

	memory, GA in fuzzy logic controller design, applications.)	
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Books:

- 1 Fuzzy Logic with Engineering applications, T.J.Ross, 3rd ed., TMH, 2010
- 2 **Neural Networks and Learning Machines, S.Haykin, 3rd ed, Pearson/PHI, 2008**
- 3 Genetic Algorithms, D.E.Goldberg, Addison-Wesley, 2005
- 4 Neural Network, Fuzzy Logic & Genetic algorithm: Synthesis and application, S.Rajasekharan, G.A, Vijaylaxshmi Pai, PHI, 2013
- 5 Neuro fuzzy and Soft Computing, J.S.R. Jang, C.T.Scan, E. Mitzumi, PHI, 2005
- 6 Fuzzy sets and fuzzy logic: Theory and Applications, Klir & Yuan, PHI, 2002

Department of Electrical Engineering

Programme : Degree in Electrical Engineering

Year I			Semester - I			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	PH21105	Physics	4	0	2	05
2.	MA21101	Mathematics – I	3	1	0	04
3.	ES21100	Basic Electrical Engineering (offered by EE)	3	1	2	05
4.	ES21151	Engineering Graphics and Design (offered by CE+ME)	0	0	6	03
5.	FR21121	Biology for Engineers	2	1	0	03
			Total	12	3	10
						20

Year I			Semester - II			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	CY 21201	Chemistry	3	1	2	5
2.	MA 21201	Mathematics –II	3	1	0	4
3.	ES21200	Programming for Problem Solving (offered by CS)	3	0	2	4
4.	ES21251	Workshop Practices (offered by ME)	0	0	6	3
5.	HS21201	English	2	0	2	3
6.	HS21277	Environmental Sciences (AUDIT)	2	0	0	0
			Total	13	2	12
						19

Year II			Semester - III			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	MA 22101	Mathematics – III	3	1	0	4
2.	ES 22100	Engineering Mechanics (offered by CE+ME)	3	1	0	4
3.	ES 22101	Basic Electronics Engineering (offered by ECE)	3	0	2	4
4.	EE 22101	Analog Electronics	3	0	2	4
5.	EE 22102	Electrical Circuit Analysis	3	1	0	4
6.	EE 22103	Electrical Machines-I	3	0	2	4
			Total	18	3	6
						24

Year II			Semester - IV			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	EE 22201	Microprocessors & its Applications	3	0	2	4
2.	EE 22202	Power System-I	3	0	2	4
3.	EE 22203	Electrical Machines-II	3	0	2	4
4.	EE 22204	Power Electronics	3	0	2	4

5.	HS 22201	Entrepreneurship and Startups	3	0	0	3
6.	ES 22277	Indian Constitution (AUDIT)	3	0	0	0
Total			18	0	8	19

Year III			Semester - V			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	EE 23101	Digital Electronics	3	0	2	4
2.	EE 23102	Control Systems	3	0	2	4
3.	EE 23103	Electromagnetic Fields	3	1	0	4
4.	EE 23104	Power System-II	3	0	2	4
5.	EE 23105	Signals & Systems	2	1	0	3
6.	HS 23101	Principles of Economics	3	0	0	3
7.	HS 23177	Essence of Indian Traditional Knowledge (AUDIT)	3	0	0	0
8.	EE23166	Study Tour (AUDIT)	0	0	0	0
Total			20	2	6	22

Year III			Semester - VI			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	HS 23201	Organizational Behavior	3	0	0	3
2.	EE23201	Switchgear & Protection	3	0	2	4
3.	EE230**	Program Elective-I	3	0	0	3
4.	EE230**	Program Elective-II	3	0	0	3
5.	MO230**	Open Elective-I (from MOOC)	3	0	0	3
6.	EE23251	Seminar	0	0	2	1
Total			15	0	4	17

Year IV			Semester - VII			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	EE 24101	Modern Control Engineering	3	0	0	3
2.	EE 240**	Program Elective-III	3	0	0	3
3.	EE 240**	Program Elective-IV	3	0	0	3
4.	**240**	Open Elective-II	3	0	0	3
5.	EE 24199	Project-I	0	0	6	3
6.	EE 24179	Industrial Training	0	0	6	3
Total			12	0	12	18

Year IV			Semester - VIII			
S.N.	Course Code	Course Title	L	T	P	Credit
1.	EE 240**	Program Elective-V	3	0	0	3
2.	EE 240**	Program Elective-VI	3	0	0	3
3.	MO 240**	Open Elective-III (from MOOC)	3	0	0	3
4.	**240**	Open Elective-IV	3	0	0	3
5.	EE 24299	Project-II	0	0	12	6
6.	EE 24288	Extra-curricular Activities	0	0	0	2
Total			12	0	12	18+2

List of Program Electives

Sl. No.	Course Code	Title	L	T	P	Cr
1	EE 23001	Advanced Power Electronics	3	0	0	3
2	EE 23002	Electrical Energy Management	3	0	0	3
3	EE 23003	Power System Stability	3	0	0	3
4	EE 23004	Computer Aided Design of Electrical Machines	3	0	0	3
5	EE 23005	Power System Economics	3	0	0	3
6	EE 23006	Extra HVDC/HVAC Transmission	3	0	0	3
7	EE 23007	Optimization Techniques & Engineering Applications	3	0	0	3
8	EE 23008	Computer Application in Power Systems	3	0	0	3
9	EE 23009	Flexible AC Transmission Systems	3	0	0	3

Program Elective-III & IV

Sl. No.	Course Code	Title	L	T	P	Cr

1	EE 24021	High Voltage Engineering	3	0	0	3
2	EE 24022	Advanced Artificial Intelligence	3	0	0	3
3	EE 24023	Distributed Generations	3	0	0	3
4	EE 24024	Advanced Microprocessors & It's Applications	3	0	0	3
5	EE 24025	Power System Instrumentation & Control	3	0	0	3
6	EE 24026	Special Electromechanical Systems	3	0	0	3
7	EE 24027	Power Electronic based Industrial Drives	3	0	0	3
8	EE 24028	Bio-medical Instrumentation	3	0	0	3
9	EE 24029	Safety & Reliability Engg.	3	0	0	3
10	EE 24030	Network Synthesis	3	0	0	3

Program Elective-V & VI

Sl. No.	Course Code	Title	L	T	P	Cr
1	EE 24041	Time-Series Analysis & Forecasting	3	0	0	3
2	EE 24042	Power System Reliability	3	0	0	3
3	EE 24043	CMOS VLSI Design	3	0	0	3
4	EE 24044	Microprocessor based Industrial Drives	3	0	0	3
5	EE 24045	Arduino Programing	3	0	0	3
6	EE 24046	Electric Vehicles	3	0	0	3
7	EE 24047	Energy Systems	3	0	0	3
8	EE 24048	Electrical Power Utilization & Illumination Engg.	3	0	0	3

Open Elective-I (from MOOC)

Open Elective-II

SL. No.	Course Codes	Title	L	T	P	Cr
1	EE 230**	Renewable Energy and Applications	3	0	0	3

Open Elective-IV

SL. No.	Course Codes	Title	L	T	P	Cr
1	EE 230**	Introduction to Nano-Bio Technology	3	0	0	3

COURSE CONTENTS

ES 21100	Basic Electrical Engineering : 5 Credits (3-1-2)	
Unit I	DC Circuits: Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order R-L and R-C circuits.	10 lectures
Unit II	AC Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections.	10 lectures
Unit III	Transformers: Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.	7 lectures
Unit IV	Electrical Machines: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators,	8 lectures
Unit V	Power Converters: DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.	7 lectures
Text/Reference Books:		
1. Basics of Electrical Engineering, by Fitzgerald, TMH.		