



Kadi Sarva Vishwavidyalaya
Faculty of Engineering & Technology
Second Year Bachelor of EE Engineering- Semester IV
 With effect from: Academic Year 2018-19

EE405-N	Power system -I
Pre-requisite	

Teaching scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		Theory		IE Marks	CIA Marks	Pract. Marks	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks				
03	00	02	05	04	03	70	30	20	30	150

Teaching Scheme (Credits and Hours)

Course Outcomes:

At the end of this course, students will demonstrate the ability to

- To realization concept of Energy generation and benefit of all system
- To realization concept various power system components
- To make aware about load distribution and tariff calculations
- To focus on distribution systems

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Power Generation	20
2	Distribution systems	15
3	Substation and neutral grounding:	10
	Total	45

- **Total hours (Theory): 45**
- **Total hours (Lab): 30**
- **Total hours: 75**



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DETAILED SYLLABUS

Unit No.	Topic	Lecture Hours	Weightage(%)
1.	Power Generation: Steam power station: Schematic arrangement, advantages and disadvantages, choice of site, efficiency of steam power station, Types of prime movers, characteristic, speed control & auxiliaries. Environmental aspects for selecting sites and locations of thermal power stations. Hydro power station: Schematic arrangement, advantages and disadvantages, choice of site constituents of hydro power plant, Hydro turbine. Environmental aspects for selecting sites and locations of hydro power stations. Nuclear power station: Schematic arrangement, advantages and disadvantages, selection of site, types of reactors, Hazards Environmental aspects for selecting sites and locations of nuclear power stations. Gas turbine power plant: Schematic arrangement, advantages and disadvantages. Combined cycle power plant: Combined cycle power plant, Comparison of various power plants Renewable energy sources.	20	45
2.	Distribution systems: Types of distribution systems, types of cables & their construction, Types of conductors for Overhead line, Types of insulators, string efficiency, comparison between Overhead & underground transmission , Loads: Types, Voltage and Frequency Dependence of Loads. Effect of variable load, Load curves, Base load and peak load, Cost of electrical energy, methods of determining Depreciation, Tariff, Characteristics of tariff, Types of tariff	15	30
3.	Substation and neutral grounding: Classification of Substations, substation equipments, Comparison, Bus bar arrangements Neutral grounding: necessity of neutral grounding, Methods for neutral grounding, Advantages of neutral grounding, Power factor Improvement: need of power factor improvement, Techniques of power factor improvement, Most economical power factor	10	25
	Total	45	100



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INSTRUCTIONAL METHOD AND PEDAGOGY:

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weight age should be given to all topics while teaching and conduction of all examinations.
- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
- Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
- Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

LEARNING OUTCOME:

- The student can be acquired the basic knowledge of electric circuits, electrical fundamentals, thus being prepared to pursue any area of engineering spectrum in depth as desired.
- The students will be able to effectively employ electrical systems and lead the exploration of new applications and techniques for their use.

Text/References books:

- B. M. Weedy, B. J. Cory, N. Jenkins, J. Ekanayake and G. Strbac, “Electric Power Systems”, Wiley, 2012.
- Electrical power by S.L.Uppal, Khanna Publishers
- Principles of power system by V.K.Mehta, S.Chand
- Power system engineering by D.P.Kothari and I.J.Nagrath, Mcgraw hill
- Electrical Power system by C.L.Wadhwa, 5th Edition, New Age International Publishers.
- Introduction to power system by NPTEL: nptel.ac.in/courses/108105067



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List of experiments:

Sr. No.	Name of experiment
1.	Introduction to MATLAB
2.	Introduction to Simulink Model and challenges in computer simulation.
3.	Basic circuit connection and waveform analysis
4.	Energy bill calculations
5.	Load duration curve
6.	Power factor improvement
7.	Power stations
8.	Ungrounded neutral system
9.	Resistance grounding
10.	Peterson coil grounding