	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205				
Programme	**B.E. / B.Tech.**	Programme Code	----	Regulation	**2015**
Department	**----**			Semester	**I**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 - 2016onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15EN101	English for Communication – I*	HS	3	0	2	4	50	50	100
U15MA101	Calculus*	BS	4	0	0	4	50	50	100
U15PH101	Physics- I*	BS	3	0	0	3	50	50	100
U15CH101	Chemistry*	BS	3	0	0	3	50	50	100
U15CS101	Fundamentals of Computing and C Programming*	ES	3	0	0	3	50	50	100
U15GE101	Engineering Graphics*	ES	2	0	4	4	50	50	100
PRACTICAL									
U15PC101	Physics and Chemistry Laboratory*	BS	0	0	2	-	-	-	-
U15CS102	Computer Programming in C Laboratory*	ES	0	0	4	2	50	50	100
U15GE102	Engineering Practices Laboratory*	ES	0	0	4	2	50	50	100
					Total Credits	**25**	**400**	**400**	**800**

CA - Continuous Assessment, ESE - End Semester Examination, BS - Basic Sciences, ES - Engineering Sciences, HS - Humanities and Social Sciences

* Common Syllabus for CSE, EEE, ECE, IT & BT

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Programme	**B.E. / B.Tech.**	Programme Code	---	Regulation	**2015**
Department	**---**			Semester	**II**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15EN202	English for Communication- II*	HS	3	0	2	4	50	50	100
U15MA202	Linear Algebra ,Vector Calculus,and Laplace Transforms*	BS	4	0	0	4	50	50	100
U15PH202	Physics – II*	BS	3	0	0	3	50	50	100
U15CH202	Environmental Science and Engineering +	HS	3	0	0	3	50	50	100
U15CS203	Object Oriented Programming+	ES	3	0	0	3	50	50	100
U15GE203	Basic Civil and Mechanical Engineering*	ES	3	0	0	3	50	50	100
PRACTICAL									
U15CS204	Object Oriented Programming Laboratory+	ES	0	0	4	2	50	50	100
U15PC101	Physics and Chemistry Laboratory*	BS	0	0	4	2	50	50	100
					Total Credit	**24**	**400**	**400**	**800**

CA - Continuous Assessment, ESE - End Semester Examination,BS - Basic Sciences, ES - Engineering Sciences, HS - Humanities and Social Sciences

* Common Syllabus for CSE, EEE, ECE, IT& BT

\+ Syllabus for CSE, EEE, ECE, IT

\# Syllabus only for BT

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15MA304	Complex Analysis and Partial Differential Equations	BS	3	2	0	4	50	50	100
U15CS305	Data Structures	ES	3	0	0	3	50	50	100
U15EE301	Electron Devices and Circuits	PC	3	0	0	3	50	50	100
U15EE302	Electromagnetic Field	PC	4	0	0	4	50	50	100
U15EE303	Electric Circuit Theory	PC	4	0	0	4	50	50	100
U15EE304	Electrical Measurements and Instrumentation	PC	3	0	0	3	50	50	100
PRACTICAL									
U15EE305	Electric Circuits Laboratory	PC	0	0	4	2	50	50	100
U15EE306	Electronic Devices and Circuits Laboratory	PC	0	0	4	2	50	50	100
					Total Credit	**25**	**400**	**400**	**800**

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**IV**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15MA406	Numerical Methods	BS	3	2	0	4	50	50	100
U15EE410	Linear Integrated Circuits	PC	3	0	0	3	50	50	100
U15EE411	Control Systems	PC	3	0	0	3	50	50	100
U15EE412	Digital Electronics	PC	3	0	0	3	50	50	100
U15EE413	Electrical Machines – I	PC	4	0	0	4	50	50	100
PRACTICAL									
U15EE414	Integrated Circuits laboratory	PC	0	0	4	2	50	50	100
U15EE415	Electrical Machines - I Laboratory	PC	0	0	4	2	50	50	100
U15EE416	Control Systems and Instrumentation Laboratory	PC	0	0	4	2	50	50	100
					Total Credit	**23**	**400**	**400**	**800**

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**V**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15BA501	Principles of Management	HS	3	0	0	3	50	50	100
U15EE517	Electrical Machines – II	PC	4	0	0	4	50	50	100
U15EE518	Power Electronics	PC	3	0	0	3	50	50	100
U15EE519	Transmission and Distribution of Electrical Energy	PC	3	0	0	3	50	50	100
U15EC520	Digital Signal Processing	ES	3	0	0	3	50	50	100
	Professional Elective-I	PE	3	0	0	3	50	50	100
PRACTICAL									
U15EE520	Electrical Machines - II Laboratory	PC	0	0	4	2	50	50	100
U15EE521	Power Electronics Laboratory	PC	0	0	4	2	50	50	100
U15EN503	Communication Skills Laboratory	EEC	0	0	2	1	100	-	100
					Total Credit	**24**	**500**	**400**	**900**

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**VI**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15EE622	Power System Protection and Switchgear	PC	3	0	0	3	50	50	100
U15EE623	Power System Analysis	PC	3	0	0	3	50	50	100
U15EE624	Microprocessors and Microcontrollers	PC	3	0	0	3	50	50	100
U15EE625	Solid State Drives	PC	3	0	0	3	50	50	100
	Professional Elective-II	PE	3	0	0	3	50	50	100
	Professional Elective-III	PE	3	0	0	3	50	50	100
PRACTICAL									
U15EE626	Microprocessors and Microcontrollers Laboratory	PC	0	0	4	2	50	50	100
U15EE627	Electric Drives and Control Laboratory	PC	0	0	4	2	50	50	100
U15EE628	Communication and Technical Report writing	EEC	0	0	2	1	100	-	100
					Total Credit	**23**	**500**	**400**	**900**

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**				
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**VII**				
CURRICULUM (Applicable to the students admitted from the academic year 2015 – 2016 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
U15EE729	Power System Economics and Control Techniques	PC	3	0	0	3	50	50	100
U15EE730	Utilization Of Electrical Energy	PC	3	0	0	3	50	50	100
U15EE731	Flexible AC Transmission Systems	PC	3	0	0	3	50	50	100
	Professional Elective-IV	PE	3	0	0	3	50	50	100
	Professional Elective-V	PE	3	0	0	3	50	50	100
	Open elective-I	OE	3	0	0	3	50	50	100
PRACTICAL									
U15EE732	Electrical Simulation Laboratory	PC	0	0	4	2	50	50	100
U15EE733	Internship Training	EEC	0	0	8	4	100	-	100
					Total Credit	**24**	**450**	**350**	**800**

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**				
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**VIII**				
CURRICULUM (Applicable to the students admitted from the academic year 2015 – 2016 onwards)									
Course Code	Course Name	Category	Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	ESE	Total
THEORY									
	Professional Elective-VI	PE	3	0	0	3	50	50	100
	Open elective-II	OE	3	0	0	3	50	50	100
PRACTICAL									
U15EE834	Project Work	EEC	0	0	20	10	50	50	100
					Total Credit	**16**	**150**	**150**	**300**

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**-**

CURRICULUM

(Applicable to the students admitted from the academic year 2015 - 2016 onwards)

LIST OF ELECTIVES

Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EEE01	High Voltage Engineering	3	0	0	3	50	50	100
U15EEE02	Computer Architecture	3	0	0	3	50	50	100
U15EEE03	Electrical Safety	3	0	0	3	50	50	100
U15EEE04	Modern Control Systems	3	0	0	3	50	50	100
U15EEE05	Operating Systems	3	0	0	3	50	50	100
U15EEE06	Communication Systems	3	0	0	3	50	50	100
U15EEE07	EHV AC And DC Transmission	3	0	0	3	50	50	100
U15EEE08	Computer Networks	3	0	0	3	50	50	100
U15EEE09	Fuzzy Systems And Genetic Algorithms	3	0	0	3	50	50	100
U15EEE10	Power Generation Systems	3	0	0	3	50	50	100
U15EEE11	VLSI	3	0	0	3	50	50	100
U15EEE12	Power Switching Converters	3	0	0	3	50	50	100
U15EEE13	Digital Control Systems	3	0	0	3	50	50	100
U15EEE14	Embedded System Design	3	0	0	3	50	50	100
U15EEE15	Aircraft Electronic Systems	3	0	0	3	50	50	100

Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EEE16	Design Of Electrical Apparatus	3	0	0	3	50	50	100
U15EEE17	Vehicular Electrical Power Systems	3	0	0	3	50	50	100
U15EEE18	Digital System Design and HDLS	3	0	0	3	50	50	100
U15EEE19	Non Linear Control Systems	3	0	0	3	50	50	100
U15EEE20	Distribution System Automation	3	0	0	3	50	50	100
U15EEE21	Special Electrical Machines	3	0	0	3	50	50	100
U15EEE22	Modern Optimization Techniques for Electric Power Systems	3	0	0	3	50	50	100
U15EEE23	Power System Restructuring	3	0	0	3	50	50	100
U15EEE24	Industrial Automation	3	0	0	3	50	50	100
U15EEE25	Design of PIC Microcontroller	3	0	0	3	50	50	100
U15EEE26	Wind and Solar Electrical Systems	3	0	0	3	50	50	100
U15EEE27	Artificial Neural Networks	3	0	0	3	50	50	100
U15EEE28	Operation Research	3	0	0	3	50	50	100
U15EEE29	Low Power Microcontroller	3	0	0	3	50	50	100
U15EEE30	Applied Signal Processing	3	0	0	3	50	50	100
U15EEE31	Smart Grid	3	0	0	3	50	50	100
U15EEE32	Visual Languages and Applications	3	0	0	3	50	50	100

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Programme	**B.E./ B. Tech**	Programme code		Regulation	**2015**
Department	**ECE , EEE &BT**			Semester	**III**

Course code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15MA304	**Complex Analysis and Partial Differential Equations**	4	0	0	4	50	50	100

Course Objectives

The Main Objective of the course is to

- Identify the skills of the students in areas of analyticity
- understand and find Taylor's series and determine their intervals of convergence and contour integral
- Recognize to understand the concepts in Fourier series
- Proficiently understand the skills of the students in the areas of transform techniques
- Provide information in the areas of boundary value problems

Unit - I	**ANALYTIC FUNCTIONS**	Periods	**9 + 3**

Definition and properties of analytic functions, Cauchy-Riemann equations, Conformal mapping{ 1/z, z^2} - Bilinear transformations- Mapping of transformation w=1/z & $w=z^2$.

Unit - II	**COMPLEX INTEGRATION**	Periods	**9 + 3**

Complex integration, Cauchy's integral theorem and Cauchy's integral formula and for Derivatives - Taylor's and Laurent's Series. Singularities, Types of Singularities. Cauchy's Residue Theorem .Evaluation of real integrals(Unit Circle,Semi Circle excluding poles on real axis).

Unit - III	**FOURIER SERIES**	Periods	**9 + 3**

Periodic functions, Fourier series -Dirichlet's condition- General Fourier series – Odd and Even functions- Half range sine and cosine series- Parseval's identity - Harmonic Analysis - Gibb's Phenomenon .

Unit - IV	**FOURIER TRANSFORM**	Periods	**9 + 3**

Fourier integral theorem (without proof) – Fourier transform pair- Fourier transform of simple functions,Sine and cosine transforms – Parseval's identity,Evaluation of definite integrals.

Unit - V	**PARTIAL DIFFERENTIAL EQUATIONS**	Periods	**9 + 3**

Introduction to PDE, Classification of linear second order PDE in two variables, Modeling of one dimensional wave equations, Solutions of one dimensional Heat and wave equations.

Total Periods: 60

Text Books / References:

1. E. Kreyszig, Advanced Engineering Mathematics (10th Edition), John Wiley (2015).
2. R. V. Churchill and J. W. Brown, Complex variables and applications (9th Edition), McGraw-Hill (2014).
3. R. V. Churchill and J. W. Brown, Fourier series and boundary value problems.(8th Edition), McGraw-Hill

Course Outcomes	The students will be able to • Determine continuity , differentiability, analyticity of a function and find the derivative of the function • Evaluate a contour integral using fundamental theorem of calculus, Cauchy integral formula and compute the residue of a function, find the Taylor's series of a function, determine its circle or annulus of convergence. • Demonstrate the basic concepts in Fourier series, properties, parseval's identity. • Apply the concepts of Fourier Transform • Apply partial differential equation in engineering problems

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Department	**CSE, EEE, ECE & IT**				Semester	**III**		
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15CS305	**Data Structures**	3	0	0	3	50	50	100
Course Objectives	The student should be made, • To have the fundamental knowledge in algorithm analysis • To know different kinds of data structures • To have a knowledge in hashing • To know the different kinds sorting techniques.							
Unit – I	**LINEAR DATA STRUCTURES**					Periods	**9**	
introduction - Abstract Data Types, The list ADT, The Stack ADT, The Queue ADT.								
Unit - II	**TREES**					Periods	**9**	
Preliminaries, Binary Trees, The Search Tree ADT – Binary Search Trees, AVL Trees, Splay Trees, Tree Traversals, B-Trees.								
Unit – III	**HASHING AND PRIORITY QUEUES**					Periods	**9**	
Model and Simple implementations, Binary Heap, Applications of Priority Queues, d-Heaps, Leftist and Skew Heaps.								
Unit - IV	**GRAPH ALGORITHMS**					Periods	**9**	
Definitions, Topological Sort, Shortest Path Algorithms, Network Flow Problems and Minimum Spanning Tree.								
Unit – V	**SORTING AND SEARCHING**					Periods	**9**	
Sorting: Preliminaries, Insertion sort, A Lower Bound for Simple Sorting Algorithms, Shell sort, Heap sort, Merge sort, and Quick sort. Linear Search- Binary Search.								
						Total Periods	**45**	
REFERENCES :								
1.	Mark A. Weiss, "Data Structures & Algorithm Analysis in C++", 2nd Edition, Pearson Education, New Delhi, 2002.							
2.	Gregory L. Heilean,"Data Structures Algorithms, and Object Programming", Tata McGraw Hill, New Delhi, 2002.							
3.	Mark A. Weiss, "Data Structures and Algorithm Analysis in C++", 4th Edition, Prentice Hall, 2012							
4.	S. Sahni, "Data Structures, Algorithms and Applications in C++", 2nd edition, Universities Press, 2005.							
Course Outcomes	At the end of the course, the student should be, • Able to analyze the running time of various algorithms. • Able understand various data structures. • Apply the different data structures to find solutions to the problem. • Able to implement various hashing technique • Able to apply sorting techniques to solve real world problems							

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE301	**Electron Devices and Circuits**	**3**	**0**	**0**	**3**	**50**	**50**	**100**

Course Objectives	• To educate on the construction and working of common electronic devices and to prepare for application areas		
Unit – I	**PN JUNCTION DEVICES**	Periods	**09**
PN junction diode –structure, operation and V-I characteristics, diffusion and transient capacitance - Rectifiers – Half Wave and Full Wave Rectifier,– Display devices- LED, Laser diodes- Zener diodecharacteristics- Zener Reverse characteristics – Zener as regulator			
Unit – II	**TRANSISTORS**	Periods	**09**
BJT, JFET, MOSFET- structure, operation, characteristics and Biasing UJT, Thyristor and IGBT - Structure and characteristics.			
Unit – III	**AMPLIFIERS**	Periods	**09**
BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response – MOSFET small signal model– Analysis of CS and Source follower – Gain and frequency response- High frequency analysis.			
Unit – IV	**MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER**	Periods	**09**
BIMOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FET input stages – Single tuned amplifiers – Gain and frequency response – Neutralization methods, Power amplifiers –Types (Qualitative analysis).			
Unit – V	**FEEDBACK AMPLIFIERS AND OSCILLATORS**	Periods	**09**
Advantages of negative feedback – voltage / current, series , Shunt feedback –positive feedback – Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillators.			
		Total Periods	**45**

TEXT BOOKS

1.	David A. Bell ,"Electronic Devices and Circuits", Prentice Hall of India, 2004.
2.	Sedra and smith, "Microelectronic Circuits "Oxford University Press, 2004.

REFERENCES

1.	Rashid, "Micro Electronic Circuits" Thomson publications, 1999.
2.	Floyd, "Electron Devices" Pearson Asia 5th Edition, 2001.
3.	Donald A Neamen, "Electronic Circuit Analysis and Design" Tata McGraw Hill, 3rd Edition, 2003.
4.	Robert L.Boylestad, "Electronic Devices and Circuit theory", 2002.

5.	Robert B. Northrop, "Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation", CRC Press, 2004
Course Outcomes	Upon completion of course , students will be able to • Understanding the semiconductor physics of the intrinsic, p and n materials and various devices and characteristics • Analyze simple diode circuits under DC and AC excitation • Analyze and design simple amplifier circuits using BJT in CE,CC and CB configurations • Understand the analysis and salient features of CE, CC and CB amplifier circuits. • Understand the construction and characteristics of FET, MOSFET and UJT

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE302	**Electromagnetic field**	**4**	**0**	**0**	**4**	**50**	**50**	**100**

Course Objectives	• Concepts of electrostatics, electrical potential, energy density and their applications. • Concepts of magneto statics, magnetic flux density, scalar and vector potential and its applications. • Faraday's laws, induced emf and their applications in the concepts of electromagnetic waves and pointing vector.

Unit – I	**INTRODUCTION**	Periods	**12**

Scalar and Vector fields – Different co-ordinate systems- vector calculus, gradient, divergence and curl, Laplacian operator. Volume and line integrals, surface integrals, Divergence and Stoke's theorem.

Unit – II	**ELECTROSTATICS**	Periods	**12**

Coulomb's Law and concept of Electric Field -Divergence Theorem and Gauss' Law -Concept of Electrostatic Potential, Poisson's Equation -Energy in the Field, Capacitance -capacitance of common two-plate capacitors, including two-wire capacitors- Dielectrics, dielectric boundary conditions- Solution of Laplace's Equation and Poisson's Equation in 1-D. Capacitance calculations with multiple dielectrics

Unit – III	**MAGNETOSTATICS**	Periods	**12**

Force due to a Magnetic field, Force due to combined Electric and Magnetic fields-Biot-Savart Law, calculation of Magnetic Field for simple coil configurations-Ampere's Law -Magnetic flux, Stokes theorem -Magnetic materials, magnetic boundary conditions -Inductance calculations -Force on a dipole

Unit – IV	**ELECTRODYNAMIC FIELDS**	Periods	**12**

Emf, electromagnetic induction, Faraday's law for a circuit, interpretation of Faraday's emf; self-inductance, inductance of long solenoid, coaxial cylinders, parallel cylinders; mutual inductance; transformers; magnetic energy density.

Unit – V	**ELECTROMAGNETIC WAVES**	Periods	**12**

The Displacement current. Maxwell's Equation -The wave equation in 1-Dimension-Solution of the wave equation. Plane waves -Wave propagation in vacuum and lossy dielectrics-Skin depth and frequency dependence of lumped elements-Energy transport by waves-The Poynting vector -Reflection at boundaries. Normal incidence formula. Impedence matching.

Total Periods	**60**

REFERENCES

1.	Mathew N. O. SADIKU, 'Elements of Electromagnetics', Oxford University press Inc. First India edition, 2007.
2.	J. R. Reitz,F. J. Milford and R. W. Christie, "Foundations of Electromagnetic Theory", Addison Wesley (2008).
3.	Plonsey, R. and Collin, R.E., Principles and Applications of Electromagnetic Fields - McGraw Hill. 1961.
4.	William H. Hayt, Jr. Engineering Electromagnetics - Fifth Edition. TMH.1999

Course Outcomes	Upon completion of the course, the students would be able to • Understand about the scalar and vector fields • Analyze about electrostatics and the various laws associated with it. • Understand about the basics of magneto statics. • Understand about the Electrodynamics Fields and Electromagnetic Waves

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Programme	**B.E.**	Programme Code	102	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE303	**Electric Circuit Theory**	**4**	**0**	**0**	**4**	**50**	**50**	**100**

Course Objectives

- To provide the key concepts and tools in a logical sequence to analyze and understand electrical and electronic circuits

Unit - I	**BASIC CIRCUITS ANALYSIS**	Periods	**12**

Fundamental concepts of R, L and C elements, DC circuits, series and parallel circuits - loop and nodal analysis, A.C circuits - complex impedance - phasor diagram, real and reactive power - loop and nodal analysis applied to AC circuits.

Unit - II	**NETWORK THEOREMS**	Periods	**12**

Voltage source –current source transformations, Various Network theorems (Superposition Theorem – Thevenin's and Norton's Theorem – Maximum Power Transfer Theorem – Reciprocity Theorem) and applications to dc and ac circuits, star-delta transformations.

Unit - III	**RESONANCE AND COUPLED CIRCUITS**	Periods	**12**

Resonance in series and parallel circuits, self and mutual inductances, coefficient of coupling - dot convention - analysis of coupled circuits.

Unit - IV	**THREE PHASE CIRCUITS**	Periods	**12**

Three - phase star and delta circuits with balanced and unbalanced loads power measurements - power factor calculations.

Unit - V	**TRANSIENT RESPONSE FOR DC AND AC CIRCUITS**	Periods	**12**

Time response of RL, RC and RLC circuits for step and sinusoidal inputs.

	Total Periods	**60**

TEXT BOOKS:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", Tata McGraw Hill publishers, 6th edition, New Delhi, 2003.
2. Charles K. Alexander, Matthew N. O. Sadiku, 'Fundamentals of Electric Circuits', McGraw-Hill Publications, 3rd Edition, 2007.

REFERENCES:

1. Joseph. A. Edminister, 'Electric Circuits - Schaum's outline series', McGraw Hill Publications, 6 t h Edi t ion , 2003.
2. Robins & Miller, 'Circuit Analysis Theory and Practice', Delmar Publishers, 5th Edition, 2012.

Course Outcomes

Upon completion of course , students will be able to

- Understand the technical representation of common electrical systems.
- Analyze and compute the time domain behavior of linear (AC and DC) electric circuits with single or multiple power sources
- Compute the performance of AC networks (1 port) which may be 1-phase or 3-phase using phasor analysis.
- Understand flow of real and reactive power components in AC systems.
- Analyze simple electro- magnetic circuits.

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE304	**Electrical Measurements and Instrumentation**	**3**	**0**	**0**	**3**	**50**	**50**	**100**

Course Objectives	• To understand the basic operation of different measuring instruments and thereby able to choose appropriate instruments for measuring different parameters.		
Unit – I	**ELECTRICAL MEASUREMENTS**	Periods	**9**
Measurements – Errors & classification, Measurement of voltage & current- permanent magnet moving coil and moving iron meters, Digital voltmeters and automation, guarding techniques.			
Unit – II	**MEASUREMENT OF POWER AND ENERGY**	Periods	**9**
Measurement of power and energy - dynamometer and induction instruments, kVAh and kVARh meters, maximum demand indicators, digital multi-meters. Instrument transformers – Current and Potential transformers. Spectrum Analyzers, Data & Logic Analyzers.			
Unit – III	**MEASUREMENT OF RESISTANCE, INDUCTANCE AND CAPACITANCE**	Periods	**9**
Measurement of resistance, inductance and capacitance using dc and ac bridges, Transducers – Position transducers, force transducers, peizo-electric transducers, Hall effect transducers. Temperature measurement.			
Unit – IV	**ELECTRONIC MEASUREMENTS**	Periods	**9**
Signal sources – Oscillators, Function generator & pulse generators. Oscilloscopes - CRO, Digital storage and Analog storage Oscilloscope, Digital Phosphor Oscilloscopes. Analog & Digital Recorders and printers.			
Unit – V	**INSTRUMENTATION**	Periods	**9**
Signal conditioners – Instrumentation amplifiers, voltage – current converters, voltage-frequency converters, analog multiplexers and de-multiplexers. Instruments Used in Computer Controlled Instrumentation, Microprocessor Based Measurements, Case Studies in Instrumentation.			
		Total Periods	**45**

REFERENCES

1.	K. Sawhney, 'A Course in Electrical and Electronic Measurements and Instrumentation', Dhanpat Rai & Co., 1st Edition, 2012.
2.	Bouwens A. J., 'Digital Instrumentation', Tata McGraw Hill Publications, 16threprint (2008).
3.	Deobelin, 'Measurements Systems', Tata McGraw Hill Publications, 2nd Edition, 2010.
4.	W. D. Cooper, 'Electronic Instrumentation and Measurement Techniques', Prentice Hall of India Publications, 1st Edition, 2009.
5.	Rangan C.S., 'Instruments Devices and System', Tata McGraw Hill Publications, 2nd Edition, 2009.

Course Outcomes	Upon completion of the course, the students would be able to • Describe the working principle of different measuring instruments. • Choose appropriate measuring instruments for measuring various parameters in their laboratory courses. • Correlate the significance of different measuring instruments, recorders and oscilloscopes. • Develop a micro-processor based measuring unit for any practical application

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course code	Course name	Periods per week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE305	**Electric Circuits Laboratory**	**0**	**0**	**4**	**2**	**50**	**50**	**100**

Course Objectives

- To understand and analyze the basic theorems of circuit theory.
- Understand and analyze series & parallel circuits and measurement of single and three phase power.
- Understand and analyze different applications of diode and characteristics of transistor.

SUGGESTED LIST OF EXPERIMENTS

1. Experimental verification of Kirchhoff's voltage and current laws
2. Experimental verification of network theorems (Thevenin, Norton, Superposition and maximum Power transfer Theorem).
3. Study of DSO and measurement of sinusoidal voltage and frequency.
4. Determination of time constant of series R-C electric circuits
5. Determination of frequency response of RLC circuits.
6. Design and simulation of series resonance circuit.
7. Design and simulation of parallel resonant circuits.
8. Simulation of low pass and high pass passive filters.
9. Determination of power in three phase circuits by two-watt meter method.
10. Calibration of single phase energy meter.
11. Determination of two port network parameters.

Total Periods	**60**

Course Outcomes

Upon completion of the course, the students would be able to

- Verify the network theorems and operation of typical electrical and electronic circuits.
- Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits.
- Prepare the technical report on the experiments carried**.**

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**III**

Course code	Course name	Periods per week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE306	**Electronic Devices and Circuits Laboratory**	**0**	**0**	**4**	**2**	**50**	**50**	**100**

Course Objectives

- Design of amplifiers and other electronic systems to satisfy specifications. Gain, Bandwidth, Feedback and Stability are some of the design concepts needed.

SUGGESTED LIST OF EXPERIMENTS

1. Characteristics of Semiconductor diode and Zener diode.
2. Characteristics of Transistor under common emitter, common collector and common base configurations.
3. Characteristic of FET.
4. Characteristic of UJT.
5. Characteristics of SCR, DIAC and TRIAC.
6. Photo diode, phototransistor Characteristics and study of light activated relay circuit.
7. Static characteristics of Thermistors.
8. Single phase half wave and full wave rectifiers with inductive and capacitive filters.
9. Differential amplifiers using FET.
10. Study of CRO.
11. Series and Parallel resonance circuits.
12. Realization of Passive filters.

Total Periods **60**

Course Outcomes

Upon completion of the course, the students would be able to

- Design a complete electronic circuit using a top-down approach which starts from specifications.
- Design and analyze electronic circuits using BJT and FET.
- Design and characterization of electronic circuits using UJT.
- Waveform generation circuit design using electronic devices.
- Prepare the technical report and provide solutions to real time problems.

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Programme	**B.E.**	Programme Code		Regulation	**2015**
Department	**CSE & EEE**			Semester	**IV**

Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15MA406	**Numerical Methods**	**4**	**0**	**0**	**4**	**50**	**50**	**100**

Course Objectives

The main Objective of the course is to

- Understand appropriate numerical methods to approximate a function
- Recognize appropriate numerical methods to solve a differential function
- Provide information about appropriate numerical methods to evaluate a derivative at a value
- Introduce appropriate numerical methods to calculate a definite integral
- Proficiently understand boundary value problems

Unit – I	**SOLUTION OF EQUATIONSAND EIGENVALUE PROBLEMS**	Periods	**9+3**

Solution of equation –Fixed point iteration: x=g(x) method – Newton's method – Solution of linear system by Gauss-Jordon method . Iterative method – Gauss Jacobi and Seidel method – Inverse of a matrix by Gauss Jordon method – Eigenvalues of a matrix by power method and by Jacobi method for symmetric matrix.

Unit – II	**INTERPOLATION AND APPROXIMATION**	Periods	**9+3**

Lagrangian Interpolation – Divided differences – Interpolating with a cubic spline – Newton's forward and backward difference formula

Unit – III	**NUMERICAL DIFFERENTIATION AND INTEGRATION**	Periods	**9+3**

Differentiation using interpolation formulae –Numerical integration by trapezoidal and Simpson's 1/3 and 3/8 rules – Romberg's method – Two and Three point Gaussian quadrature formulae – Double integrals using trapezoidal and Simpsons's rules

Unit – IV	**INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS**	Periods	**9+3**

Single step methods: Taylor series method – Euler method for first order equation – Fourth order Runge – Kutta method for solving first and second order equations – Multistep methods: Milne's and Adam's predictor and corrector methods

Unit – V	**BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS**	Periods	**9+3**

Finite difference solution of second order ordinary differential equation – Finite difference solution of one dimensional heat equation by explicit and implicit methods – One dimensional wave equation and two dimensional Laplace and Poisson equations.

	Total Periods	**60**

TEXT BOOKS :

1.	Veerarjan.T and Ramachandran.T, "Numerical methods with programming in C", Second Edition, Tata McGraw-Hill Publishing.Co.Ltd, 2007.
2.	Sankara Rao K, "Numerical Methods for Scientists and Engineers", Third Edition, Prentice Hall of India Private Ltd, New Delhi, 2007.
3.	Gerald.C.F and Wheatley.P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2006.

REFERENCES:	
1.	Numerical Analysis by Richard L. Burden Brooks Cole; 10th edition (January 1, 2015)
2.	Grewal.B.S and Grewal.J.S, "Numerical methods in Engineering and Science", Sixth Edition, Khanna Publishers, New Delhi, 2004.
3.	Chapra.S.C and Canale.R.P, "Numerical Methods for Engineers", Fifth Edition, TataMcGraw-Hill, New Delhi, 2007.
4.	Burden R, L. and Faires J.D., Numerical Analysis, Cengage Learning, 2011.
Course Outcomes	Upon completion of the course, the students would be able to • Apply numerical methods to obtain approximate solutions to mathematical problems • Derive numerical methods for various mathematical operations and tasks such as interpolation, differentiation , integration and perform an error analysis • Analyze and evaluate the accuracy of common numerical integral methods • Determine Solutions of Differential Equations using an appropriate numerical methods • Design boundary value problems.

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Programme	**B.E.**	Programme Code	102	Regulation	**2015**			
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**V**			
Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE410	**Linear Integrated Circuits**	**3**	**0**	**0**	**3**	**50**	**50**	**100**

Course Objectives	To provide in-depth instructions on the characteristics and applications of operational amplifiers, timers and voltage regulators		
Unit - I	**INTRODUCTION OF OPERATIONAL AMPLIFIER**	Periods	**9**
Block diagram of a typical op-amp - characteristics of ideal and practical op amp - parameters of op-amp – inverting and non-inverting amplifier configurations - frequency response - circuit stability			
Unit - II	**APPLICATIONS OF OP-AMP**	Periods	**12**
DC and AC amplifiers - summing amplifier - difference amplifier - voltage follower- differentiator - integrator - clamper - clipper – filters			
Unit - III	**WAVEFORM GENERATORS**	Periods	**9**
Oscillators, sine wave, square wave, triangular wave, saw tooth wave generation, Schmitt trigger, window detector			
Unit - IV	**PHASE LOCKED LOOP**	Periods	**9**
Analog to digital, digital to analog, sample and hold circuits. voltage controlled oscillator, phase locked loop – operating principles , applications of PLL			
Unit - V	**SPECIAL ICs**	Periods	**9**
IC555 Timer, Monostable and Astable modes of operation ; voltage regulators - fixed voltage regulators, adjustable voltage regulators - switching regulators			
		Total Periods	**45**

TEXT BOOK:

1.	Gayakwad R.A., 'Op-amps & Linear Integrated Circuits', Prentice Hall of India, New Delhi, 4th edition,2009.
2.	Roy Choudhury and Shail Jain, 'Linear Integrated Circuits', 4th Edition, New Age International Publishers,2010

REFERENCES:

1.	Sergio Franco,' Design with operational amplifiers and Analog Integrated circuits', Tata McGraw Hill, 3rd Edition, 2002.
2.	Sedra Smith, 'Microelectronic Circuits', Oxford University Press, 6th Edition, 2009.
Course Outcomes	Upon completion of the course, the students would be able to • Describe the various ideal and practical characteristics of an OPAMP • Develop simple OPAMP based circuits • Implement various signal generating circuits. • Analyze and design various types of ADCs and DACs • Analyze and construct various application circuits using 555 timers.

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Programme	**B.E.**	Programme Code	**102**	Regulation	**2015**
Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**IV**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE411	**Control Systems**	**3**	**0**	**0**	**3**	**50**	**50**	**100**

Course Objectives	• To equip the students with the fundamental concepts in control systems		
Unit – I	**SYSTEMS AND THEIR REPRESENTATION**	Periods	**9**
Basic elements in control systems – Open and closed loop systems – Electrical analogy of mechanical and thermal systems – Transfer function – Synchros – AC and DC servomotors – Block diagram reduction techniques – Signal flow graphs.			
Unit – II	**TIME RESPONSE**	Periods	**9**
Time response – Time domain specifications – Types of test input – I and II order system response –Error coefficients – Generalized error series – Steady state error – Root locus construction- Effects of P, PI, PID modes of feedback control –Time response analysis.			
Unit – III	**FREQUENCY RESPONSE**	Periods	**9**
Frequency response – Bode plot – Polar plot – Determination of closed loop response from open loop response - Correlation between frequency domain and time domain specifications- Effect of Lag, lead and lag-lead compensation on frequency response- Analysis.			
Unit – IV	**STABILITY AND COMPENSATOR DESIGN**	Periods	**9**
Characteristics equation – Routh Hurwitz criterion – Nyquist stability criterion- Performance criteria – Lag, lead and lag-lead networks – Lag/Lead compensator design using bode plots.			
Unit – V	**STATE VARIABLE ANALYSIS**	Periods	**9**
Concept of state variables – State models for linear and time invariant Systems – Solution of state and output equation in controllable canonical form – Concepts of controllability and observability –Effect of state feedback.			
		Total Periods	**45**

REFERENCES

1.	M. Gopal, 'Control Systems, Principles and Design', 4th Edition, Tata McGraw Hill, New Delhi,2012
2.	S.K.Bhattacharya, Control System Engineering, 3rd Edition, Pearson, 2013.
3.	Dhanesh. N. Manik, Control System, Cengage Learning, 2012.
4.	Nagrath & Gopal, "Modern Control Engineering", New Ages International
5.	Arthur, G.O.Mutambara, Design and Analysis of Control; Systems, CRC Press, 2009.
6.	Richard C. Dorf and Robert H. Bishop, "Modern Control Systems", Pearson Prentice Hall, 2012.
7.	Benjamin C. Kuo, Automatic Control systems, 7th Edition, PHI, 2010.

Course Outcomes	Upon completion of the course, the students would be able to • Understand the concepts of closed loop control systems. • Analyze the stability of closed loop systems. • Apply the control techniques to any electrical systems. • Design the classical controllers such as P, PI etc for electrical systems.

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**IV**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE412	**Digital Electronics**	**3**	**0**	**0**	**3**	**50**	**50**	**100**

Course Objectives	• This subject exposes the students to digital fundamentals		
Unit – I	**DIGITAL LOGIC FAMILIES & DIGITAL COMMUNICATION**	Periods	**09**
Review of number systems, binary codes, error detection and correction codes. Digital Logic Families - Introduction to RTL, DTL, TTL, ECL and MOSL families - wired and operation, characteristics of digital logic family - comparison of different logic families			
Unit – II	**COMBINATIONAL LOGIC CIRCUITS**	Periods	**09**
Combinational logic - representation of logic functions-SOP and POS forms K-map representations-minimization using K maps - simplification and implementation of combinational logic - multiplexers and demultiplexers - code converters, adders, subtractors.			
Unit – III	**SEQUENTIAL LOGIC CIRCUITS**	Periods	**09**
Sequential logic- SR, JK, D and T flip flops - level triggering and edge triggering - counters - asynchronous and synchronous type – Modulo counters - Shift registers - Ring counters			
Unit – IV	**SYNCHRONOUS SEQUENTIAL LOGIC CIRCUITS**	Periods	**09**
Synchronous Sequential Logic circuits-state table and excitation tables state diagrams-Moore and Melay models-design of counters-analysis of synchronous sequential logic circuits-state reduction and state assignment.			
Unit – V	**ASYNCHRONOUS SEQUENTIAL LOGIC CIRCUITS**	Periods	**09**
Asynchronous sequential logic circuits-Transition table,flow table-race conditions-circuits with latches, analysis of asynchronous sequential logic circuits-introduction o design -implication table-hazards-programmable logic array and devices.			
		Total Periods	**45**

REFERENCES

1.	Morris Mano,M .'Digital logic and computer design ', Prentice Hall of India, 2005.
2.	Donald D. Givone, "Digital Principles and Design", Tata McGraw Hill, 2002.
3.	Tocci R.J.,Neal S. Widmer, 'Digital Systems: Principles and Applications',Pearson Education Asia, Second Indian Reprint 2002

Course Outcomes	Upon completion of the course, the students would be able to • Interpret, convert and represent different number systems. • Manipulate and examine Boolean algebra, logic operations, Boolean functions and their simplification. • Design and analyze combinational and sequential circuits.

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Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE413	**Electrical Machines - I**	**4**	**0**	**0**	**4**	**50**	**50**	**100**

Course Objectives	• This course aims to equip the students with a basic understanding of DC machines and Transformers fundamentals, machine parts and help to gain the skills for operating DC machines and Transformers. The course also equips students with ability to understand and analyze the equivalent circuits of DC Machines and Transformers.		
Unit – I	**PRINCIPLE OF ENERGY CONVERSION**	Periods	**12**
Principle of Energy conversion - Basic magnetic circuit analysis Faradays law of electromagnetic induction - singly and doubly Excited magnetic field systems - Torque production in rotating machines and general analysis of electro mechanical system			
Unit – II	**DC GENERATOR**	Periods	**12**
DC Generator - construction, principle of operation - emf equation - types Characteristics commutation - Armature reaction			
Unit – III	**DC MOTOR**	Periods	**12**
DC motor - Principle of operation - Torque equation - Types - Electrical & Mechanical characteristics - starting - speed control - Various testing - Braking			
Unit – IV	**TRANSFORMERS**	Periods	**12**
Transformers - Principle of operation - Types - basic construction - Equivalent circuit - regulation and efficiency - Auto transformer			
Unit – V	**THREE PHASE TRANSFORMER**	Periods	**12**
Three phase transformer connection-Scott connection - all day efficiency - Sumpner's test - parallel operation of transformers			
		Total Periods	**60**

REFERENCES

1.	Dr. P.S. Bhimra, 'Electrical Machinery, 'Khanna Publishes, 2007.
2.	Vincent Del Toro, 'Electrical Engineering Fundamentals', Printicehall, 2003
3.	Parkar Smith, N.N., 'Problems in Electrical Engineering' CBS Publishers and Distributers, New Delhi, 1984.
4.	Irving L. Kosow 'Electric Machinery and Transformers' PHI, New Delhi, 1991.
5.	Nagrath, I.J.and Kothari, D.P.,`Electrical Machines', Tata McGraw Hill Publishing Company Ltd., New Delhi,1990.

Course Outcomes	Upon completion of the course, the students would be able to • Understand the constructional details and principle of operation of DC machines and Transformers. • Analyze the performance of the DC Machines under various operating conditions using their various characteristics. • Evaluate the performance of Transformers using phasor diagrams and equivalent circuits. • Select appropriate DC motor as well as to choose an appropriate method of speed control for any industrial application

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Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE414	**Integrated Circuits Laboratory**	**0**	**0**	**4**	**2**	**50**	**50**	**100**

Course Objectives

- To enrich the students' knowledge on practical circuit design using analog and digital ICs.

SUGGESTED LIST OF EXPERIMENTS

1. Implementation of Boolean functions, Adder / Subtractor Circuits
2. Design of Encoder,Decoder,4:1 multiplexer and 1:4 de multiplexer
3. Inverting, Non – Inverting amplifiers using op - amp
4. Integrator and differentiator using op - amp
5. Instrumentation amplifier using op - amp
6. Differential amplifier using op - amp
7. Active low pass, high pass and band pass filters
8. Comparator clipper and clamper using op - amp
9. Phase shift and Wein bridge oscillators using op - amp
10. A/D and D/A converter
11. A stable, Monostable and Bistable multivibrators using op – amp
12. Study of PLL characteristics and its use as frequency multiplier.

Total Periods **60**

Course Outcomes

Upon completion of the course, the students would be able to

- Understand the non-ideal behavior of Op-amp.
- Analyze and prepare the technical report on the experiments carried out.
- Design application oriented circuits using Op-amp and 555 timer ICs.
- Create and demonstrate live projects using ICs.

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Department	**ELECTRICAL AND ELECTRONICS ENGINEERING**			Semester	**IV**

Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE415	**Electrical Machines - I Laboratory**	**0**	**0**	**4**	**2**	**50**	**50**	**100**

Course Objectives

- The main objective of the course is to give the students an insight into the constructional details of the dc machines and transformers with a view of better understanding of their working principles. The course also equips the students to test and evaluate the performance of various dc machines and single phase transformers by conducting appropriate experiments.

SUGGESTED LIST OF EXPERIMENTS

1. Open circuit and load characteristics of separately and self excited DC shunt generators.
2. Load characteristics of DC compound generator with differential and cumulative connection.
3. Load characteristics of DC shunt and compound motor.
4. Load characteristics of DC series motor.
5. Swinburne's test and speed control of DC shunt motor.
6. Hopkinson's test on DC motor – generator set.
7. Load test on single-phase transformer and three phase transformer connections.
8. Open circuit and short circuit tests on single phase transformer.
9. Sumpner's test on transformers.
10. Separation of no-load losses in single phase transformer.

Total Periods **60**

Course Outcomes

Upon completion of the course, the students would be able to

- Interpret the constructional details of the DC machines and Transformers and also understand the significance of different connections of three phase transformers
- Estimate or test the performance of any DC machine (shunt, series or compound) and single phase transformer, by conducting suitable experiments and report the results.
- Experiment and analyze, the various speed control and braking techniques for dc motors
- Develop simulation models and prototype modules in view of implementing any control technique upon dc motors and single phase transformers for various applications.

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Course Code	Course Name	Periods Per Week			Credit	Maximum Marks		
		L	T	P	C	CA	ESE	Total
U15EE416	**Control Systems and Instrumentation Laboratory**	**0**	**0**	**4**	**2**	**50**	**50**	**100**

Course Objectives	• To expose the students to determine the transfer functions of various motors and generators.

SUGGESTED LIST OF EXPERIMENTS

1. Determination of transfer function of DC Servomotor
2. Determination of transfer functions of AC Servomotor.
3. Analog simulation of Type - 0 and Type – 1 systems
4. Determination of transfer function of DC Generator
5. Determination of transfer function of DC Motor
6. Stability analysis of linear systems
7. DC and AC position control systems
8. Stepper motor control system
9. Digital simulation of first systems
10. Digital simulation of second systems

Total Periods	**60**

Course Outcomes	Upon completion of the course, the students would be able to • Evaluate the transfer function of a given AC and DC servo motor. • Determine the performance of first and second order systems in time domain. • Understand about the stability analysis with DC and AC position control systems. • Understand the Digital simulation of first order and second order systems • To design a suitable controller for a practical system

Department of EEE								
S.No	**Categery**	**Credit Per Semester**						
		1	**2**	**3**	**4**	**5**	**6**	**7**
1	HS	4	7			3		
2	BS	10	9	4	4			
3	ES	11	8	3		3		
4	PC			18	19	14	16	11
5	PE					3	6	6
6	OE							3
7	EEC					1	1	4
TOTAL		**25**	**24**	**25**	**23**	**24**	**23**	**24**

8	**Credits Total**	**% of credits**	**UGC Norms**
	14	7.61	5 to 10
	27	14.67	15- 20
	25	13.51	15-20
	78	42.16	30-40
3	**18**	9.73	10 to 15
3	**6**	3.24	5 to 10
10	**16**	8.65	10 to 15
16	**184**		