

22EPC301		Electric Circuit Theory	III
COURSE OUTCOMES At the end of the course, students will be able to			PO's Mapped
C01	Explain the fundamental principles of electrical circuits including passive elements, circuit laws, network theorems, transient behaviour, AC circuit concepts, resonance, coupled circuits, polyphase systems, and two-port networks used in electrical engineering applications.		-
C02	Apply circuit analysis techniques including Kirchhoff's laws, nodal analysis, mesh analysis, source transformation, network theorems, phasor analysis, and transient response methods to determine electrical quantities in DC and AC circuits.		PO1
C03	Analyze the steady-state and transient performance of linear electrical circuits by evaluating voltage, current, power, resonance characteristics, power factor, coupled circuits, and balanced and unbalanced three-phase systems.		PO2
C04	Design filter circuits and evaluate electrical circuit solutions by selecting appropriate circuit analysis methods, resonance conditions, and equivalent network representations for practical engineering applications.		PO3
C05	Synthesize one port network by utilizing Hurwitz Polynomial, Positive Real Function and appropriate circuit analysis techniques. Attempt two-port network representations and three-phase circuit models for practical electrical engineering applications. (Case Studies/Tutorials)		PO4, PO8, PO9, PO11
C06	Engage in self-learning by utilizing simulation tools and modern computational techniques to model, analyse, validate, and interpret the behaviour of electrical circuits and networks for real-world engineering applications. (Case Studies/Seminars/Simulation Exercises)		PO5, PO8, PO9, PO11

	COURSE ARTICULATION MATRIX:													
	CO and PO Mapping:													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	3		-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	3	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	3	-	-	-	2	3	-	2	3	-	-
CO6	-	-	-	-	3	-	-	2	3	-	2	3	-	-
22EPC301	3	3	3	3	3	-	-	2	3	-	2	3	-	-
	1 – Slight, 2 – Moderate, 3 – Substantial													

III SEMESTER

P03

a) CO and PO Mapping

1 – Slight, 2 – Moderate, 3 – Substantial

22EPC303	Electronic Devices and Circuits	SEMESTER III
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COURSE OUTCOMES: On completion of the course, the students will be able to:		POs Mapped
CO1	Explain the construction, operating principles and characteristics of semiconductor devices for electronic circuit applications.	PO1, PSO1
CO2	Analyze the characteristics and equivalent circuit models of semiconductor devices in electronic circuits.	PO2, PO4, PSO2
CO3	Simulate the amplifier circuits, frequency response, feedback techniques and oscillator circuits to understand its performance	PO4, PO5, PSO2
CO4	Design suitable electronic circuits such as rectifiers, amplifiers, biasing networks and feedback circuits to meet specified engineering requirements.	PO3, PO5, PO6 PSO2
CO5	Evaluate the characteristics, operation and suitability of power electronic devices, optoelectronic devices and emerging semiconductor materials for real time applications.	PO2, PO6, PO11, PSO3

COURSE ARTICULATION MATRIX :

a) CO and PO Mapping														
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	3	-	2	-	-	-	-	-	-	-	-	3	-
CO3	-	-	-	2	3	-	-	-	-	-	-	-	3	-
CO4	-	-	3	-	2	2	-	-	-	-	-	-	3	-
CO5	-	2	-	-	-	2	-	-	-	-	2	-	-	3
22EPC303	3	3	3	2	3	2					2	3	3	3

1 – Slight, 2 – Moderate, 3 – Substantial

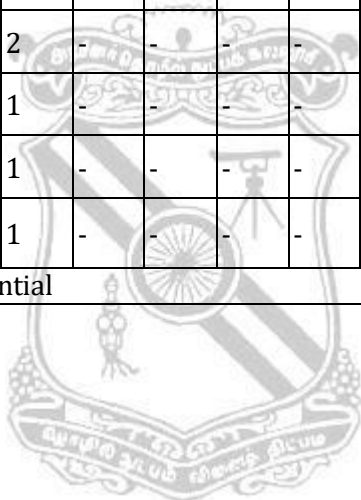
22EPC304	ELECTRICAL MACHINES-I	SEMESTER III
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COURSE OUTCOMES:		Bloom's Taxonomy Mapped	PO
Upon completion of the course, the students will be able to:			
CO1	Apply basic laws of electromagnetic principles for static and dynamic electric machines.	K1	2,3,4,5,10,11
CO2	Analyze the performance of electrical machines for the different level of utilization in Industries.	K4	5,10,11
CO3	Identify suitable machines for any specific application.	K6	5,11
CO4	Perform testing of the electrical machines and validate through Simulation.	K3	5,10,11
CO5	Evaluate the performance of electrical machines through suitable experiments.	K5	5,11

COURSE ARTICULATION MATRIX:

a) CO and PO Mapping														
COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O 1	PSO 2	PSO 3
CO1	3	2	2	2	1	-	-	-	-	1	1	3	2	2
CO2	3	3	3	3	1	-	-	-	-	1	1	3	3	3
CO3	3	2	2	2	2	-	-	-	-	-	1	3	2	2
CO4	2	2	2	3	1	-	-	-	-	1	1	2	2	2
CO5	2	2	1	3	1	-	-	-	-	-	1	2	2	1
22EPC 304	3	2	2	3	1	-	-	-	-	1	1	3	2	2

1-Slight,2-Moderate,3-Substantial



22EPC306	ELECTRIC CIRCUITS AND ELECTRONIC DEVICES LABORATORY	SEMESTER III
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COURSE OUTCOMES: On completion of the course, the students will be able to:		Bloom's Taxonomy Mapped	POs mapped
CO1	Apply fundamental electrical laws, network theorems and measurement techniques to analyze DC and AC electrical circuits.	K2	PO1,PO2
CO2	Investigate the operation and performance of practical electrical and electronic circuits.	K3	PO1,PO2,PO4
CO3	Analyze the characteristics and applications of semiconductor devices including diodes, Zener diode, BJT, UJT and FET.	K3	PO1,PO2,PO4
CO4	Utilize technical software tools to model, simulate and analyze electrical/electronic circuits	K2	PO1,PO2,PO4,P O5
CO5	Apply engineering practices to electrical and electronic laboratory experiments by considering societal requirements, environmental sustainability, and efficient utilization of equipment, and resources	K3	PO6, PO7, PO10

COURSE ARTICULATION MATRIX:

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO1	PSO 2	PSO 3
CO1	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	-	3	-	-	-	-	-	-	-	-	3	-
CO3	3	3	-	3	-	-	-	-	-	-	-	-	3	-
CO4	2	2	-	3	3	-	-	-	-	-	-	-	3	-
CO5	-	-	-	-	-	2	2	-	-	2	-	-	2	2
	3	3	-	3	3	2	2	-	-	2	-	3	3	2

22EPC307	ELECTRICAL MACHINES LABORATORY – I	SEMESTER III
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PREREQUISITES :	CATEGORY	L	T	P	C
NIL	PC	0	0	3	1.5

COURSE OUTCOMES:		POs Mapped
Upon completion of the course, the students will be able to:		
CO1	Perform standard tests on DC generators, DC motors, and single-phase transformers by following appropriate laboratory procedures and safety practices.	PO1
CO2	Analyze the operating characteristics of DC machines and transformer connections under different loading conditions and interpret the experimental results.	PO2
CO3	Evaluate the performance of DC machines and transformers by comparing the results obtained from direct and indirect testing methods.	PO3, PSO2
CO4	Design and conduct suitable experimental procedures to estimate machine parameters, separate losses, validate performance characteristics, and prepare technical reports with justified conclusions.	PO4
CO5	Work effectively as an individual and as a member of a laboratory team to conduct experiments, interpret results, and communicate technical findings on DC machines and transformers.	PO8, PSO3

COURSE ARTICULATION MATRIX :

a) CO and PO Mapping

COs / POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3
22EPC 307	3	3	3	3	-	-	-	3	-	-	-	-	-	3	3

1 – Slight, 2 – Moderate, 3 – Substantial

22EPC516	POWER ELECTRONICS	SEMESTER V
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COURSE OUTCOMES: On completion of the course, the students will be able to:		Bloom's Taxonomy Mapped	POs mapped
CO1	Understand the characteristics, switching behaviour, ratings, protection and driving requirements of power semiconductor devices and their role in power conversion systems	K2	-
CO2	Analyze different power electronic converter topologies and their operating modes for AC–DC, DC–DC, DC–AC and AC–AC power conversion under various load and supply conditions.	K4	PO1,PO2,PO3
CO3	Apply suitable control, modulation and commutation techniques for efficient regulation of power electronic converters.	K3	PO1,PO3
CO4	Evaluate the performance of power electronic converters in terms of output voltage/current, power quality, harmonics, efficiency and device stresses.	K4	PO2,PO4,PO5
CO5	Critically review recent research publications on power electronic converter applications, analyze their methodologies and contributions, and evaluate their practical significance in renewable energy, electric vehicles, motor drives, HVDC, STATCOM, and industrial power systems	K4	PO4, PO9, PO11

COURSE ARTICULATION MATRIX:

COs/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO1	PSO 2	PSO 3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	-	-	-	-	-	-	-	-	2	3	-
CO3	3	-	3	-	-	-	-	-	-	-	-	-	3	-
CO4	-	3	-	3	2	-	-	-	-	-	-	2	3	2
CO5	-	-	-	3	-	-	-	-	2	-	2	-	2	2
22EPC 516	3	3	2	3	2	-	-	-	2	-	2	2	3	2

22EPC518	MICROPROCESSORS, MICROCONTROLLERS AND APPLICATIONS	SEMESTER V
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PREREQUISITES	CATEGORY	L	T	P	C
	PC	0	0	3	1.5

COURSE OUTCOMES: On completion of the course, the students will be able to:		POs Mapped
CO1	Apply assembly language and embedded C programs to solve arithmetic algorithms, logical operations, delay routines and basic code conversions.	PO1,PSO1
CO2	Analyze peripheral interface techniques using special function registers and timers	PO1,PO2,PO4,PSO2
CO3	Simulate the execution programs using instruction sets of the target microcontroller to capture execution states and binary operations	PO4,PO5,PSO2
CO4	Evaluate performance of algorithms and peripheral interface in hardware.	PO3,PO5,PO6,PSO2
CO5	Design and assemble integrated hardware/software solutions to address real time applications.	PO2,PO6,PO11, PSO3

COURSE ARTICULATION MATRIX :

a) CO and PO Mapping														
COs /POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PSO 1	PSO 2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	-	2	-	-	-	-	-	-	-	-	3	-
CO3	-	-	-	2	3	-	-	-	-	-	-	-	3	-
CO4	-	-	3	-	2	2	-	-	-	-	-	-	3	-
CO5	-	2	-	-	-	2	-	-	-	-	2	-	-	3
22EPC518	3	2.5	3	2	2.5	2	-	-	-	-	2	3	3	3

1 – Slight, 2 – Moderate, 3 – Substantial

22EPC724	POWER SYSTEM LABORATORY	SEMESTER VII
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PREREQUISITES	CATEGORY	L	T	P	C
	PC	0	0	3	1.5

COURSE OUTCOMES: On completion of the course, the students will be able to:		POs Mapped
CO1	Apply power system modeling techniques to compute transmission line parameters, form bus admittance/impedance matrices, and perform load flow analysis using Gauss–Seidel, Newton–Raphson, and Fast-Decoupled methods.	PO1, PSO1
CO2	Analyze the performance of power systems under balanced and unbalanced faults, stability conditions, and load–frequency control using simulation tools.	PO2, PSO2
CO3	Evaluate the operational performance of power systems through economic dispatch, unit commitment, and voltage control techniques to ensure reliable and economical operation.	PO3, PSO3
CO4	Develop simulation models to investigate the characteristics of solar photovoltaic systems, wind energy conversion systems, and power quality phenomena in modern power systems.	PO4
CO5	Work as a team and develop solutions for Power system problems using modern simulation tools.	PO5, PO8, PO9, PO11, PSO1, PSO2, PSO3

COURSE ARTICULATION MATRIX :

a) CO and PO Mapping														
COs /POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	3	-	-	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	-	-	-	-	-	-	-	-	-	-	3
CO4	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	3	-	-	3	3	-	3	-	-	-
22EPC724	3	3	3	3	3	-	-	3	3	-	3	3	3	3

1 – Slight, 2 – Moderate, 3 – Substantial