HINDU COLLEGE OF ENGINEERING, SONEPAT

LECTURE PLAN



SEMESTER/CLASS	8TH-EE	SESS	SION [JAN JUNE 2018
SUBJECT: COMPUTER A	PPLICATIONS TO POWE	R SYSTEM ANALYSIS S	UBJE	CT CODE : EE404B
SESSIONAL MARKS: 25	THEORY MARKS:	75 DURATI	ION O	F EXAMS: 3 HOURS
NAME OF TEACHER : DF	R. AARTI GUPTA	DEPARTM	IENT :	ELECTRICAL ENGG
OBJECTIVES OF CONCERNED SUBJECT:				
To study the computer application to complex power system problems, mathematical modeling of power system and numerical analysis using latest load flow and short circuit techniques.				

OUTCOME OF CONCERNED SUBJECT:

After the completion of this course the students would be able to model the power system and use load flow technique and short circuit studies to arrive at a solution to the power system problem, learn the usage of graph theory in power system.

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
1	8/1/18	Introduction to graph theory, Tree graph, Co-tree etc.	LP SINGH Power Systems
2	9/1/18	Bus Admittance Matrix, Formation	S.K Gupta/ B.R Gupta
3	11/1/18	Formation of Y Bus, Primitive admittance matrix,	S.K Gupta/ B.R Gupta
4	12/1/18	Bus Incidence matrix,	S.K Gupta/ B.R Gupta
5	16/1/18	QUIZ/PRACTICE	
6	18/1/18	NUMERICAL	
7	19/1/18	Formulation of Y Bus using singular transformation,	S.K Gupta/ B.R Gupta
8	23/1/18	Formation of twig admittance matrix,	S.K Gupta/ B.R Gupta
9	25/1/18	Formation of Z loop, Bus Impedance matrix	S.K Gupta/ B.R Gupta
10	29/1/18	Algorithm for formulation of Z- Bus. All types of modifications.	S.K Gupta/ B.R Gupta
11	30/1/18	Previous lecture continued.	
12	1/2/18	Quiz	
13	2/2/18	Power Flow equations	HADI SAADAT
14	5/2/18	Circle diagrams, travelling waves	Power System Engg., by B.R.Gupta
15	6/2/18	Load flow equations, Approximate Load flow study	Power System Engg., by B.R.Gupta
16	8/2/18	Continued	

17	13/2/18	Gauss-Seidel method for Load flow Study, algorithm	Power System Engg., by B.R.Gupta
18	15/2/18	Newton-Raphson method for Load flow studies,	HADI SAADAT
19	16/2/18	Algorithm and flow chart for Computer Application.	HADI SAADAT
20	19/2/18	FDLF, Numerical	HADI SAADAT
21	20/2/18	Comparison of various LF Techniques	NAGRATH KOTHARI
22	26/2/18	Numerical	
23	27/2/18	Quiz	
24	12/3/18	Symmetrical Components,	Power System Engg., by B.R.Gupta
25	13/318	Sequence networks for synchronous machines	B. R. Gupta
26	15/3/18	Transforms and Transmission Lines	B. R. Gupta
27	16/3/18	Digital Technique In Short Circuit Studies	B. R. Gupta
28	19/3/18	L-L Fault,	B. R. Gupta
29	20/3/18	L-G Fault	B. R. Gupta
30	22/3/18	L-L-L Fault	B. R. Gupta
31	2/4/18	Numerical Practice	B. R. Gupta
32	3/4/18	Numerical Practice	B. R. Gupta
33	5/4/18	EXAM QUESTIONS/ QUIZ	B. R. Gupta
34	6/4/18	EXAM QUESTIONS/ QUIZ	B.R.Gupta

- A. Power System Engg., by B.R.Gupta
- B. Power System Analysis: Hadi Saadat, TMH, New Delhi.
- C. Power Systems Engineering by S. K. Gupta, Umesh publication, New Delhi

Home Assignments: 4 –5 assignments are given during the semester.

Evaluation Procedure

1.	Surprise Quiz/ Tutorial Test	5 Marks
2.	Assignment / Project / Performance in the Class	5 Marks
3.	Minor Tests (Two tests having equal weightage)	15 Marks
	Minor Test I : 06 – 09 March, 2018	
	Minor Test II : 17 -20 April, 2018	
4.	Major test (University Examination)	75 Marks

Attendance Record – Candidate should attend at least75% attendance of the total classes held of the subject

Chamber consultation hour: Any vacant period.

- In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.
- 2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

HINDU COLLEGE OF ENGINEERING, SONEPAT

LECTURE PLAN



SEMESTER/CLASS

EE-8TH

SESSION JAN. - JUNE 2018

SUBJECT CODE : EE-402-B

DURATION OF EXAMS: 3 HOURS

SUBJECT: ADVANCED CONTROL SYSTEMS

SESSIONAL MARKS: 25 THEORY MARKS: 75

NAME OF TEACHER: ER.CHARAN JEET MADAN

DEPARTMENT: ELECTRICAL ENGG.

OBJECTIVES OF CONCERNED SUBJECT: This subject covers advanced techniques for analysis and design of modern control systems. The objectives of this subject are to consolidate fundamental knowledge of state space and state feedback, state observers and output feedback control. Topics include also nonlinear systems, Describing function analysis, Lyapunov stability theory and optimal control.

OUTCOME OF CONCERNED SUBJECT: Upon successful completion of this subject students should be able to:

1. Assure knowledge of state space and state feedback in modern control systems, design of state observers and output feedback controllers.

2. Develop analysis and design skills in optimal control of multivariable systems.

3. Develop simulation skill in the use of MATLAB/SIMULINK for modeling and control of dynamic systems.

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS		
		UNIT-1 (STATE VARIABLE TECHNIQUE	ES)		
1-3	09/01/2018 to 17/01/2018	State variable representation of systems by various methods	A,B		
4-5	18/01/2018, 19/01/2018	Solution of state equations-state transition matrix	A,B		
6	24/01/2018	Transfer function from state variable model	A,B		
7	30/01/2018	Controllability of state variable model	A,B		
8	31/01/2018	Observability of state variable model	A,B		
9	01/02/2018	Observer system	В		
10	02/02/2018	TEST & DISCUSSION (UNIT-1)			
	UNIT-2 (SECOND ORDER SYSTEMS & STATE PLANE)				
11	06/02/2018	Phase portrait of linear second order systems	В		
12	08/02/2018	Method of isoclines	В		

		phase portrait of second order system with	В
13	09/02/2018	non-linearities	
		non-inteartites	
14	13/02/2018	limit cycle	В
15	15/02/2018	singular points, Stability of nonlinear system	В
16	16/02/2018	TEST & DISCUSSION (UNIT-2)	
		UNIT-3 (DESCRIBING FUNCTION ANALY	'SIS)
17	21/02/2018	Definition & limitations of Describing function	В
18-19	27/02/2018, 28/02/2018	Use of describing function for stability analysis	В
20	01/03/2018	Describing function of ideal relay	В
21	13/03/2018	Describing function of relay with hysteresis & dead zone	В
22-23	14/03/2018. 16/03/2018	Describing function of saturation/coulomb friction	В
24	20/03/2018	Describing function backlash	В
25	27/03/2018	TEST & DISCUSSION (UNIT-3)	
		UNIT-4 (OPTIMAL CONTROL SYSTEM	[)
26	28/03/2018	Variation calculus: fundamental concepts, Functionals of a single function,	С
27	30/03/2018	Fixed end point problems-euler-lagrange equation	С
28	03/04/2018	Variable end point problem and the transversality conditions	С
29	04/04/2018	Limitations of calculus of variation	С
30	05/04/2018	Pontryagin's minimum principle	С
31	06/04/2018	TEST & DISCUSSION (UNIT-4)	

- A. Digital Control & State Variable Methods: M.Gopal ; TMH.
- B. Control Systems Engineering: Nagrath & Gopal, New Age Inter. Publisher.
- C. Optimal Control Theory: An Introduction: Donald E. Krik; PHI.

Home Assignments: 4 –5 assignments are given during the semester.

Evaluation Procedure

1.	Surprise Quiz/ Tutorial Test	5 Marks
2.	Assignment / Project / Performance in the Class	5 Marks
3.	Minor Tests (Two tests having equal weightage)	15 Marks
	Minor Test I : 06 – 09 March, 2018	
	Minor Test II : 17 - 20 April, 2018	
4.	Major test (University Examination)	75 Marks

Attendance Record – Candidate should attend at least75% attendance of the total classes held of the subject

Chamber consultation hour: Any vacant period.

- 1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.
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HINDU COLLEGE OF ENGINEERING, SONEPAT

LECTURE PLAN



SEMESTER/CLASS	EE, 8 th	SESSION	JAN JUNE 2018
SUBJECT: UTILIZATION	OF ELECTRICAL POWER & TRACTION	SUBJECT	CODE : EE-466-B
SESSIONAL MARKS: 25	THEORY MARKS: 75	DURATION (OF EXAMS: 3 HOURS
NAME OF TEACHER: MI	R. NAVEEN KAUSHIK	DEPARTMEN	T: ELECTRICAL ENGG.

OBJECTIVES OF CONCERNED SUBJECT: This subject gives an overview to various areas of utilization of electric energy such as in lightening, electric heating, electric welding process of electrolysis and electric traction.

OUTCOME OF CONCERNED SUBJECT: Students should able to learn about various process involved in heating and welding. The efficient lightning schemes are introduced the students and why different types of light source are used at different application. From the chapter Electric traction they should be able to know the types of motors used in electric traction, their control and also the movement of trains.

Lecture No.	Lecture Dates (Approx.)	TOPICS	TEXT/REFERENCE BOOKS
1	08/01/18	Basic laws of illumination	А
2	11/01/18	Sources of lights and characteristics	А
3	12/01/18	Design of lightening schemes	А
4	12/01/18	Design of lightening schemes	А
5	15/01/18	Incandescent lamp, sodium lamp	А
6	19/01/18	Mercury lamp, fluorescent lamp	А
7	19/01/18	Comparison between various lamps, LED,CFL lamp	А
8	26/01/18	Principle of resistance heating,& application	В
9	26/02/18	Principle of resistance heating,& application	В
10	29/01/18	Principle of induction heating,& application	В
11	01/02/18	Principle of dielectric heating,& application	В
12	09/02/18	Types of furnaces	В
13	12/02/18	Resistance welding & its Types	В
14	15/02/18	Arc Welding	В

15	16/02/18	Arc Welding	В
16	16/02/18	Welding generator,& transformer, properties of electrode	В
17	19/02/18	Principle & Application of electrolysis,	В
18	26/02/18	Faradays law of electrolysis,	В
19	01/03/18	Electroplating,	В
20	05/03/18	Types of application of electroplating	В
21	12/03/18	Charging and discharging of Battery	В
22	15/03/18	Capacity & efficiency of battery	В
23	16/03/18	Defects and maintenance in battery	В
24	16/03/18	System of electric traction,	В
25	19/03/18	Traction motors & their control	В
26	26/03/18	Braking of electric traction	В
27	30/03/18	Thyristor control of electric traction	В
28	30/03/18	Types of services, Speed - time curve	В
29	02/04/18	Speed distance curve, average & scheduled speed	В
30	05/04/18	Numericals	В
31	06/04/18	Estimation of power & energy requirement	В
32	06/04/18	Specific energy consumption	В
33	09/04/18	Mechanism of train movement	В
34	11/04/18	Co-efficient of adhesion	В
35	12/04/18	Adhesive weigh & effective weight	В
36	12/04/18	Numericals	В
37	16/04/18	Numericals & Problem solutions	A,B
38	26/04/18	Problem solutions	A,B
39	27/04/18	Problem solutions	A,B

- A. Art and Science of utilization of electric energy: H.Partab, Dhanpat rai & Sons, Delhi
- B. Generation, Distribution & utilization of Electric Power: C.L.Wadhwa:Khanna Pub.

Home Assignments: 4 –5 assignments are given during the semester.

Evaluation Procedure

1.	Surprise Quiz/ Tutorial Test	5 Marks
2.	Assignment / Project / Performance in the Class	5 Marks
3.	Minor Tests (Two tests having equal weightage)	15 Marks
	Minor Test I : 06 – 09 March, 2018	
	Minor Test II : 17 - 20 April, 2018	
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Attendance Record – Candidate should attend at least75% attendance of the total classes held of the subject

Chamber consultation hour: Any vacant period.

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HINDU COLLEGE OF ENGINEERING, SONEPAT

LECTURE PLAN

SEMESTER/CLASS

ELECTRICAL -8TH

SUBJECT: ELECTRIC POWER QUALITY

SESSIONAL MARKS: 25 THEORY MARKS: 75

NAME OF TEACHER : MS. SHILPI

OBJECTIVES OF CONCERNED SUBJECT: To provide the Electric Power Sector with high- quality, efficient and safe technologies . Study of Issues and solutions related with the deviations in voltage, current and frequency.

OUTCOME OF CONCERNED SUBJECT: Understand the issues related with Power Quality occurs due to deviations in voltage, current and frequency. Improvement in Electric Power Sector.

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
		UNIT:(1)- (A) Introduction to Electrical Power Quality:	
1.	8/1/18	Power Quality,	R.C DUGAN
2.	9/1/18	Concern in Power System	Amit Yadav, J.B. Dixit
3.	10/1/18	Power Quality Issues,	R.C DUGAN
4.	12/1/18	Standards of Power Quality.	Amit Yadav, J.B. Dixit
5.	15/1/18	Revision	
		(B) Voltage Sags and Interruptions:	
6	16/1/18	Sources of Sags and Interruptions	C. SANKARAN
7	17/1/18	Fundamental Principles of Protection	R.C DUGAN
8	19/1/18	Solutions at End User Level	R.C DUGAN
9	23/1/18	Comparison of Different Ride-Through Alternatives.	Amit Yadav, J.B. Dixit
10	24/1/18	Surprise Test	
		UNIT : (2) –(A) Transient Overvoltages:	
11	29/1/18	Sources of Transient Overvoltages,	Amit Yadav, J.B. Dixit
12	30/1/18	Principles of Overvoltage Protection,	Amit Yadav, J.B. Dixit
13	31/1/18	Devices for Overvoltage Protection,	R.C DUGAN

SESSION JAN. - JUNE 2018

SUBJECT CODE : EE-444-B

DURATION OF EXAMS: 3 HOURS

DEPARTMENT : ELECTRICAL ENGG



14	2/2/18	Strategies for Utility System	R.C DUGAN	
15	5/2/18	Lightning Protection	C. SANKARAN	
16	6/2/18	Switching Transient Problems with Loads.	R.C DUGAN	
17	7/2/18	Surprise Test		
18	9/2/18	Revision		
		(B)Harmonics:		
19	12/2/18	Harmonics Distortion,	Amit Yadav, J.B. Dixit	
20	13/2/18	Power System Quantities under Nonsinusoidal Conditions,	R.C DUGAN	
21	16/2/18	Harmonic Indices,	Amit Yadav, J.B. Dixit	
22	19/2/18	Harmonics Sources from Commercial	R.C DUGAN	
23	20/2/18	and Industrial Loads	R.C DUGAN	
24	21/2/18	Effects of Harmonic Distortion on Power System Equipments.	R.C DUGAN	
		UNIT- III-(A)Wiring and Grounding		
25	26/2/18	Reasons for Grounding,	Amit Yadav, J.B. Dixit	
26	27/2/18	Typical Wiring and Grounding Problems,	Amit Yadav, J.B. Dixit	
27	28/2/18	Solutions to wiring and grounding problems	Amit Yadav, J.B. Dixit	
28	5/3/18	Surprise Test		
		(B) Power Quality Monitoring and Evaluation:		
29	12/3/18	Power Quality Monitoring and its Objective,	R.C DUGAN	
30	13/3/18	Power Quality Measurement Equipments	Amit Yadav, J.B. Dixit	
31	14/3/18	Power Quality Evaluation,	R.C DUGAN	
32	16/3/18	Different Power Quality Indices used in Power Quality Evaluation.	Amit Yadav, J.B. Dixit	
		UNIT- IV-(A)Power Quality Conditioners:		
33	19/3/18	Passive Filters, Active Filters	Amit Yadav, J.B. Dixit	
34	20/3/18	Hybrid Filters	Amit Yadav, J.B. Dixit	
35	26/3/18	STATCOM ,	Amit Yadav, J.B. Dixit	
36	27/3/18	DSTATCOM	Amit Yadav, J.B. Dixit	
37	28/3/18	DVR,	Amit Yadav, J.B. Dixit	
38	2/4/18	UPQC	Amit Yadav, J.B. Dixit	
39	3/4/18	Surprise Test		
		(B)Distributed Generation and Power Quality:		
40	9/4/18	Distributed Generation and its Advantages and Disadvantages,	R.C DUGAN	

41	10/4/18	Different Distributed Generation Technologies	R.C DUGAN
42	11/4/18	Different Interfacing Electrical Systems,	Amit Yadav, J.B. Dixit
43	13/4/18	Power Quality Issues in Distributed Generation	Amit Yadav, J.B. Dixit
44	16/4/18	Surprise Test	

- A. ELECTRIC POWR SYSTEM QUALITY: RC DUGAN, M.F. MCGRANAGHAN AND H.W.BEATY, MCGRAW HILL.
- B. POWER QUALITY: C. SANKARAN, CRC PRESS.
- C. Electric Power Quality : Amit Yadav, J.B. Dixit. Laxmi Publications

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