



Model Institute of Engineering
& Technology (Autonomous)
Course Handout

Kot, Bhalwal, Jammu

COURSE HANDOUT

Power System-II (EE-701 (A))

EE-7th SEMESTER

ACADEMIC YEAR (2024-25)

Mr. Bhanu Pratap Singh Jamwal

Assistant Professor

Department of Electrical Engineering



School of Management

Model Institute of Engineering & Technology (Autonomous)

KotBhalwal, Jammu - 181122

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Dr. Arun K. Gupta Teaching-Learning Centre

Version 1.1



Please Do Not Print Unless Necessary



SYLLABUS

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
EE-701 (A)	Power System-II	PEC	3	2	1	0	50	100	150
Faculty Details	bhau.ee@mietjammu.in								

Section-A

Unit 1: Fault Analysis: Symmetrical components, sequence impedances, sequence networks, unsymmetrical faults: single- line to ground, line-to- line, double line ground faults on unload alternator and on power system, 3 phase short circuits, short circuit capacity of a bus, selection of circuit breakers.

(08 Hrs)

Unit 2: Per Unit Representation of a Power System: Single line diagram, impedance and reactance diagram of a power system, per unit system of calculations, per unit representation of a power system.

(12 Hrs)

Unit 3: Network Equations: Introduction, Network model formulation, Formation of Y bus by singular transformation, Steady state stability, transient stability, equal area criterion, numerical solution of swing equations, multi machines stability, factors affecting transient stability.

(08 Hrs)

Section-B

Unit 4: Load flow studies: Introduction, Gauss- Siedel method, Newton- Raphson method, Decoupled load flow studies, comparison of load flow methods.

(10 Hrs)

Unit 5: Insulation Co-ordination: Generation of over voltages in power system, resonance over voltages, switching over voltages, lightening over voltages, lightening phenomenon, protection of power system against over voltages, ground wires, lightening arrestors, concept of insulation coordination, basic impulse insulation level, standard impulse test wave, volt- time curve, location and ratings of lightening arrestors.

(10 Hrs)

Text Books

S.No.	Name of the Books	Author	Publisher Name	Edition (Pub. yr.)
1	Electric Power System	C.L. Wadhwa	New age International	6th (2018)
2	Power System Stability and Control	Prabha Kundur	McGraw Hill	2nd(2022)

Reference Books

S.No.	Name of the Books	Author	Publisher Name	Edition (Pub. Yr.)
1	Elements of Power System Analysis	C.W. Stevenson	McGraw-Hill	4th (2017)
2	Electrical Power Distribution System	A.S Pabla	Tata McGraw Hill	5th(2004)



COURSE PLAN

Unit-I Fault Analysis		
S.No	Topics	Recommended Books
1	Symmetrical Components	Book 1, Ch.1
2	Sequence Impedance	Book 1, Ch.1
3	Unsymmetrical Faults	Book 1, Ch.1
4	3-Phase short circuits	Book 1, Ch.2
6	Short circuit Capacity of Bus	Book 1, Ch.2
Unit-II Per Unit Representation of Power System		
7	Single line diagram	Book 1, Ch.2
8	Impedance and Reactance diagram	Book 1, Ch.2
9	Per Unit system of calculations	Book 1, Ch.3
10	Per unit representation of power system	Book 1, Ch.5
11	Single line diagram	Book 1, Ch.5
Unit-III Network Equations		
12	Network model formulation	Book 2, Ch.4
13	Formation of Y bus by singular transformation	Book 2, Ch.4
14	Steady state stability	Book 2, Ch.4
15	Transient stability	Book 2, Ch.4
16	Equal area criterion	Book 2, Ch.4
17	Numerical solution of swing equations	Book 2, Ch.4
18	Multi machines stability	Book 2, Ch.4
19	Factors affecting transient stability	Book 2, Ch.4
Unit-IV Load Flow Studies		
20	Gauss- Siedel method	Book 2, Ch.5
21	Newton- Raphson method	Book 2, Ch.5
22	Decoupled load flow studies	Book 2, Ch.5
23	Comparison of load flow methods	Book 2, Ch.5
Unit-V Insulation Coordination		
24	Generation of over voltages in power system	Book 2, Ch.6
25	Resonance over voltages	Book 2, Ch.6
26	Switching Over voltages	Book 2, Ch.6
27	Lightening over voltages and lightening phenomenon	Book 3, Ch.8
28	Protection of power system against over voltages	Book 3, Ch.8
29	Ground wires and lightening arrestors	Book3, Ch. 3
30	Concept of insulation coordination and basic impulse insulation level	Book 3, Ch.1
31	Standard impulse test wave and volt- time curve	Book 3, Ch.8
32	Location and ratings of lightening arrestors	Book 3, Ch.8



ADDITIONAL WEB RESOURCES

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| 1. | NPTEL: Video lectures on “Power System Engineering” by Prof. Devpriya Das from IIT, Kharagpur.
https://nptel.ac.in/courses/108/105/108105104/ |
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GRADING AND ASSESSMENT

- **Sessional Test:** 20 marks
- **Assignment:** 20 marks
- **Attendance:** 10 marks
- **Final Examination:** 100 marks

COURSE POLICIES

- **Attendance:** Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET’s academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**
Tuesday (12:05 PM - 12:55 PM)
Thursday (12:05 PM - 12:55 PM)
- **Contact Information**
bhanu.ee@mietjammu.in