EE703PC: ELECTRICAL SYSTEMS SIMULATION LAB

B.Tech. IV Year I Sem.

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Prerequisite: Electrical and Electronic circuits, Power System Analysis & Power Electronics

Course Objectives:

- To Simulate and analyse electrical and electronic systems**.**
- To evaluate the performance of transmission lines.
- To Analyze various Faults in power systems
- To Model, simulate and analyze the performance of DC Machines and Induction Motors.
- To Analyze performance of feedback and load frequency control of the systems

Course Outcomes: After going through this lab the student will be able to

- Design and Analyze electrical systems in time and frequency domain
- Analyze various transmission lines and perform fault analysis
- Model Load frequency control of Power Systems
- Design various Power Electronic Converters and Drives.

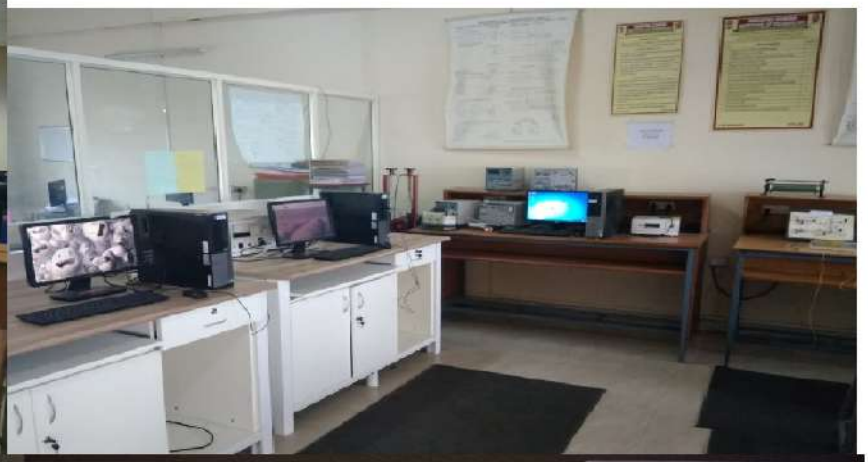
Any ten of the following experiments are required to be conducted using suitable software

1. Design of first and second order circuits in time and frequency domain
2. Performance evaluation of medium and long transmission lines
3. Symmetrical component analysis
4. Transmission Line Fault Analysis
5. LG, LL and 3-Φ fault analysis of Transformer
6. Short Circuit Analysis of Power system models
7. Speed Control of DC Motor
8. Speed Control of Induction motor
9. Design and analysis of feedback control system
10. Transient analysis of open ended line and short circuited line
11. Load frequency control of single area and two area power system
12. Economic Dispatch of Thermal Units
13. Design of Single Phase and Three Phase Inverters
14. Design of Single Phase and Three Phase Full Converters

Reference Books:

1. C.L. Wadhwa: Electrical Power Systems –Third Edition, New Age International Pub. Co., 2001.
2. Hadi Sadat: Power System Analysis –Tata Mc Graw Hill Pub. Co. 2002.

3. “I. J. Nagrath & M. Gopal”, Control Systems Engineering, New Age International Pub. Co., 5th Edition 2009.
4. A.E. Clayton & C.I. Hancock Performance and Design of DC Machines, CBS Publisher, 1st Edition 2004.




MATLAB
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PSPICE 16.0
MGIT/EEE/ESS LAB/ORCAD PSPICE/1-20
ELECTRONIC
DESIGN SOFTWARE
cadence
cadence
PSPICE 16.6
PSCAD
visualize
design
simulate
verify
solve

MAHATMA GANDHI INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ELECTRICAL SYSTEMS SIMULATION LAB

COMPUTING FACILITIES AND HARDWARE DESCRIPTION :

S.No.	Item Description	Quantity/Users
	I. System Configuration	
1	Dell-13 processor, 3.3 GHZ Processor, 2 GB RAM 500 HDD, 18.5 TFT Monitor.	45
2	Dell-Dual core, 160 GB HDD, 2.2 Ghz, 2 GB RAM, CD Drive 17" Monitor, Keyboard and mouse.	3
3	Dell-Dual core, 160 GB HDD, 2.2 Ghz, 2 GB RAM, CD Drive 17" Monitor	1
4	Server : IBM, P-IVm, 80 GB, IGB RAM, CD/Drive, 17" Monitor	1
	II. Network Accessories and Peripherals	
1	HP 1020 Laset Jet Printer	
2	NEC LCD projector, focus wall mounting kit	1
3	24 Port D-Link Switch	2
	III. Electrical Equipment	
1	Air Conditioners	
2	10 KVA Online UPS with 1 hour backup	01
	IV Sofware's/Tool Boxes	
1	Multisim V10	25 users
2	ORCAD Simulation Suite	10 users
3	MATLAB R07	10 users
4	Simulink	10 users
5	Sim power system tool box	10 users
6	Control system tool box	10 users
7	Fuzzy Logic tool box	10 users
8	Neural Network tool box	10 users
9	Single processing tool box	10 users
10	Symbolic math tool box	10 users