

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	Power System Restructuring and Pricing		
Course Code	EE677	No. of Credits	3
Course Code of Pre-requisite subject(s)	Power system Analysis, Power system Transmission and distribution.		
Session	January	Section (if, applicable)	S
Name of Faculty	Dr. Sishaj P Simon	Department	EEE
Email	sishajpsimon@gmail.com	Telephone No.	0431-2503265
Name of Course Coordinator(s) (if, applicable)	-		
E-mail	ammas@nitt.edu	Telephone No.	0431-2503253
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>Introduction – Market Models – Entities – Key issues in regulated and deregulated power markets; Market equilibrium- Market clearing price- Electricity markets around the world.</p> <p>Operational and planning activities of a Genco - Electricity Pricing and Forecasting -Price Based Unit Commitment Design - Security Constrained Unit Commitment design. - Ancillary Services for Restructuring Automatic Generation Control (AGC).</p> <p>Introduction-Components of restructured system-Transmission pricing in Open-access system- Open transmission system operation; Congestion management in Open-access transmission systems- FACTS in congestion management - Open-access Coordination Strategies; Power Wheeling-Transmission Cost Allocation Methods.</p> <p>Open Access Distribution - Changes in Distribution Operations- The Development of Competition – Maintaining Distribution Planning.</p> <p>Power Market Development – Electricity Act, 2003 - Key issues and solution; Developing power exchanges suited to the Indian market - Challenges and synergies in the use of IT in power- Competition- Indian power market- Indian energy exchange- Indian power exchange- Infrastructure model for power exchanges Congestion Management-Day Ahead Market- Online power trading.</p> <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Loi Lei Lai, 'Power System Restructuring and Deregulation', John Wiley & Sons Ltd., 2001. 2. Mohammad Shahidehpour, Hatim Yamin, 'Market operations in Electric power systems', John Wiley & son ltd.,2002. 3. Lorrin Philipson, H. Lee Willis, 'Understanding Electric Utilities and Deregulation' Taylor & Francis, 2006. 4. Mohammad Shahidehpour, Muwaffaq Alomoush, 'Restructured Electrical Power Systems', Marcel Dekker, Inc.,2001. 			

COURSE OBJECTIVES										
To understand the electricity power business and technical issues in a restructured power system in both Indian and world scenario.										
COURSE OUTCOMES (CO)										
Course Outcomes				Aligned Programme Outcomes (PO)						
H-High, M=Medium, L=Low										
1. Explain the deregulated electricity market models functioning around the world. 2. Understand the operational and planning activities in power generation.				PO1	PO2	PO3	PO4	PO5	PO6	PO7
				H	H	H	H	H	H	M
				PO8	PO9	PO10	PO11	PO12	PO13	PO14
				M	M	M	M	M	M	M
2. Understand the operational and planning activities in power generation.				PO1	PO2	PO3	PO4	PO5	PO6	PO7
				H	H	H	H	H	H	H
				PO8	PO9	PO10	PO11	PO12	PO13	PO14
				H	H	H	H	M	M	M
3. Solve transmission pricing and understand strategies in congestion management.				PO1	PO2	PO3	PO4	PO5	PO6	PO7
				H	H	H	H	H	H	H
				PO8	PO9	PO10	PO11	PO12	PO13	PO14
				H	H	H	M	M	M	M
4. Study the development of competition in electricity distribution companies.				PO1	PO2	PO3	PO4	PO5	PO6	PO7
				H	H	H	H	H	H	H
				PO8	PO9	PO10	PO11	PO12	PO13	PO14
				H	H	H	H	M	M	M
5. Outline the salient features of Indian Electricity Act and the formation and operation of Indian power exchanges.				PO1	PO2	PO3	PO4	PO5	PO6	PO7
				M	M	H	H	H	H	H
				PO8	PO9	PO10	PO11	PO12	PO13	PO14
				H	H	H	H	H	H	H
COURSE PLAN – PART II										
COURSE OVERVIEW										
Students get exposure on deregulated electricity market models functioning around the world. Students will be able to Understand the operational and planning activities in power generation. Further they will be exposed to Solve transmission pricing and understand strategies in congestion management. They will learn to apply the development of competition in electricity distribution companies and Indian Electricity Act and the formation and operation of Indian power exchanges.										
COURSE TEACHING AND LEARNING ACTIVITIES										
S.No.	Week/Contact Hours	Topic					Mode of Delivery			
1	Weeks 1 to 3 (7 contact hours)	Introduction – Market Models – Entities – Key issues in regulated and deregulated power markets - Market equilibrium - Market clearing price - Electricity markets around the world.					Lecture			

2	Weeks 3 to 5 (8 contact hours)	Operational and planning activities of a Genco - Electricity Pricing and Forecasting - Price Based Unit Commitment Design - Security Constrained Unit Commitment design. - Ancillary Services for Restructuring Automatic Generation Control (AGC).	C&T/ PPT or any
3	Week 5 (1 contact hours)	Numerical examples/ problem solving	Suitable mode
4	Weeks 6 to 8 (8 contact hours)	Introduction - Components of restructured system - Transmission pricing in Open-access system-Open transmission system operation - Congestion management in Open-access transmission systems - FACTS in congestion management - Open-access Coordination Strategies - Power Wheeling - Transmission Cost Allocation Methods.	Lecture
5	Weeks 8 to 9 (7 contact hours)	Open Access Distribution - Changes in Distribution Operations - The Development of Competition – Maintaining Distribution Planning.	C&T/ PPT or any
6	Week 10 (1 contact hours)	Numerical examples/ problem solving	Suitable mode
7	Weeks 10 to 12 (8 contact hours)	Power Market Development – Electricity Act, 2003 - Key issues and solution - Developing power exchanges suited to the Indian market - Challenges and synergies in the use of IT in power - Competition - Indian power market - Indian energy exchange- Indian power exchange- Infrastructure model for power exchanges - Congestion Management - Day Ahead Market - Online power trading.	Group work (exercise)

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Descriptive Type Written Exam	7 th Week	60 Minutes	20
2	Descriptive Type Written Exam	11 th Week	60 Minutes	20
3	Assignments/Seminar	3 rd to 11 th week	Work will be carried out along with the course	5+5
4	Compensation Assessment	12 th week	60 Minutes	20
5	Final Assessment	14 th week	180 Minutes	50

COURSE EXIT SURVEY

- Feedback from the students during class committee meetings
- Anonymous feedback through questionnaire

COURSE POLICY

MODE OF CORRESPONDENCE

1. All the students are advised to check their NITT WEBMAIL regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/any other information regarding this course) will be done through their webmail only.
2. Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher.

ATTENDANCE

1. Attendance will be taken by the faculty in all the contact hours.
2. Every student should maintain minimum 75 % physical attendance in these contact hours along with assessment criteria to attend the end semester examination or Final Assessment (Assessment 5).
3. Any student, who is having an attendance percentage between 74% to 50% should ensure that they had scored at least 50% in both Assessment 1 and assessment 2 together in order to become eligible to attend the end semester examination or Final Assessment (Assessment 5).
4. Any student, who is having an attendance percentage below 50% has to **redo** the course.

COMPENSATION ASSESSMENT

1. Any student who misses any of the continuous assessments (CAs) [Assessment 1 or Assessment 2] can appear for CPA to get eligibility to attend the end semester examination or Final Assessment (Assessment 5).

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the course work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD of the concerned department.
5. Students who honestly producing ORIGINAL and OUTSTANDING WORK will be REWARDED.

ADDITIONAL INFORMATION

The faculty is available for consultation at times as per the intimation given by the faculty.

FOR APPROVAL

Course Faculty _____

Sr 9
10/11/2018

CC-Chairperson _____

SR 9
10.01.18

HOD _____

Sr 9
11/1/18