic
СОЗ	3. use different Medical laboratory equipments for different tests .
CO4	4. analyze any measurement application and suggest suitable measurement methods.
CO5	5. suggest suitable imaging methodology for a specific ailment.

Name of the Subj	ect: INTRODUCTION TO MA	CHINE LEARNING					
Subject Code: OE	-EE 801C						
Year: 4TH							
Course Outcomes:	On completion of this	course a studen	ts will be able to)			
CO1	1. explain the basics of	concepts and clas	ssification of Ma	chine Learning .			
CO2	2. write simple progra	ıms using pythor	١.				
СОЗ	3. describe Supervise	d Learning conce	epts.				
CO4	4. explain the concept	t of Support Vect	tor Machine.				
CO5	5. describe unsupervis	sed learning cond	cepts and dimer	nsionality reduct	ion technique:	S.	
CO7	6. apply Machine Lear	ning in a range o	of real-world ap	plications .			
Name of the Subj	ect: SENSORS AND TRANSD	UCERS					
Subject Code: OE	-EE 801D						
Year: 4TH							
Course Outcomes:	On completion of this course a students will be able to						
CO1	1. explain the basic principle of operation of Transducers and Sensors.						
CO2	2. distinguish different sensors and transducers.						
соз	3. identify suitable transducer by comparing different industrial standards and procedures for me						
CO4	4. estimate the performance of different transducers.						
CO5	5. design real life electronics and instrumentation measurement systems. 6. apply sm					smart senso	
	PROGRAMME OUTCOMES (PO) BASED ON G.A.						
	POS& COS	PO1	PO2	PO3	PO4	PO5	
Name of the Subject:	CO1	0.65	0.65	0.65	0.65		
ELECTRIC	CO2	0.65	0.65	0.65	0.65		
CIRCUIT	CO3	0.65	0.65	0.65			
THEORY	CO4	0.65	0.65	0.65	0.65		
	CO5	0.65	0.65	0.65			
Subject Name of the Subject:ANALOG ELECTRONICS	CO6	0.65	0.65	0.65	0.65	0.65	
	CO1	0.66	0.66	0.66	0.66		
	CO2	0.66	0.66	0.66	0.66		
				i		1	
	CO3	0.66	0.66	0.66			

Subject	CO5	0.66	0.66	0.66		1
Name of the	CO1	0.53	0.53	0.53	0.53	
Subject: ELECTRO	CO2	0.53	0.53	0.53	0.53	
MAGNETIC	CO3	0.53	0.53	0.53	0.53	
FIELD THEORY	CO4	0.53	0.53	0.53	0.53	
	CO5	0.53	0.53	0.53	0.53	
	CO6	0.53	0.53	0.53	0.53	
Name or the Subject:	CO1	0.57	0.57	0.57	0.57	
ENGINEERING	CO2	0.57	0.57	0.57	0.57	
MECHANICS	CO3	0.57	0.57	0.57	0.57	
	CO4	0.57	0.57	0.57	0.57	
Subject	CO5	0.57	0.57	0.57	0.57	
Name of the	CO1	0.78	0.78		0.78	
Subject:	CO2	0.78	0.78		0.78	
MATHEMATICS	CO3	0.78	0.78		0.78	0.78
Subject	CO4	0.78	0.78		0.78	
Code: BS M 301	CO5	0.78	0.78		0.78	0.78
	CO6	0.78	0.78		0.78	
Name of the Subject:	CO1	0.75				
BIOLOGY FOR	CO2	0.75			0.75	
ENGINEERS	CO3	0.75			0.75	
Subject Code:	CO4	0.75			0.75	
BS EE	CO5	0.75			0.75	
301	CO6	0.75			0.75	
Name of the Subject: INDIAN CONSTITUTION	CO1	0.92				
Subject Code: MC EE 301	CO2					
Name of the Subject:	CO1	0.9	0.9	0.9	0.9	
ELECTRIC	CO2	0.9	0.9	0.9	0.9	
CIRCUIT	CO3	0.9	0.9	0.9		
THEORY LABORATORY	CO4	0.9	0.9	0.9	0.9	
	CO5	0.9	0.9	0.9		
Subject Code: PC EE	CO6	0.9	0.9	0.9	0.9	0.9
	CO1	0.81	0.81	0.81	0.81	

	CO2	0.81	0.81	0.81	0.81	
Name of the Subject:	CO3	0.81	0.81	0.81		
ANALOG	CO4	0.81	0.81	0.81	0.81	
ELECTRONICS	CO5	0.81	0.81	0.81		
Name of the	CO1	0.84	0.84		0.84	
Subject: —— NUMERICAL	CO2	0.84	0.84		0.84	
METHODS	CO3	0.84	0.84		0.84	0.84
LABORATORY	CO4	0.84	0.84		0.84	1 0.0.
Subject Code: BS M	CO5	0.84	0.84		0.84	0.84
301	CO6	0.84	0.84		0.84	0.04
N				0.77		
Name of the Subject:ELECTRI	CO1	0.77	0.77	0.77	0.77	
C MACHINE	CO2	0.77	0.77	0.77	0.77	
I	CO3	0.77	0.77			
Subject Code: PC EE	CO4	0.77	0.77			
401	CO5	0.77	0.77			
	CO6	0.77	0.77	0.77	0.77	
Name of the Subject:	CO1	0.58	0.58	0.58	0.58	
DIGITAL	CO2	0.58	0.58	0.58	0.76	
ELECTRONICS	CO3	0.58	0.58	0.58		
Subject	CO4	0.58	0.58	0.58		
Code: PC EE	CO5	0.58	0.58	0.58	0.58	
402	CO6	0.58	0.58	0.58	0.58	
Name of the	CO1	0.72	0.72	0.72	0.72	0.72
Subject: —— ELECTRICAL	CO2	0.72	0.72	0.72		
AND	CO3	0.72	0.72	0.72		
ELECTRONICS —— MEASUREMENT	CO4	0.72				
MEASUREMENT	CO5	0.72			0.72	0.72
Subject	CO6	0.72	0.72	0.72		0.72
Code: PC EE Name of the	CO1	0.61	0.61	0.61	0.61	0.61
Subject:				0.01	0.01	0.01
THERMAL POWER	CO2	0.61	0.61	0.04		
ENGINEERING —	CO3	0.61	0.61	0.61		
<u> </u>	CO4	0.61				
Subject	CO5	0.61			0.61	0.61

Code: E5 EE 401	CO6	0.61	0.61	0.61	0.61	0.61
Name of the	CO1	0.72	0.72	0.72	0.72	0.72
Subject: VALUES ——— AND ETHICS IN	CO2	0.72	0.72	0.72		
PROFESSION	CO3	0.72	0.72	0.72		
Subject Code:	CO4	0.72	<u>-</u>	-		
HM EE	CO5	0.72			0.72	0.72
401	CO6	0.72	0.72	0.72	0.72	0.72
Name of the	CO1	0.81	0.81	0.81	0.81	0.81
Subject: ENVIRONMENTA	CO2	0.81	0.81	0.95		0.01
SCIENCE	CO3	0.81	0.81	0.95		
	CO4	0.81		0.00		
	CO5	0.81			0.81	0.81
Subject	CO6	0.81	0.81	0.81	0.81	0.81
Code: MC FE 401 Name of the	CO1	0.76	0.76	0.76	0.76	0.76
Subject: ELECTRIC	CO2	0.76	0.76			
MACHINE I	CO3	0.76	0.76	0.76		
LABORATORY	CO4	0.76				
ubject Code: PC	CO5	0.76			0.76	0.76
491	CO6	0.76	0.76	0.76	0.76	0.76
Name of the	CO1	0.92	0.92	0.92	0.92	0.92
Subject: DIGITAL	CO2	0.92	0.92	0.92		
ELECTRONICS	CO3	0.92	0.92	0.92		
LABORATORY	CO4	0.92				
Subject Code:	CO5	0.92			0.92	0.92
PC EE	CO6	0.92	0.92	0.92	0.92	0.92
Name of the	CO1	0.91	0.91	0.91	0.91	0.91
Subject: ELECTRICAL	CO2	0.91	0.91	0.91		
AND	CO3	0.91	0.91	0.91		
ELECTRONICS MEASUREMENT	CO4	0.91				
ABORATORY	CO5	0.91			0.91	0.91
Subject Code:	CO6	0.91	0.91	0.91	0.91	0.91
Subject Code: Name of the Subject:	CO1	0.87	0.87	0.87	0.87	0.87
THERMAL	CO2	0.87	0.87	0.87		

POWER	соз	0.87	0.87	0.87	1	
ENGINEERING — LABORATORY	CO4	0.87				
s	CO5	0.87			0.87	0.87
ubject Code: ES	CO6	0.87	0.87	0.87	0.87	0.87
ME Name of the	CO1	0.54	0.54	0.54		
Subject: — ELECTRIC	CO2	0.54			0.54	
MACHINE	CO3	0.54			0.54	
п –	CO4	0.01			0.54	
Subject Code: PC EE	CO5		0.54	0.54	0.54	0.54
501		0.54				
Name of the	CO6	0.54	0.54	0.54		0.54
Subject:	CO1	0.84	0.84	0.84		
ELECTRIC	CO2	0.84			0.84	
MACHINE II LABORATORY —	CO3	0.84			0.84	
	CO4				0.84	
Subject Code:	CO5		0.84	0.84		
PC EE	CO6	0.84	0.84	0.84		
Name of the	CO1	0.56	0.56	0.56		
Subject: POWER	CO2	0.56			0.56	
SYSTEM —	CO3	0.56			0.56	
Subject	CO4				0.56	
Code: PC EE	CO5		0.56	0.56		
	CO6	0.56	0.56	0.56		
Name of the	CO1	0.92	0.92	0.92		
Subject: POWER — SYSTEM I	CO2	0.92			0.92	
LABORATORY	CO3	0.92			0.92	
Subject Code:	CO4				0.92	
PC EE	CO5		0.92	0.92		
592	CO6	0.92	0.92	0.92	1	
Name of the	CO1	0.55	0.55	0.55		
Subject: — CONTROL	CO2	0.55	3.00	3.00	0.55	
SYSTEM	CO3	0.55			0.55	
Su —		0.55				
bject Code: PC EE	CO4				0.55	
EU3 EE	CO5		0.55	0.55		

503	CO6	0.55	0.55	0.55		
Name of the	CO1	0.87	0.87	0.87		
Subject: CONTROL	CO2	0.87			0.87	
SYSTEM	CO3	0.87			0.87	
LABORATORY	CO4				0.87	
Subject Code:	CO5		0.87	0.87		
PC EE 593	CO6	0.87	0.87	0.87		
Name of the	CO1	0.6	0.6	0.6		
Subject: POWER	CO2	0.6				
ELECTRONICS	CO3	0.6				
Subject Code:	CO4					
PC EE 504	CO5		0.6	0.6		
	CO6	0.68	0.6	0.6		
Name of the Subject: POWER	CO1	0.92	0.92	0.92		
ELECTRONICS	CO2	0.92				
LABORATORY	CO3	0.92				
Subject Code:	CO4					
PC EE	CO5		0.92	0.92		
594	CO6	0.92	0.92	0.92		
Name of the Subject: HIGH	CO1	NA	NA	NA	NA	NA
VOLTAGE	CO2	NA	NA	NA	NA	NA
ENGINEERING	CO3	NA	NA	NA	NA	NA
	CO4	NA	NA	NA	NA	NA
Subject	CO5	NA	NA	NA	NA	NA
Code: EE PE 501 A	CO6	NA	NA	NA	NA	NA
Name of the Subject:	CO1	0.72	0.72	0.72	0.72	
RENEWABLE	CO2	0.72	0.72			
AND NON	CO3	0.72	0.72			
CONVENTIONAL ENERGY	CO4	0.72				
Subject	CO5	0.72		0.72	0.72	
Code: EE PE 501 C	CO6	0.72	0.72	0.72	0.72	
Name of the Subject: DATA	CO1	NA	NA	NA	NA	NA
STRUCTURE	CO2	NA	NA	NA	NA	NA

AND	CO3	NA	NA	NA	NA	NA
ALGORITHM	CO4	NA	NA	NA	NA	NA
Subject Code:	CO5	NA	NA	NA	NA	NA
OE EE 501A	CO6	NA	NA	NA	NA	NA
Name of the Subject: OBJECT	CO1	NA	NA	NA	NA	NA
ORIENTED	CO2	NA	NA	NA	NA	NA
PROGRAMMING	CO3	NA	NA	NA	NA	NA
Subject	CO4	NA	NA	NA	NA	NA
Code: OE EE	CO5	NA	NA	NA	NA	NA
501B	CO6	NA	NA	NA	NA	NA
Name of the Subject:	CO1		0.71	0.71	0.71	
COMPUTER	CO2	0.71	0.71			
ORGANISTION	CO3	0.71	0.71			
AND	CO4	0.71				
	CO5	0.71		0.71	0.71	
Subject Code: OE EE	CO6	0.71	0.71	0.71	0.71	
Name of the	CO1	0.65	0.65	0.65	0.65	
Subject: POWER	CO2	0.65	0.65			
SYSTEM II	CO3	0.65	0.65			
Subject	CO4	0.65				
Code: PC EE 601	CO5	0.65		0.65	0.65	
	CO6	0.65	0.65	0.65	0.65	
Name of the Subject: POWER	CO1	0.91	0.91	0.91	0.91	
SYSTEM II	CO2	0.91	0.91			
LABORATORY	CO3	0.91	0.91			
Su bject Code: PC	CO4	0.91				
EE	CO5	0.91		0.91	0.91	
691	CO6	0.91	0.91	0.91	0.91	
	CO1	0.65	0.65	0.65	0.65	
Name of the Subject:	CO2	0.65	0.65			
MICRO PROCESSOR - AND	CO3	0.65	0.65			
MICROCONTROLLER Subject Code: PC EE	CO4	0.65	0.65			0.65
602	CO5	0.65	0.65	0.65	0.65	0.65

	CO6	0.65	0.65	0.65	0.65	0.65
Name of the Subject:	CO1	0.92	0.92	0.92	0.92	
MICRO PROCESSOR	CO2	0.92	0.92			
AND MICROCONTROLLER	CO3	0.92	0.92			
LABORATORY	CO4	0.92	0.92			0.92
Subject	CO5	0.92	0.92	0.92	0.92	0.92
Code: PC EE 692	CO6	0.92	0.92	0.92	0.92	0.92
Name of the Subject:	CO1	0.89	0.89	0.89	0.89	0.89
ELECTRICAL AND	CO2	0.89	0.89			0.89
LABORATORY	CO3	0.89	0.89			
Subject Code: PC EE	CO4	0.89	0.89			
681	CO5	0.89	0.89	0.89	0.89	0.89
	CO6	0.89	0.89	0.89	0.89	0.89
Name of the Subject:	CO1	0.68	0.68	0.68	0.68	
ELECTRICAL AND	CO2	0.68			0.68	
ELECTRONIC DESIGN LABORATORY	CO3	0.68			0.68	
	CO4	0.68			0.68	
Subject Code: PC EE	CO5	0.68	0.68	0.68	0.68	
681	CO6	0.68	0.68	0.68	0.68	
	CO1	0.64	0.64	0.64	0.64	
Name of the Subject: HVDC	CO2	0.64			0.64	
TRANSMISSION	CO3	0.64			0.64	
Subject Code: PE EE	CO4	0.64			0.64	
601B	CO5	0.64	0.64	0.64	0.64	
	CO6	0.64	0.64	0.64	0.64	
	CO1	NA	NA	NA	NA	NA
Name of the Subject: ELECTRICAL	CO2	NA	NA	NA	NA	NA
MACHINE DESIGN	CO3	NA	NA	NA	NA	NA
	CO4	NA	NA	NA	NA	NA
Subject Code: PE EE 601C	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
	CO1	0.61	0.61	0.61	0.61	
Name of the Subject: POWER QUALITY AND	CO2	0.61	0.61	0.61	0.61	

FACTS Subject Code: PE	CO3	0.61	0.61			
EE 602	CO4	0.61	0.61			
В	CO5	0.61	0.61	0.61	0.61	
	CO6	0.61	0.61	0.61	0.61	
Name of the	CO1	NA	NA	NA	NA	NA
Subject: — DIGITAL	CO2	NA	NA	NA	NA	NA
SIGNAL	CO3	NA	NA	NA	NA	NA
PROCESSING Su	CO4	NA	NA	NA	NA	NA
bject Code: OE	CO5	NA	NA	NA	NA	NA
EE 601	CO6	NA	NA	NA	NA	NA
	CO1	0.62	0.62	0.62	0.62	
Name of the Subject: COMMUNICATION ENGINEERING Subject Code: OE EE 601 B	CO2	0.62	0.62	0.62	0.62	
	CO3	0.62			0.62	
	CO4	0.62	0.62	0.62	0.62	
	CO5	0.62				
	CO6	0.62	0.62	0.62	0.62	
	CO1	0.57	0.57	0.57	0.57	
Name of the Subject: ECONOMICS FOR	CO2	0.57	0.57	0.57	0.57	
ENGINEERS	CO3	0.57	0.57	0.57	0.57	
	CO4	0.57	0.57		0.57	
Subject Code: HM EE 601	CO5	0.57	0.57		0.57	
	CO6	0.57	0.57		0.57	
	CO1	0.61	0.61	0.61	0.61	0.61
Name of the Subject:	CO2	0.61	0.61			0.61
ELECTRIC DRIVE	CO3	0.61				0.61
Subject	CO4	0.61	0.61	0.61	0.61	0.61
Code: PC EE 701	CO5	0.61	0.61	0.61		
	CO6	0.61	0.61	0.61		0.61
	CO1	0.95	0.95	0.95	0.95	0.95
Name of the Subject: ELECTRIC DRIVE	CO2	0.95	0.95			0.95
LABORATORY Subject Code:	CO3	0.95				0.95
PC EE	CO4	0.95	0.95	0.95	0.95	0.95
791	CO5	0.95	0.95	0.95		

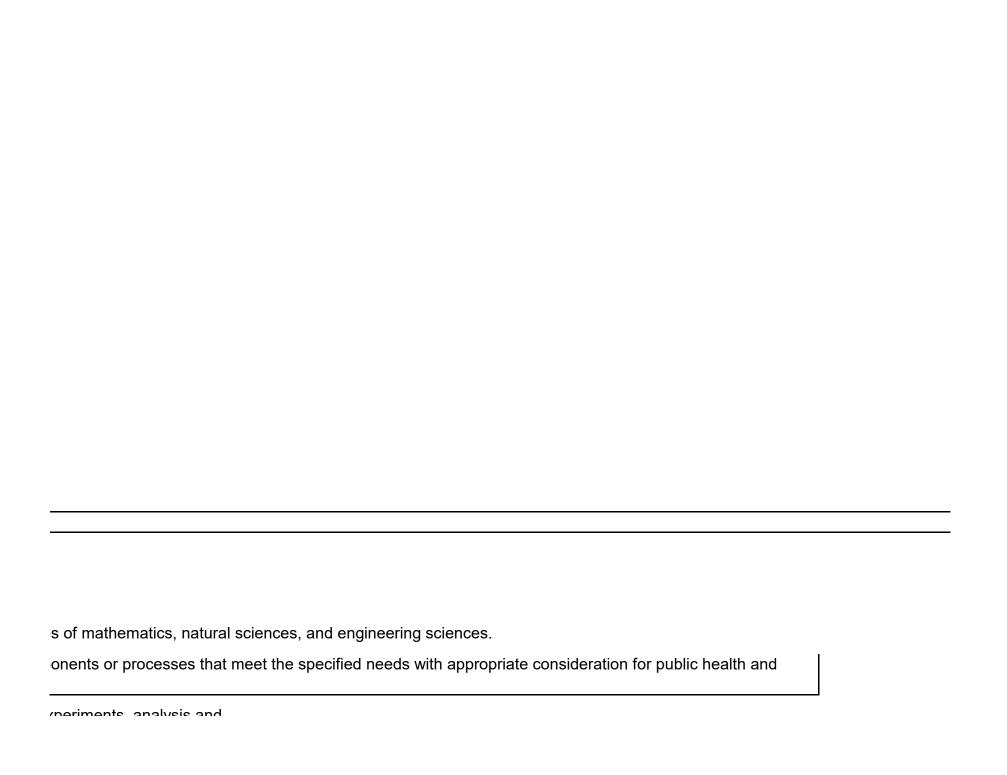
	CO6	0.95	0.95	0.95		0.95
	CO1	NA	NA	NA	NA	NA
Name of the Subject: CONTROL SYSTEM	CO2	NA	NA	NA	NA	NA
DESIGN Subject Code: PE	CO3	NA	NA	NA	NA	NA
EE 701	CO4	NA	NA	NA	NA	NA
Α	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
Name of the Subject:	CO1	NA	NA	NA	NA	NA
ELECTRICAL ENERGY CONSERVTION AND	CO2	NA	NA	NA	NA	NA
AUDITING	CO3	NA	NA	NA	NA	NA
Subject Code: PE EE 701	CO4	NA	NA	NA	NA	NA
В	CO5	NA	NA	NA	NA	NA
	CO6	NA	NA	NA	NA	NA
Name of the Subject:	CO1	0.76	0.76	0.76		0.76
	CO2	0.76	0.76	0.76		0.76
ECONOMICS Subject	CO3	0.76	0.76	0.76		
Code: PE EE 701	CO4	0.76	0.76	0.76		
С	CO5	0.76	0.76	0.76		0.76
	CO6	0.76	0.76	0.76		0.76
Name of the Subject:	CO1	0.74	0.74	0.74	0.74	0.74
ARTIFICIAL	CO2	0.74	0.74	0.74	0.74	
INTELLIGENCE	CO3	0.74				0.74
Subject	CO4	0.74				0.74
Code: OE EE 701	CO5	0.74	0.74	0.74	0.74	0.74
Α	CO6	0.74	0.74	0.74	0.74	0.74
Name of the Subject:	CO1	0.61	0.61	0.61	_	
INTERNET OF	CO2	0.61	0.61		0.61	0.61
THINGS	CO3	0.61	0.61		0.61	0.61
Subj ect Code: OE EE	CO4	0.61	0.61	_	0.61	0.61
701	CO5	0.61	0.61			0.61
В	CO6	0.61	0.61	0.61	0.61	0.61
Name of the Subject:	CO1	NA	NA	NA	NA	NA
COMPUTER	CO2	NA	NA	NA	NA	NA

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Subject Code:	CO4	NA	NA	NA	NA	NA
OE EE 701	CO5	NA	NA	NA	NA	NA
c	CO6	NA	NA	NA	NA	NA
Name of the	CO1	0.63	0.63	0.63		
Subject: —— EMBEDDED	CO2	0.63	0.63	0.63	0.63	
SYSTEM	CO3	0.63		0.63	0.63	
Subj ect Code: OE EE	CO4	0.63	0.63		0.63	
702	CO5	0.63	0.63	0.63		
Α	CO6	0.63	0.63		0.63	
Name of the Subject:	CO1	NA	NA	NA	NA	NA
DIGITAL IMAGE	CO2	NA	NA	NA	NA	NA
PROCESSING	CO3	NA	NA	NA	NA	NA
S ubject Code: OE	CO4	NA	NA	NA	NA	NA
EE 702	CO5	NA	NA	NA	NA	NA
В	CO6	NA	NA	NA	NA	NA
Name of the	CO1	NA	NA	NA	NA	NA
Subject: COMPUTER	CO2	NA	NA	NA	NA	NA
NETWORK	CO3	NA	NA	NA	NA	NA
Su bject Code: OE	CO4	NA	NA	NA	NA	NA
EE 702	CO5	NA	NA	NA	NA	NA
c	CO6	NA	NA	NA	NA	NA
Name of the	CO1	0.7	0.7			
Subject: PRINCIPLE OF	CO2	0.7	0.7			
MANAGEMENT	CO3	0.7	0.7			
S ubject Code: HM	CO4	0.7	0.7			
EE	CO5	0.7	0.7			
701	CO6	0.7	0.7			
Name of the	CO1	0.92	0.92	0.92	0.92	0.92
Subject:	CO2	0.92	0.92	0.92	0.92	
PROJECT STAGE	CO3	0.92	0.92	0.92	0.92	
Subject Code:	CO4	0.92	0.92	0.92	0.92	
PW EE	CO5	0.92	0.92	0.92		

	CO6	0.92	0.92	0.92	0.92	
Name of the	CO1	0.9	0.9	0.9	0.9	0.9
Subject: SEMINAR —	CO2	0.9	0.9	0.9	0.9	
Su	CO3	0.9	0.9	0.9	0.9	
bject Code: PW	CO4	0.9	0.9	0.9	0.9	
781	CO5	0.9	0.9	0.9	0.9	
	CO6	0.9	0.9	0.9	0.9	
Name of the	CO1	0.65	0.65			
Subject: UTILISATION	CO2	0.65	0.65			
OF ELECTRIC	CO3	0.65	0.65			
POWER Subject	CO4	0.65	0.65			0.65
Code: PC EE	CO5	0.65	0.65			0.65
801	CO6	0.65	0.65			0.65
Name of the Subject: POWER —	CO1	0.69	0.69	0.69	0.69	
SYSTEM DYNAMICS AND	CO2	0.69	0.69	0.69	0.69	
	CO3	0.69	0.69	0.69	0.69	0.69
CONTROL	CO4	0.69	0.69	0.69	0.69	
Subject Code:	CO5	0.69	0.69	0.69	0.69	
PE EE 801	CO6	0.69	0.69	0.69	0.69	
Name of the Subject:	CO1	0.62	0.62			
SENSORS AND	CO2	0.62	0.62		0.62	
TRANSDUCERS	CO3	0.62	0.62			0.62
	CO4	0.62	0.62		0.62	
Subject Code:	CO5	0.62	0.62		0.62	
OE EE 801	CO6	0.62	0.62		0.71	0.71
Name of the	CO1	0.94	0.94	0.94	0.94	0.94
Subject:	CO2	0.94	0.94	0.94	0.94	
PROJECT STAGE — II	CO3	0.94	0.94	0.94	0.94	
Subject	CO4	0.94	0.94	0.94	0.94	
Code: PW EE 881	CO5	0.94	0.94	0.94	0.94	
	CO6	0.94	0.94	0.94	0.94	
AVEDACE		0.727712211	0.725026446	0.742057142	0.722707102	0.7656

AVERAGE 0.737713311 0.735826446 0.742857143 0.732707182 0.7656

PO	PO1	PO2	PO3	PO4	PO5	PO6
AVERAGE	0.737713311	0.738617572	0.736899277	0.744404762	0.733626151	0.7656
PERCENTAGE(%)	73	73	73	74	73	76



gineering and IT tools, including prediction and modelling to complex engineering activities, with an

alth, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional

nd environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

; and norms of the engineering practice

ams, and in multidisciplinary settings.

ng community and with the society at large, such as, being able to comprehend and write effective reports ve clear instructions.

ment principles and apply these to one's own work, as a member and leader in a team, to manage projects

dependent and life-long learning in the broadest context of technological change.

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		0.94				
						0.94
0.731506849	0.728064516	0.774166667	0.736969697	0.79777778	0.737	0.766315789

PO7	PO8	PO9	PO10	PO11	PO12
0.731506849	0.728064516	0.774166667	0.736969697	0.79777778	0.737
73	72	77	73	79	73

1		

CALCUTTA INSTITUTE OF ENGINEERING AND MANAGEMENT DEPARTMENT OF INFORMATION TECHNOLOGY ACADEMIC YEAR 2021-2022

PROGRAM OUTCOMES

PO-1: Engineering Knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem Analysis:

Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4: Conduct investigations of complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO-6: The engineer and society:

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

PO-7: Environment and sustainability:

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

PO-8: Ethics:

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

PO-9: Individual and team work:

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

PO-10: Communication:

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.

PO-11: Project management and finance:

Demonstrate knowledge and understanding of the 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.

PO-12: Life-long learning:

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.

COURSE DETAILS

COURSE NAME	Physics I
COURSE CODE	BS PH-101
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	$\sqrt{}$											
CO2												
CO3												
CO4	\checkmark											
CO5	$\sqrt{}$	$\sqrt{}$		V								
CO6			\checkmark									

COURSE DETAILS

COURSE NAME	Mathematics I(A)
COURSE CODE	BS-M (101)
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	$\sqrt{}$											
CO2	V											
CO3	V											

COURSE NAME	Basic Electrical Engineering
COURSE CODE	ES-EE101
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark	\checkmark										
CO2												
CO3												

COURSE DETAILS

COURSE NAME	Physics – I Laboratory
COURSE CODE	BS PH-191
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark											
CO2	$\sqrt{}$			V								
CO3	$\sqrt{}$											
CO4	\checkmark											
CO5	$\sqrt{}$			V								

COURSE DETAILS

COURSE NAME	Basic Electrical Engineering Laboratory
COURSE CODE	ES-EE191
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						\checkmark						
CO2												
CO3												

COURSE NAME	Workshop/Manufacturing Practices
COURSE CODE	ES - ME 192
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	1

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3			$\sqrt{}$									
CO4												

COURSE DETAILS

COURSE NAME	Analog & Digital Electronics
COURSE CODE	ESC301
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2		$\sqrt{}$										
CO3	$\sqrt{}$		$\sqrt{}$									

COURSE DETAILS

COURSE NAME	Data Structure & Algorithm
COURSE CODE	PCC-CS301
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark	\checkmark										
CO2												

CO3			~				
CO4	\checkmark		$\sqrt{}$				
CO5		V					

COURSE NAME	Computer Orgranization
COURSE CODE	PCC-CS302
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark	\checkmark										
CO2												
CO3		$\sqrt{}$		$\sqrt{}$								
CO4				$\sqrt{}$								

COURSE DETAILS

COURSE NAME	Mathematics – III (Differential Calculus)
COURSE CODE	BSC-301
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		$\sqrt{}$										
CO2	\checkmark	\checkmark										
CO3												
CO4												
CO5		$\sqrt{}$		·	$\sqrt{}$							

COURSE DETAILS

COURSE NAME	Economics for Engineers (Humanities – II)
COURSE CODE	HSMC 301
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		\checkmark	$\sqrt{}$									
CO2											V	
CO3												

COURSE NAME	Analog & Digital Electronics Laboratory
COURSE CODE	ESC391
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2				V								
CO3												

COURSE DETAILS

COURSE NAME	Data Structures and Algorithms
COURSE CODE	PCC-CS391
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark											
CO2												
CO3				$\sqrt{}$	$\sqrt{}$							$\sqrt{}$

COURSE DETAILS

COURSE NAME	Computer Organisation
COURSE CODE	PCC CS-392
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3			$\sqrt{}$									
CO4			V		V							

COURSE NAME	IT Workshop (SciLab/MATLAB/Python/R)
COURSE CODE	PCC-CS393
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3			$\sqrt{}$									
CO4												

COURSE DETAILS

COURSE NAME	Economics for Engineers
COURSE CODE	HU 501
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1		V												
CO2		V									V			
CO3														
	COUF	RSE NA	ME		Design & Analysis of Algorithm									
	COURSE CODE					IT 501								
NAM	NAME OF THE PROGRAMME					B.Tech								
	DEPARTMENT					Information Technology								
	SEN	MESTE	₹					5						

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				V								
CO2												
CO3												

CO4			V				
CO5	\checkmark	$\sqrt{}$					

COURSE NAME	Computer Arcghitecture
COURSE CODE	IT 502
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			V		V							
CO2			V		V							
CO3					V							

COURSE NAME	Operating System
COURSE CODE	IT 503
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3	\checkmark											\checkmark
CO4												
CO5				V								

COURSE NAME	Programing Practices using C++
COURSE CODE	IT504F
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		\checkmark										
CO2		$\sqrt{}$	$\sqrt{}$									
CO3												
CO4				V								

COURSE NAME	Algorithm Lab
COURSE CODE	IT591

NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2		\checkmark										
CO3												
CO4			V	V								
CO5												

COURSE DETAILS

COURSE NAME	Computer Architecture
COURSE CODE	IT592
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		\checkmark										
CO2		1										

COURSE DETAILS

COURSE NAME	Operating System Lab
COURSE CODE	IT593
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												

COURSE NAME	Programming Practices Using C++
COURSE CODE	IT594F
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												

COURSE DETAILS

COURSE NAME	Internet Technology
COURSE CODE	IT701
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	\checkmark											
CO2	\checkmark	\checkmark										
CO3		\checkmark			V							
CO4	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$								

COURSE DETAILS

COURSE NAME	Multimedia
COURSE CODE	IT702
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		$\sqrt{}$										
CO2					V							
CO3					V							
CO4					V						V	

COURSE NAME	E-Commerce
COURSE CODE	IT703A
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												$\sqrt{}$
CO4												

COURSE DETAILS

COURSE NAME	Cloud Computing
COURSE CODE	IT704B
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2	V											
CO3	V											
CO4												V

COURSE NAME	Advanced Data Communication & Coding
COURSE CODE	IT705E
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3				V								
CO4				V								

COURSE DETAILS

COURSE NAME	Group Discussion
COURSE CODE	HU781
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3				V					V	V		$\sqrt{}$
CO4												$\sqrt{}$

COURSE DETAILS

COURSE NAME	Internet Technology
COURSE CODE	IT 7 91
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												

COURSE NAME	Multimedia
COURSE CODE	IT792
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		$\sqrt{}$										
CO2	\checkmark	$\sqrt{}$										
CO3												
CO4			$\sqrt{}$	V								
CO5		$\sqrt{}$	\checkmark		\checkmark						$\sqrt{}$	
CO6		$\sqrt{}$			V						V	

COURSE DETAILS

COURSE NAME	E-Commerce
COURSE CODE	IT793A
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2											V	
CO3				V								
CO4		V	V	V				V		V		

COURSE DETAILS

COURSE NAME	Industrial Training
COURSE CODE	IT 7 94
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												$\sqrt{}$
CO2					V							
CO3												
CO4												

COURSE DETAILS

COURSE NAME	Project-1
COURSE CODE	IT795
NAME OF THE PROGRAMME	B.Tech
DEPARTMENT	Information Technology
SEMESTER	7

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3		V	V									
CO4			1	1								
CO5							$\sqrt{}$				$\sqrt{}$	
CO6									$\sqrt{}$		$\sqrt{}$	

Paper Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	CO1	0.81											
	CO2		0.72	0.72									
BS PH-101	CO3	0.75			0.75								
BS PH-101	CO4					0.83							
	CO5		0.69		0.69								
	CO6			0.79	0.79								
	CO1	0.75	0.75										
BS-M(101)	CO2	0.9		0.9									
	CO3	0.72	0.72										
ES-EE101	CO1	0.7	0.7										
E9-EE101	CO2	0.75											

	CO3	0.7					0.7		
	CO1			0.72	0.72				
	CO ₂			0.8	0.8				
BS PH-191	CO3			0.78	0.78				
	CO4		0.85	0.85	0.85				
	CO5		0.75	0.75					
	CO1	0.75							
ES-EE191	CO2		0.65	0.65					
	CO3		0.7	0.7			0.7		
	CO1			0.7					
	CO2	0.7		0.7					
ES - ME 192	CO3			0.65					
	CO4	0.7	0.7						
	CO1		0.69	0.69					
	CO2	0.72							
BS CH-201	CO3	0.78							
	CO4	0.81							
	CO5			0.82	0.82	0.82			
	CO1	0.9							
	CO2	0.75	0.75	0.75					
BS-M201	CO3					0.7			
	CO4							0.85	
	CO1		0.7	0.7					
	CO2	0.6	0.6	0.6					
ES-CS201	CO3	0.7	0.7	0.7	0.7	0.7			
	CO4		0.65		0.65				
	CO1	0.62						0.62	
	CO2	0.58							
HM-HU201	CO3	0.75	0.75						
	CO4	0.64	0.64						
	CO1		0.72	0.72					
	CO2			0.78	0.78		0.78		
BS CH-291	CO3		0.83	0.83	01.0		01.0		
25 011 27 1	CO4		0.76	0.76					
	CO5		0.84	0.84					
	CO1		0.9						
	CO2			0.9					
	CO3			0.8					
	CO4		0.85	0.85					
ES-CS291	CO5			0.9					
	CO6			0.8					
	CO7		0.75	0.75					
	CO8			0.8					
	CO1	0.75							
ES-ME291	CO2	0.7		0.7					
	002	0.7		0.7					<u> </u>

	CO3	0.65									
	CO4	0.65	0.65								
	CO1	0.55									
	CO2								0.54		
HM-HU291	CO3		0.77	0.77							
	CO4	0.67	0.67								
	CO1	0.6		0.6							
ESC301	CO2	0.62	0.62	0.62							
	CO3		0.55	0.55							
	CO1	0.79	0.79								
	CO2		0.83	0.83							
PCC-CS301	CO3			0.8	0.8						
	CO4		0.82		0.82						
	CO5		0.71	0.71							
	CO1	0.7	0.7								
DOG OGAMA	CO2			0.75							
PCC-CS302	CO3		0.7		0.7						
	CO4			0.65	0.65	0.65					
	CO1	0.7	0.7								
	CO2	0.72	0.72	0.72							
BSC-301	CO3			0.75	0.75						
	CO4			0.7	0.7						
	CO5		0.74			0.74					
	CO1		0.58	0.58							
HSMC 301	CO2		0.59							0.59	0.59
	CO3						0.61				
	CO1			0.7							
ESC391	CO2			0.65	0.65						
	CO3			0.7							
	CO1	0.85		0.85		0.85					
PCC-CS391	CO2	0.8		0.8		0.8					
	CO3				0.82	0.82					0.82
	CO1		0.8								
	CO2			0.8							
PCC CS-392	CO3			0.8		0.8					
	CO4			0.8		0.8					
	CO1	0.83				0.83					
	CO2		0.85	0.85				0.85			
PCC-CS393	CO3	0.82		0.82		0.82					
	CO4	0.74	0.74	0.74	0.74						
	CO1	0.75									
	CO2	0.8	0.8								
PCC-CS401							+	1			
エンレーしょりやけょ	CO3	0.75	0.75						,		
100-05401	CO3	0.75	0.75								

	CO1	0.75	0.75	0.75		0.75							
PCC-CS402	CO2	0.85	0.85	0.85		0.85							
	CO3	0.8	0.8	0.8	0.8	0.8						0.8	
	CO1	0.7											
	CO2		0.65	0.65									
PCC-CS403	CO3			0.75									
	CO4				0.65								0.65
	CO1	0.85	0.85										
	CO2		0.75	0.75									
	CO3		0.7	0.7									
DOG GGAAA	CO4		0.8	0.8									
PCC-CS404	CO5		0.85	0.85									
	CO6		0.7	0.7									
	CO7		0.7			0.7							
	CO8		0.65			0.65							
	CO1	0.82	0.82		0.82								
	CO2	0.81	0.81										
DCC 404	CO3		0.78		0.78								
BSC 401	CO4		0.83		0.83								
	CO5		0.75	0.75				0.75					
	CO6	0.79	0.79										
	CO1			0.8			0.8	0.8					
	CO2			0.82			0.82	0.82					
N.C. 404	CO3			0.84		0.84	0.84	0.84					
MC 401	CO4			0.8	0.8			0.8					
	CO5		0.88	0.88				0.88	0.88	0	.88		
	CO6						0.89	0.89	0.89	0	.89		
DGG GG 404	CO1		0.95	0.95		0.95							
PCC-CS 492	CO2		0.85	0.85									
	CO1			0.85	0.85								
	CO2		0.7									0.7	
PCC-CS494	CO3			0.7		0.7							
	CO4			0.75	0.75							0.75	
	CO5		0.6	0.6									
	CO1	0.85	0.85	0.85									
	CO2	0.8	0.8										
ESC-501	CO3			0.9		0.9							
	CO4	0.7											
	CO5			0.65	0.65	0.65						0.65	
	CO1	0.9	0.9	0.9									
DOG GGEO4	CO2			0.85		0.85							
PCC-CS501	CO3			0.8							0.8		
	CO4			0.75	0.75								
PCC-CS502	CO1	0.6	0.6										

	CO2		0.7	0.7	0.7							ĺ	
	CO3	0.65		0.65									0.65
	CO4		0.6		0.6								
	CO1	0.7	0.7										
DCC CCE02	CO2			0.8	0.8								
PCC-CS503	CO3		0.65	0.65	0.65								
	CO4			0.8		0.8							
	CO1	0.59	0.59					0.59					
HSMC 501	CO2		0.61	0.61									
	CO3		0.62								0.62		
	CO1	0.6				0.6	0.6						
	CO2			0.7	0.7						0.7		
PEC-IT501B	CO3							0.75					
	CO4		0.7					0.7					
	CO5			0.6	0.6						0.6		
	CO1	0.7		0.7								0.7	
	CO2	0.85	0.85										
PEC-IT501C	CO3	0.75	0.75										
	CO4		0.7	0.7	0.7								
	CO5		0.65	0.65		0.65							
MC-CS501	CO1								0.72	0.72	0.72		0.72
	CO1	0.85	0.85										
FGG 501	CO2	0.9		0.9		0.9							
ESC-591	CO3			0.6	0.6								
	CO4	0.75	0.75										
	CO1	0.6		0.6									
PCC-CS592	CO2	0.7		0.7									
	CO3	0.65		0.65									
	CO1	0.93				0.93							
PCC-CS593	CO2	0.92		0.92		0.92							
	CO3			0.95	0.95	0.95							0.95
	CO1	0.8	0.8			0.8							
	CO2		0.75	0.75	0.75								
PCC-CS601	CO3		0.7		0.7								
FCC-CS001	CO4		0.75	0.75									
	CO5	0.7		0.7									
	CO6		0.65				0.65						0.65
	CO1	0.7	0.7	0.7	0.7								
PCC-CS602	CO2		0.7	0.7	0.7								
	CO3		0.75		0.75	0.75							0.75
	CO1		0.7		0.7								
PEC-IT601D	CO2									0.72			
LEC-11001D	CO3												0.8
	CO4		0.6					0.6					

	CO5		0.75					0.75					
	CO1							0.6					
	CO2		0.7		0.7								
PEC-IT602D	CO3	0.75				0.75	0.75					0.75	
	CO4	0.7				0.7	0.7						
	CO5				0.6								
	CO1				0.75								
	CO2				0.6								
0.70.77.017	CO3	0.7				0.7	0.7					0.7	
OEC-IT601B	CO4								0.75				
	CO5		0.6										
	CO6			0.6	0.6								
	CO1		0.78										
	CO2				0.82	0.82							
DDOL CCC01	CO3								0.67				
PROJ-CS601	CO4						0.79						
	CO5						0.75						
	CO6							0.85					
	CO1	0.8		0.8		0.8							
	CO2			0.75		0.75							
PCC-CS691	CO3			0.7		0.7							
	CO4			0.75		0.75							
	CO5	0.7				0.7							0.7
	CO1		0.9										
PCC-CS692	CO2	0.9	0.9										
1 CC-CS072	CO3			0.9									
	CO4			0.8	0.8								
	CO1		0.85										
PEC-IT701C	CO2	0.75	0.75										
TEC-II/OIC	CO3	0.65						0.65					
	CO4												0.7
	CO1	0.77	0.77	0.77									
PEC-IT702A	CO2			0.76	0.76	0.76							
1 EC-11 / 02A	CO3					0.73							
	CO4			0.72		0.72						0.72	
	CO1						0.83						
OEC-IT701C	CO2									0.81			0.81
OEC-11701C	CO3								0.74	0.74			
	CO4						0.68				0.68		
	CO1						0.58	0.58					
HSMC 701	CO2										0.59	0.59	0.59
	CO3		0.6									0.6	0.6
PROJ-IT 781	CO1				0.77					0.77			
1 WOJ-11 /01	CO2		0.78							0.78	0.78		

	CO3		0.8	0.8									
	CO4			0.81	0.81								
	CO5							0.82				0.82	
	CO6									0.82	0.82	0.82	
	CO1		0.8										
PEC-IT801B	CO2		0.8	0.8									
PEC-11801B	CO3		0.81										
	CO4			0.85	0.85								
	CO1							0.55					
	CO2		0.5					0.5					
OEC-IT801A	CO3				0.6								
	CO4				0.55								
	CO5				0.5								
	CO1		0.84										
	CO2		0.65	0.65		0.65							
OEC-IT802A	CO3					0.75							0.75
	CO4			0.72	0.72								
	CO1			0.78		0.78						0.78	
	CO2					0.82				0.82			
DD O I CC 001	CO3					0.81		0.81		0.81			
PROJ CS 881	CO4								0.8			0.8	0.8
	CO5									0.82	0.82		
	CO6						0.85	0.85	0.85			0.85	0.85
Average PO													
Attainment		0.74	0.74	0.75	0.73	0.78	0.75	0.73	0.79	0.79	0.73	0.73	0.73
		74%	74%	75%	73%	78%	75%	73%	79%	79%	73%	73%	73%

Department: Computer Science & Engineering PO Attainment of 2022-23

Data structure and		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
algorithm	CO1	101	0.84	0.84	10.	100	100	107	100	107	1010	1011	
PCC-CS301	CO2		0.85	0.85									
	CO3			0.88		0.88							
	CO4			0.95		0.95							
Data structure and algorithm	CO1	0.86	0.86	0.86									
Lab PCC- CS391	CO2	0.87	0.87										
1 CC- CS391	CO3		0.88			0.88							
	CO4		0.92			0.92							
Computer Organization	CO1					0.84		0.84					
PCC-CS302	CO2					0.86		0.86					
	CO3									0.87			
	CO4					0.93		0.93					
Computer								-					
Organization Lab PCC-CS392	CO1					0.84		0.84					
	CO2					0.85		0.85					
	CO3									0.87			
	CO4					0.94		0.94					
Compiler Design													
PCC-CS501	CO1	0.84				0.84	0.84						
	CO2					0.85		0.85				0.85	
	CO3		0.86	0.86	0.86						0.86		
	CO4	0.87	0.87			0.87	0.87	0.87				0.87	
	CO5	0.92	0.92			0.92	0.92	0.92				0.92	
Operating													
Systems PCC- CS502	CO1					0.84		0.84					
	CO2			0.85	0.85						0.85		
	CO3			0.88	0.88			0.88			0.88		
Operating Systems Lab													
PCC-CS592	CO1		0.85										
	CO2			0.86	0.86						0.86		
	CO3			0.87	0.87						0.87		

	CO4				0.90							
Object Oriented												
Programming	CO1		0.81	0.81								
PCC-CS503	COA		0.04	0.04								
	CO2		0.84	0.84								
	CO3			0.88		0.88						
	CO4			0.93		0.93						
Object Oriented												
Programming Lab	CO1	0.84	0.84	0.84								
PCC-CS593				0.01								
1 00-05373	CO2	0.87	0.87									
	CO3		0.90			0.90						
	CO4		0.95			0.95						
Software												
Engineering ESC 501	CO1	0.81				0.81	0.81				0.81	
	CO2			0.83	0.83					0.83		
	CO3					0.86		0.86				
	CO4					0.87		0.87				
HSMC301												
Economics for Engineers	CO1		0.83		0.83							
	CO2		0.86		0.86							
	CO3							0.89				0.89
Artificial Intelligence PEC-IT501B												
rec-11301b	CO1	0.84				0.84					0.84	
	CO2			0.86	0.86					0.86		
	CO3					0.94		0.94				
Industrial Management HSMC501,												
,	CO1		0.77		0.77							

	CO2	0.87		0.87					
	CO3	0.91				0.91			
	COS	0.51				0.71			
Introduction to									
Philosophical Thoughts	CO1	0.77							
PEC-IT501B	CO2	0.86							
	CO3	0.87		0.87					
Cloud Computing PEC-CS701B									
	CO1					0.87			
	CO2					0.88			
	CO3	0.91							
Cyber Security PEC-CS 702E									
	CO1	0.88		0.88					0.88
	CO2		0.89	0.89					
	CO3			0.91					
Project Management and Interpreneurship (HSMC701)									
	CO1	0.77		0.77					
	CO2	0.86		0.86					
	CO3	0.89							0.89
Design and Analysis of Algorithms PCC-CS404									
	CO1	0.83							
	CO2	0.84	0.84	0.84				0.84	
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	CO3				0.85	0.85		
	CO4		0.86	0.86			0.86	0.86
	CO5				0.93	0.93		
Design and Analysis of Algorithm Lab PCC- CS494								
C5424	CO1		0.86	0.86			0.86	
	CO2		0.87	0.87			0.87	
	CO3		0.88	0.88			0.88	
	CO4		0.90	0.90			0.90	
	CO5		0.91	0.91			0.91	
	CO6		0.93	0.93			0.93	
Computer								
Architecture PCC-CS402	CO1		0.83	0.83			0.83	
	CO2		0.85	0.85			0.85	
	CO3				0.93	0.93		
Computer Architecture Lab								
PCC-CS492	CO1		0.85	0.85			0.85	
	CO2		0.90	0.90			0.90	
	CO3				0.93	0.93		
Formal Language & Automata								
PCC-CS403	CO1	0.82						
	CO2		0.85	0.85			0.85	
	CO3				0.85	0.85		
	CO4		0.86	0.86			0.86	
	CO5				0.86	0.86		
	CO6	0.88						
	CO7							0.88

				1	1							
	CO1		0.85									
DBMS												
PCC-CS601	CO2			0.86	0.86					0.86		
	CO3		0.94									
	CO4				0.96							
	CO1					0.83		0.83				
DBMS LAB												
	CO2		0.86							0.86		
	CO3	0.91				0.91	0.91				0.91	
		0.52				0.52					0.52	
	CO4							0.95				
	CO1			0.83		0.83						
Computer Networks												
PCC-CS602	CO2	0.86	0.86			0.86						
	CO3				0.88	0.88						
	CO4				0.93	0.93						
ComputerNetworks	CO1		0.81					0.81				
Lab	COI		0.01					0.01				
PCC-CS692	CO2		0.85		0.85							
	CO3							0.88				
	CO4				0.93							
	CO1		0.81									
PROJ-CS601	CO2		0.92		0.92							
			0.92		0.92							
	CO3							0.93				
				0.5-		0.0-						
Image Processing PEC-IT601D	CO1			0.83		0.83						
120110010	CO2	0.85	0.85			0.85						
	CO3				0.93	0.93						
	CO4				0.94	0.94						
	004				0.94	U.94						
											<u> </u>	

	CO1				<u> </u>	Λ 01		0.01	1		
	CO1					0.81		0.81			
Pattern Recognition	CO2		0.83		0.83						
	CO3	0.84				0.84	0.84			0.84	
	CO4	0.85				0.85	0.85			0.85	
	CO5				0.86						
OEC-IT601B											
	CO1		0.83		0.83			0.83			
	CO2		0.85		0.85			0.85			
	CO3							0.89			0.89
Cryptography & Network Security	CO1		0.81								
CS801D	CO2		0.82		0.82						
	CO3	0.84	0.84				0.84	0.84			
	CO4		0.91		0.91						
	CO5		0.93								
E-Commerce & ERP OEC-CS802A											
	CO1				0.80						
	CO2					0.83		0.83			
	CO3	0.86				0.86	0.86			0.86	
	CO4					0.87		0.87			
	CO5	0.88				0.88	0.88			0.88	
Soft Skill											
&Interpersonal Communication	CO1							0.80			
OEC-CS801E,	CO2										0.83
	CO3							0.87			
BIOLOGY (BSC- 401)											
	CO1					0.83		0.83			
	CO2				0.85			0.85			0.85
	CO3			0.87							0.87
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	CO4												0.88
	CO5		0.89										
Average PO attainment		0.85	0.85	0.86	0.86	0.87	0.86	0.87	0	0.87	0.86	0.86	0.87
% Po attainment		85%	85%	86 %	86%	87%	86%	87%	0%	87%	86%	86%	87%

MBA CO PO Mapping

2022 Odd and 2023 Even Semester

Paper	COs	PO1	PO2	PO3	PO4	PO5
Name						
	CO1	0.75	0.75			0.75
MB 101	CO2		0.66			
	CO1	0.71	0.71		0.71	
MB 102	CO2		0.55		0.55	
	CO1	0.78				
MB 103	CO2	0.71	0.71			0.71
MB 104	CO1		0.61		0.61	
	CO2		0.56		0.56	
	CO1				0.71	0.71
MB 105	CO2	0.71			0.71	
	CO1	0.47				
MB 106	CO2	0.56				
	CO1	0.61				
MB 201	CO2	0.56	0.56			
	CO1	0.6				
MB 202	CO2	0.56	0.56			
	CO1	0.66				
MB 203	CO2		0.58			
	CO1	0.62				
MB 204	CO2	0.54	0.54			
	CO1			0.68		
MB 205	CO2			0.57		
	CO1	0.74	0.74			
MB 206	CO2		0.66		0.66	
	CO1		0.65			0.65
MB 301	CO2					0.67
	CO1	0.69	0.69			
MB 302	CO2					0.71
	CO1	0.71	0.71			0.71
MB303	CO2	0.72	0.72			0.72
	CO1	0.87				
HR301	CO2		0.6		0.6	
	CO1	0.72	0.72			
HR304	CO2		0.48			
	CO1	0.72		0.72	0.72	
MM302	CO2				0.74	
	CO1	0.7	0.7			
MM303	CO2		0.75	0.75		
	CO1	0.61				
FM302	CO2		0.64			
	CO1	0.53				
FM304	CO2		0.55			
	CO1	0.82				

HR 401	CO2		0.55			
	CO1	0.83				
HR 402	CO2		0.56			
	CO1	0.89				
HR 404	CO2	0.58	0.58			
	CO1	0.66				
HR 406	CO2	0.48	0.48			
	CO1	0.62				
MM401	CO2	0.65	0.65			
	CO1		0.52			
MM403	CO2		0.65		0.65	
	CO1	0.59				
MM404	Co2		0.61			
	CO1	0.51				
MM406	Co2		0.62			
	CO1	0.63	0.63			
OM401	Co2	0.7				
	CO1	0.55				
OM402	Co2	0.6	0.6			
	CO1	0.59				
FM401	CO2	0.62	0.62			
	CO1	0.64	0.64			
FM402	CO2		0.72			
	CO1	0.55				
FM405	CO2		0.59			
	CO1	0.62	0.62		0.62	
FM406	CO2	0.63	0.63			
Average A	ttainment	0.65	0.63	0.68	0.65	0.70
% of Att	ainment	65%	63%	68%	65%	70%