



National Institute of Technology Meghalaya

An Institute of National Importance

CURRICULUM

Programme	Master of Technology in Power & Energy Systems	Year of Regulation	2022-23
Department	Electrical Engineering	Semester	I
Course Code	Course Name	Pre-Requisite	
EE 515	Computer Aided Power System Analysis	---	

Credit Structure				Marks Distribution			
L	T	P	C	INT	MID	END	Total
3	0	0	3	50	50	100	200

SYLLABUS

No.	Content	Hours	
I	Network Modelling System graph loop, cutset and incidence matrices, Y-bus formation, sparsity and optimal ordering,	05	
II	Power Flow Studies Power flow concept, Newton Raphson method, decoupled and fast decoupled method, formulation of three phase load flow, DC load flow, formulation of AC-DC load flow, sequential solution technique.	08	
III	Fault Studies Analysis of three phase symmetrical and unsymmetrical faults in phase and sequence domain, phase shift in sequence quantities due to transformer, open circuit faults.	10	
IV	Stability Studies Transient stability analysis, swing equation, stability of multi-machine system using modified Euler method and Runge-Kutta method.	08	
V	Power System Security Factors affecting security, State transition diagram, contingency analysis using network sensitivity method and AC power flow method, introduction to state estimation.	09	
Total Hours		40	

Essential Readings

1. D P Kothari, I J Nagrath, "Modern Power System Analysis", McGraw Hill, 1st Edition, 1998.
2. M A Pai, "Computer Techniques in Power System Analysis", McGraw Hill, 3rd Edition, 2004.

Supplementary Readings

1. George L Kusic, "Computer Aided Power System Analysis", CRC Press, 4th Edition, 2000.
2. Arrillaga, N R Watson, "Computer Modeling of Electric Power System", Wiley, 2nd Edition, 2001.
3. G T Heydt, "Computer Analysis Methods for Power Systems", Macmillan Company, 2nd Edition, 1995.