COURSE OBJECTIVES

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

On completion of this Subject/Course the student shall be able to:

S.No	Objectives
1	To provide students the knowledge of optimization techniques used in the power system and Load Frequency Control (LFC).
2	To provide a solid foundation in mathematical and engineering fundamentals required to control the governing system in Turbine models.
3	To provide the knowledge of Hydrothermal scheduling, reactive power control.

Signature of HOD   Signature of faculty

Date: Date:25-09-13

COURSE OUTCOMES

Academic Year   :   2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System and Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha

Designation: ASST.PROFESSOR.   Dept: Electrical & Electronics Engineering

The expected outcomes of the Course/Subject are:

S.No	Outcomes
1	To make students express Economic operation of power system and importance of LFC control.
2	To allow students discuss about thermal and hydro power plants operation in meeting the load demand optimally. (State and central wide installation).Also expressing importance of reactive power control through seminars.
3	To improve student's ability in solving problems (numerical problems at present) by posing different problem models related to Economic Load Dispatch, Load Frequency Control and reactive power control.
4	Apply their knowledge in PSOC for competitive exams like GATE, IES, and Public sector etc.
5	Ability to discuss single area load frequency control and two area load frequency control.
6	Ability to model and design turbine and Automatic controller.
7	Ability to express variation of frequency in the power system with varying load.

Signature of HOD   Signature of faculty

Date: Date:25-09-13

MAPPINGS

Department/Program-EEE

Mission of the Institute:
To be among the best of the institutions for engineers and technologists with attitudes, skill and knowledge and to become an epicenter of creative solutions.

Vision of the Institute:
To achieve and impart quality education with an emphasis on practical skills and social relevance.

Mission of the Program:
To provide the technical knowledge and soft skills required to succeed in life, career and help society to achieve self sufficiency.

Program Educational Objectives:

This education is meant to prepare our students to thrive and to lead. In their careers, our graduates:

- Will have successful technical or professional careers, including supportive and leadership roles on multidisciplinary teams.

- Will acquire, use and develop skills required for effective professional practices.

- Will acquire the holistic education necessary to be a responsible member of society.

- Engage in life-long learning to remain current in their profession and be leaders in our technological society.

Program Learning Outcomes:

Students in the Electrical and Electronics Engineering program should, at the time of their graduation, be in possession of:

a. Ability to apply knowledge of mathematics, science, and engineering.

b. Ability to design and conduct experiments, as well as to analyze and interpret data.

c. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

d. Ability to function on multi-disciplinary teams.

e. Ability to identify, formulate, and solve engineering problems.

f. Understanding of professional and ethical responsibility.

g. Ability to communicate effectively.

h. Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

i. Recognition of the need for, and an ability to engage in life-long learning.

j. Knowledge of contemporary issues.

k. Ability to utilize experimental, statistical and computational methods and tools necessary for engineering practice.

l. Graduates will demonstrate an ability to design electrical and electronic circuits, power electronics, power systems, electrical machines analyze and interpret data and also an ability to design digital and analog systems and programming them.

Name of the Course: <u>POWER SYSTEM OPERATION AND CONTROL</u> (PSOC)

Course Objectives:

1) To provide students the knowledge of optimization techniques used in the power system and Load Frequency Control (LFC).
2) To provide a solid foundation in mathematical and engineering fundamentals required to control the governing system in Turbine models.
3) To provide the knowledge of Hydrothermal scheduling, reactive power control.

Course Outcomes:

1) To make students understand Economic operation of power system and importance of LFC control.
2) To allow students discuss about thermal and hydro power plants operation in meeting the load demand optimally. (State and central wide installation).Also expressing importance of reactive power control through seminars.
3) To improve student's ability in solving problems (numerical problems at present) by posing different problem models related to Economic Load Dispatch, Load Frequency Control and reactive power control.
4) Apply their knowledge in PSOC for competitive exams like GATE, IES, and Public sector etc.

5) Ability to discuss single area load frequency control and two area load frequency control.

6) Ability to model and design turbine and Automatic controller.

7) Ability to express variation of frequency in the power system with varying load.

Assessment methods:

➤ Regular attendance to classes.

➢ Viva-voce during the class.

➢ Written tests clearly linked to learning objectives

➢ Classroom assessment techniques like tutorial sheets and assignments.

➢ Seminars.

● **Program Educational Objectives (PEOs) – Vision/Mission Matrix** (Indicate the relationships by mark "X")

Vision/Mission PEOs	Vision of the Institute	Mission of the Institute	Mission of the Program
1	X		X
2	X	X	X
3	X	X	X
4		X	X

● **Program Educational Objectives(PEOs)-Program Outcomes(POs) Relationship Matrix** (Indicate the relationships by mark "X")

P-Outcomes PEOs	a	b	c	d	e	f	g	h	i	j	k	l
1	X	X	X	X	X			X	X	X	X	X
2	X	X	X	X	X			X	X	X	X	X
3		X	X	X		X	X	X	X	X		
4				X					X	X		X

● **Course Objectives-Course Outcomes Relationship Matrix** (Indicate the relationships by mark "X")

Course-Outcomes Course-Objectives	1	2	3	4	5	6	7
1	X		X	X	X	X	X
2			X	X			
3	X	X		X			

● **Course Objectives-Program Outcomes(POs) Relationship Matrix** (Indicate the relationships by mark "X")

P-Outcomes	a	b	c	d	e	f	g	h	i	J	k	l

C-Objectives												
1	X				X	X						
2		X			X							
3						X						

- **Course Outcomes-Program Outcomes(POs) Relationship Matrix** (Indicate the relationships by mark "X")

P-Outcomes / C-Outcomes	a	b	c	d	e	f	g	h	i	j	k	l
1	X				X							
2									X			
3	X	X			X		X		X			
4	X					X			X			
5	X	X			X	X	X		X			
6	X	X			X	X	X		X			
7	X	X			X	X	X		X			

- **Courses (with title & code)-Program Outcomes (POs) Relationship Matrix** (Indicate the relationships by mark "X")

P-Outcomes / Courses	a	b	c	d	e	f	g	h	i	j	k	l
Power System Operation and Control	X	X			X	X	X		X			

- **Program Educational Objectives (PEOs)-Course Outcomes Relationship Matrix** (Indicate the relationships by mark "X")

P-Objectives (PEOs) / Course-Outcomes	1	2	3	4
1	X			
2	X	X		
3	X	X		
4	X			X
5	X	X		X
6	X	X		X
7	X	X		X

- **Assignments & Assessments-Program Outcomes (POs) Relationship Matrix** (Indicate the relationships by mark "X")

P-Outcomes\n\nAssessments	a	b	c	d	e	f	g	h	i	j	k	l
1						X			X			
2	X				X		X	X	X			
3	X	X				X						
4	X	X			X							
5	X						X					

- **Assignments & Assessments-Program Educational Objectives (PEOs) Relationship Matrix** (Indicate the relationships by mark "X")

PEOs\n\nAssessments	1	2	3	4
1			X	X
2	X	X		
3	X		X	
4	X		X	X
5	X	X		X

- **Constituencies -Program Outcomes (POs) Relationship Matrix** (Indicate the relationships by mark "X").

P-Outcomes\n\nConstituencies	a	b	c	d	e	f	g	h	i	j	k	l
1												
2												
3												
4												
5												
6												

Prepare the following Matrix:

11. **The improvements Matrix** are summarized below and described in the text that follows.

Hint:

Example:

Proposed Change	Year Proposed	Year Implemented	Old Version	New Version	Comments
Add new Operating System course	2012-2013	2013-2014	No operating system course in curriculum	IT ….. Oper System Concepts & Administration	To address need for additional material for operating systems

RUBRIC TEMPLATE

Objective: _____

Student Outcome: _____

			Scale (Numeric /descriptor)	Scale (Numeric /descriptor)	Scale (Numeric /descriptor)	Scale (Numeric /descriptor)	Score (Numeric)
S.No.	Name of the Student	Performance Criteria	Identifiable performance characteristics reflecting this level	Identifiable performance characteristics reflecting this level	Identifiable performance characteristics reflecting this level	Identifiable performance characteristics reflecting this level	
1.		Performance Criteria #1					
		Performance ce					

S.No.	Student Name	Performance Criteria					Score
		Criteria #2					
		Performance Criteria #3					
		Performance Criteria #4					
					Average Score		
2.							
					Average Score		

EXAMPLE OF FILLED RUBRIC

OBJECTIVE: **Work effectively with others**

STUDENT OUTCOME: **Ability to function in a multi-disciplinary team**

S.No.	Student Name	Performance Criteria	Unsatisfactory	Developing	Satisfactory	Exemplary	Score
			1	2	3	4	
1.		**Research & Gather Information**	Does not collect any information that relates to the topic.	Collects very little information--some relates to the topic	Collects some basic information--most relates to the topic.	Collects a great deal of information--all relates to the topic.	3
		Fulfill team role's duty	Does not perform any	Performs	Performs	Performs	3

			duties of assigned team role.	very little duties.	nearly all duties.	all duties of assigned team role.	
		Share Equally	Always relies on others to do the work.	Rarely does the assigned work--often needs reminding.	Usually does the assigned work--rarely needs reminding.	Always does the assigned work without having to be reminded.	4
		Listen to other team mates	Is always talking--never allows anyone else to speak.	Usually doing most of the talking--rarely allows others to speak.	Listens, but sometimes talks too much.	Listens and speaks a fair amount.	4
						Average score	3.5
2.							
						Average score	

GUIDELINES TO STUDY THE COURSE / SUBJECT

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

Guidelines to study the Course/ Subject: Power System Operation Control

Course Design and Delivery System (CDD):

- The Course syllabus is written into number of learning objectives and outcomes.
- These learning objectives and outcomes will be achieved through lectures, assessments, assignments, experiments in the laboratory, projects, seminars, presentations, etc.
- Every student will be given an assessment plan, criteria for assessment, scheme of evaluation and grading method.
- The Learning Process will be carried out through assessments of Knowledge, Skills and Attitude by various methods and the students will be given guidance to refer to the text books, reference books, journals, etc.

The faculty be able to –

- Understand the principles of Learning
- Understand the psychology of students
- Develop instructional objectives for a given topic
- Prepare course, unit and lesson plans
- Understand different methods of teaching and learning
- Use appropriate teaching and learning aids
- Plan and deliver lectures effectively

- Provide feedback to students using various methods of Assessments and tools of Evaluation

- Act as a guide, adviser, counselor, facilitator, motivator and not just as a teacher alone

Signature of HOD   Signature of faculty

Date: Date:

- Provide feedback to students using various methods of Assessments and tools of Evaluation

- Act as a guide, adviser, counselor, facilitator, motivator and not just as a teacher alone

COURSE SCHEDULE

Academic Year   : 2013-2014

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. Of Periods
		From	To	
1.	INTRODUCTION & IMPORATANCE OF SUBJECT.	02/07/2013	__	1
2.	**UNIT – I Economic Operation of Power Systems-1** Optimal operation of Generators in Thermal Power Stations, - heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics, Optimum generation allocation with line losses neglected.	02/07/2013	09/07/13	(2*2)+1=5
3.	**UNIT – II Economic Operation of Power Systems-2** Optimum generation allocation including the effect of transmission line losses – Loss Coefficients, General transmission line loss formula.	11/07/13	23/07/13	2*4=8
4.	*UNIT – III Hydrothermal Scheduling* Optimal scheduling of Hydrothermal System: Hydroelectric power plant models, Scheduling problems-Short term Hydrothermal scheduling problem.	25/07/13	06/08/13	2*4=8

5.	***UNIT –IV Modelling of Turbine, Generator and Automatic Controllers*** **Modelling of Turbine**: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models. **Modelling of Generator** (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation) and State-Space II-Order Mathematical Model of Synchronous Machine. **Modelling of Governor**: Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function. **Modelling of Excitation System**: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	08/08/13	23/08/13	2*4=8
6.	***UNIT – V Single Area Load Frequency Control*** Necessity of keeping frequency constant. Definitions of Control area – Single area control – Block diagram representation of an isolated power system – Steady state analysis – Dynamic response – Uncontrolled case.	29/08/13	10/09/13	2*3=6
7.	**UNIT – VI Two-Area Load Frequency Control** Load frequency control of 2-area system – uncontrolled case and controlled case, tie-line bias control	12/09/13	24/09/13	2*3=6
8.	**UNIT-VII Load Frequency Controllers** Proportional plus Integral control of single area and its block diagram representation, steady state response – Load Frequency Control and Economic dispatch control.	26/09/13	03/10/13	2*3=6
9	***UNIT – VIII Reactive Power Control*** Overview of Reactive Power control – Reactive Power compensation in transmission systems – advantages and disadvantages of different types of compensating equipment for transmission systems; load compensation – Specifications of load compensator, Uncompensated and compensated	08/10/13	24/10/13	2*4=08

	transmission lines: shunt and Series Compensation			

Total No. of Instructional periods available for the course: ...……56……. Periods

Signature of HOD   Signature of faculty

Date: Date:

COURSE SCHEDULE

Academic Year   : 2013-2014

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR
The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. Of Periods
		From	To	
1.	INTRODUCTION & IMPORATANCE OF SUBJECT.	02/07/13	__	1
2.	**UNIT – I Economic Operation of Power Systems-1** Optimal operation of Generators in Thermal Power Stations, - heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics, Optimum generation allocation with line losses neglected.	02/07/13	08/07/13	(2*4)+1=5
3.	**UNIT – II Economic Operation of Power Systems-2** Optimum generation allocation including the effect of transmission line losses – Loss Coefficients, General transmission line loss formula.	10/07/13	22/07/13	2*4=8
4.	*UNIT – III Hydrothermal Scheduling* Optimal scheduling of Hydrothermal System: Hydroelectric power plant models, Scheduling problems-Short term Hydrothermal scheduling	24/07/13	05/08/13	2*4=8

	problem.			
5.	**UNIT –IV** *Modelling of Turbine, Generator and Automatic Controllers* **Modelling of Turbine**: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models. **Modelling of Generator** (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation) and State-Space II-Order Mathematical Model of Synchronous Machine. **Modelling of Governor**: Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function. **Modelling of Excitation System**: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	12/08/13	21/08/13	2*4=8
6.	**UNIT – V** *Single Area Load Frequency Control* Necessity of keeping frequency constant. Definitions of Control area – Single area control – Block diagram representation of an isolated power system – Steady state analysis – Dynamic response – Uncontrolled case.	02/09/13	18/09/13	2*3=6
7.	**UNIT – VI Two-Area Load Frequency Control** Load frequency control of 2-area system – uncontrolled case and controlled case, tie-line bias control	23/09/13	25/09/13	2*2=4
8.	**UNIT-VII Load Frequency Controllers** Proportional plus Integral control of single area and its block diagram representation, steady state response – Load Frequency Control and Economic dispatch control.	30/09/13	08/10/13	2*2=4
9	**UNIT – VIII Reactive Power Control** Overview of Reactive Power control – Reactive Power compensation in transmission systems – advantages and disadvantages of different types of	10/10/13	23/10/13	2*3=6

	compensating equipment for transmission systems; load compensation – Specifications of load compensator, Uncompensated and compensated transmission lines: shunt and Series Compensation			

Total No. of Instructional periods available for the course: ...……50……. Periods

Signature of HOD   Signature of faculty

Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

ILLUSTRATIVE VERBS FOR STATING INSTRUCTIONAL OBJECTIVES

These verbs can also be used while framing questions for Continuous Assessment Examinations as well as for End – Semester (final)Examinations

ILLUSTRATIVE VERBS FOR STATING GENERAL OBJECTIVES/OUTCOMES

Know
Comprehend
Understand
Apply
Analyze
Design
Generate
Evaluate

ILLUSTRATIVE VERBS FOR STATING SPECIFIC OBJECTIVES/OUTCOMES:

A. COGNITIVE DOMAIN (KNOWLEDGE)

1	2	3	4	5	6
Knowledge	Comprehension Understanding	Application of knowledge & comprehension	Analysis Of whole w .r.t. its constituents	Synthesis	Evaluation Judgment
Define	Convert	Change	Breakdown	Categorize	Appraise
Identify	Defend	Compute	Differentiate	Combine	Compare
Label	Describe (a	Demonstrate	Discriminate	Compose	Conclude
List	Procedure)	Deduce	Distinguish	Compose	Contrast
March	Distinguish	Manipulate	Separate	Create	Criticize
Reproduce	Estimate	Modify	Subdivide	Devise	Justify
Select	Explain why/how	Predict		Design	Interpret
State	Extend	Prepare		Generate	Support
	Generalize	Relate		Organize	
	Give examples	Show		Plan	
	Illustrate	Solve		Rearrange	
	Infer			Reconstruct	
	Summarize			Reorganize	
				Revise	

B. AFFECTIVE DOMAIN (ATTITUDE)	C. PSYCHOMOTOR DOMAIN (SKILLS)

Adhere	Resolve		Bend	Dissect	Insert	Perform	Straighten
Assist	Select		Calibrate	Draw	Keep	Prepare	Strengthen
Attend	Serve		Compress	Extend	Elongate	Remove	Time
Change	Share		Conduct	Feed	Limit	Replace	Transfer
Develop			Connect	File	Manipulate	Report	Type
Help			Convert	Grow	Move Precisely	Reset	Weigh
Influence			Decrease	Increase	Paint	Set	

Signature of HOD   Signature of faculty

Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

SCHEDULE OF INSTRUCTIONS
COURSE PLAN

Academic Year   : 2013-2014

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.:____to____
1.	1.	02/07/13	1	Optimal operation of Generators in Thermal Power Stations	1 ; 1,2	Nagrath & Kothari
	2.	02/07/13	1	- heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
	3.	04/07/13	1	Optimum generation allocation with line losses neglected.	1;1,2,3,4	Nagrath & Kothari
	4.	04/07/13	1	Optimum generation allocation with line losses neglected. algorithm & flowchart	1;1,2	Nagrath & Kothari
	5.	09/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari
2.	1.	11/07/13	2	Optimum generation allocation including the effect of transmission line losses	1 ; 1,2	Nagrath & Kothari
	2.	16/07/13	1	Loss Coefficients,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
	3.	16/07/13	1	General transmission line loss formula.	1;1,2,3,4	Nagrath & Kothari
	4.	18/07/13	2	Optimum generation allocation including the effect of transmission line losses_algorithm & flowchart	1;1,2	Nagrath & Kothari
	5.	23/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari
3.		25/07/13	1	Optimal scheduling of	3;1,2	Nagrath & Kothari

	1.			Hydrothermal System		
	2.	25/07/13	1	Optimal scheduling of Hydrothermal System-algorithm	3;2	Nagrath & Kothari & C.L.Wadwa
	3.	30/07/13	1	Hydroelectric power plant models	3;2	Nagrath & Kothari
	4.	30/07/13	1	Scheduling problems	3;1,2	Nagrath & Kothari
	5.	01/08/13	2	Short term Hydrothermal scheduling problem	3;2	Nagrath & Kothari
	6.	06/08/13	2	Numerical problems	3;3,4	Nagrath & Kothari C.L.Wadwa
4.	1.	08/08/13	1	Modelling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.	1,2;1,6	Nagrath & Kothari ,Das
	2.	08/08/13	1	Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)	1;1	Nagrath & Kothari & Das
	3.	13/08/13	1	State-Space II-Order Mathematical Model of Synchronous Machine.	1;1	Nagrath & Kothari
	4.	13/08/13	1	Modelling of Governor:	2;1	Nagrath & Kothari, C.L.Wadwa
	5.	22/08/13	1	Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function.	2;1	Nagrath & Kothari, C.L.Wadwa
	6.	22/08/13	1	Modelling of Excitation System: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	3;1,2,6	Nagrath & Kothari,Das
	7.	23/08/13	2	Numerical problems	2;3	Nagrath & Kothari, Das & C.L.Wadwa
5.	1.	29/08/13	1	Necessity of keeping frequency constant. Definitions of Control area – Single area control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	2.		1	Block diagram representation of an isolated power system	1;1,5,7	PSOC by Siva Nagaraju

		29/08/13				
	3.	03/09/13	1	Steady state analysis	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	03/09/13	1	Dynamic response – Uncontrolled case.	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	5.	10/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju
6.	1.	12/09/13	1	Load frequency control of 2-area system	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	2.	12/09/13	1	Steady state & dynamic analysis for uncontrolled case	1;1,5,7	PSOC by Siva Nagaraju
	3.	19/09/13	1	Steady state & dynamic analysis controlled case	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	19/09/13	1	tie-line bias control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	5.	24/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju
7.	1.	26/09/13	1	Proportional plus Integral control of single area and its block diagram representation	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	2.	26/09/13	1	steady state response	1;1,5,7	PSOC by Siva Nagaraju
	3.	01/10/13	1	Load Frequency Control and Economic dispatch control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	01/10/13	1	State space model of LFC-1 and LFC-2	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	5.	03/10/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju
8.	1.	08/10/13	1	Overview of Reactive Power control	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	2.	08/10/13	1	Reactive Power compensation in transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	3.	10/10/13	1	advantages and disadvantages of different types of compensating equipment for transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	4.	10/10/13	1	load compensation – Specifications of load compensator	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	5.	17/10/13	1	Uncompensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju

		1	compensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
6.	17/10/13				
7.	24/10/13	1	shunt Compensation, Series Compensation.	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
8.	24/10/13	1	Numerical problems	3;3	PS by C.L.Wadwa ,PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

SCHEDULE OF INSTRUCTIONS
COURSE PLAN

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.:____to____
1.	1.	02/07/13	1	Optimal operation of Generators in Thermal Power Stations	1 ; 1,2	Nagrath & Kothari
	2.	02/07/13	1	- heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
	3.	04/07/13	1	Optimum generation allocation with line losses neglected.	1;1,2,3,4	Nagrath & Kothari
	4.	04/07/13	1	Optimum generation allocation with line losses neglected. algorithm & flowchart	1;1,2	Nagrath & Kothari
	5.	08/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari
2.	1.	10/07/13	2	Optimum generation allocation including the effect of transmission line losses	1 ; 1,2	Nagrath & Kothari
	2.	15/07/13	1	Loss Coefficients,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
	3.	15/07/13	1	General transmission line loss formula.	1;1,2,3,4	Nagrath & Kothari
	4.	17/07/13	2	Optimum generation allocation including the effect of transmission line losses_algorithm & flowchart	1;1,2	Nagrath & Kothari
	5.	22/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari

3.	1.	24/07/13	1	Optimal scheduling of Hydrothermal System	3;1,2	Nagrath & Kothari
	2.	24/07/13	1	Optimal scheduling of Hydrothermal System-algorithm	3;2	Nagrath & Kothari & C.L.Wadwa
	3.	29/07/13	1	Hydroelectric power plant models	3;2	Nagrath & Kothari
	4.	29/07/13	1	Scheduling problems	3;1,2	Nagrath & Kothari
	5.	31/07/13	2	Short term Hydrothermal scheduling problem	3;2	Nagrath & Kothari
	6.	05/08/13	1	Numerical problems	3;3,4	Nagrath & Kothari C.L.Wadwa
4.	1.	12/08/13	1	Modelling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.	1,2;1,6	Nagrath & Kothari ,Das
	2.	12/08/13	1	Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)	1;1	Nagrath & Kothari & Das
	3.	14/08/13	1	State-Space II-Order Mathematical Model of Synchronous Machine.	1;1	Nagrath & Kothari
	4.	14/08/13	1	Modelling of Governor:	2;1	Nagrath & Kothari, C.L.Wadwa
	5.	19/08/13	1	Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function.	2;1	Nagrath & Kothari, C.L.Wadwa
	6.	19/08/13	1	Modelling of Excitation System: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	3;1,2,6	Nagrath & Kothari,Das
	7.	21/08/13	2	Numerical problems	2;3	Nagrath & Kothari, Das & C.L.Wadwa
5.	1.	02/09/13	1	Necessity of keeping frequency constant. Definitions of Control area – Single area control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
		02/09/13	1	Block diagram representation of	1;1,5,7	PSOC by Siva Nagaraju

	2.			an isolated power system		
	3.	11/09/13	1	Steady state analysis	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	11/09/13	1	Dynamic response – Uncontrolled case.	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	5.	18/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju
6.	1.	23/09/13	1	Load frequency control of 2-area system	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	2.	23/09/13	1	Steady state & dynamic analysis for uncontrolled case	1;1,5,7	PSOC by Siva Nagaraju
	3.	25/09/13	1	Steady state & dynamic analysis controlled case, tie-line bias control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	25/09/13	1	Numerical problems	1;1,5,7	PSOC by Siva Nagaraju
7.	1.	30/09/13	1	Proportional plus Integral control of single area and its block diagram representation, steady state response	1,2;3,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	2.	30/09/13	1	Load Frequency Control and Economic dispatch control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	3.	07/10/13	1	State space model of LFC-1 and LFC-2	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
	4.	07/10/13	1	Numerical problems	1;1,5,7	PSOC by Siva Nagaraju
8	1.	09/10/13	1	Overview of Reactive Power control, Reactive Power compensation in transmission systems	1;1,5,7	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	2.	09/10/13	1	advantages and disadvantages of different types of compensating equipment for transmission systems	1,2;3,5,7	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	3.	21/10/13	1	load compensation – Specifications of load compensator	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	4.	21/10/13	1	Uncompensated transmission lines, compensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	5.	23/10/13	1	shunt Compensation, Series Compensation.	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
	6.	23/10/13	1	Numerical problems	3;2	PS by C.L.Wadwa ,PSOC by Siva

						Nagaraju

Signature of HOD

Date:

<div style="text-align:right">Signature of faculty

Date:</div>

Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

POWER SYSTEM OPERATION AND CONTROL

SYLLABUS

Objective :

This subject deals with Economic operation of Power Systems, Hydrothermal schedulings and modeling of turbines, generators and automatic controllers. It emphasizes on single area and two area load frequency control and reactive power control.

UNIT – I Economic Operation of Power Systems-1

Optimal operation of Generators in Thermal Power Stations, - heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics, Optimum generation allocation with line losses neglected.

UNIT – II   Economic Operation of Power Systems-2

Optimum generation allocation including the effect of transmission line losses – Loss Coefficients, General transmission line loss formula.

UNIT – III   Hydrothermal Scheduling

Optimal scheduling of Hydrothermal System: Hydroelectric power plant models, Scheduling problems-Short term Hydrothermal scheduling problem.

UNIT –IV   Modelling of Turbine, Generator and Automatic Controllers

Modelling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.

Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation) and State-Space II-Order Mathematical Model of Synchronous Machine.

Modelling of Governor: Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function.

Modelling of Excitation System: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model

UNIT – V   Single Area Load Frequency Control

Necessity of keeping frequency constant.

Definitions of Control area – Single area control – Block diagram representation of an isolated power system – Steady state analysis – Dynamic response – Uncontrolled case.

UNIT – VI   Two-Area Load Frequency Control

Load frequency control of 2-area system – uncontrolled case and controlled case, tie-line bias control

UNIT-VII   Load Frequency Controllers

Proportional plus Integral control of single area and its block diagram representation, steady state response – Load Frequency Control and Economic dispatch control.

UNIT – VIII   Reactive Power Control

Overview of Reactive Power control – Reactive Power compensation in transmission systems – advantages and disadvantages of different types of compensating equipment for transmission systems; load compensation – Specifications of load compensator, Uncompensated and compensated transmission lines: shunt and Series Compensation.

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Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

<u>TIME TABLE</u>

Academic Year : 2013-2014

Semester : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

IV BTech (EEE) A - ISemester

DAY/ HOUR	11:00-11:50	11:5012:40	12:40-1:30	1:30-2:00	2:00-2:45	2:45-3:30	3:30-4:15	4:15-5:00
MONDAY				B R E A K				
TUESDAY					PSOC			
WEDNESDAY								
THURSDAY							PSOC	
FRIDAY								
SATURDAY								

Signature of HOD   Signature of faculty

Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

<u>TIME TABLE</u>

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

IV BTech (EEE) B - ISemester

DAY/ HOUR	11:00-11:50	11:5012:40	12:40-1:30	1:30-2:00	2:00-2:45	2:45-3:30	3:30-4:15	4:15-5:00
MONDAY	PSOC			B R E A K				
TUESDAY								
WEDNESDAY	PSOC							
THURSDAY								
FRIDAY								
SATURDAY								

Signature of HOD   Signature of faculty
Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 1

Name of the Program: B.Tech Year: IV Section: A

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Less on No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1.	02/07/13	1	Optimal operation of Generators in Thermal Power Stations	1 ; 1,2	Nagrath & Kothari
2.	02/07/13	1	- heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
3.	04/07/13	1	Optimum generation allocation with line losses neglected.	1;1,2,3,4	Nagrath & Kothari
4.	04/07/13	1	Optimum generation allocation with line losses neglected. algorithm & flowchart	1;1,2	Nagrath & Kothari
5.	09/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 1

Name of the Program: B.Tech Year: IV Section: B

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____ to ____
1.	02/07/13	1	Optimal operation of Generators in Thermal Power Stations	1 ; 1,2	Nagrath & Kothari
2.	02/07/13	1	- heat rate Curve – Cost Curve – Incremental fuel and Production costs, input-output characteristics,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
3.	04/07/13	1	Optimum generation allocation with line losses neglected.	1;1,2,3,4	Nagrath & Kothari
4.	04/07/13	1	Optimum generation allocation with line losses neglected. algorithm & flowchart	1;1,2	Nagrath & Kothari
5.	08/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 2

Name of the Program: B.Tech Year: IV Section: A

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	11/07/13	2	Optimum generation allocation including the effect of transmission line losses	1 ; 1,2	Nagrath & Kothari
2.	16/07/13	1	Loss Coefficients,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
3.	16/07/13	1	General transmission line loss formula.	1;1,2,3,4	Nagrath & Kothari
4.	18/07/13	2	Optimum generation allocation including the effect of transmission line losses_algorithm & flowchart	1;1,2	Nagrath & Kothari
5.	23/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 2

Name of the Program: B.Tech Year: IV Section: B

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	10/07/13	2	Optimum generation allocation including the effect of transmission line losses	1 ; 1,2	Nagrath & Kothari
2.	15/07/13	1	Loss Coefficients,	1;1,2,4	Nagrath & Kothari & C.L.Wadwa
3.	15/07/13	1	General transmission line loss formula.	1;1,2,3,4	Nagrath & Kothari
4.	17/07/13	2	Optimum generation allocation including the effect of transmission line losses_algorithm & flowchart	1;1,2	Nagrath & Kothari
5.	22/07/13	2	Numerical problems	1;1,3	Nagrath & Kothari

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.:   3

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	25/07/13	1	Optimal scheduling of Hydrothermal System	3;1,2	Nagrath & Kothari
2.	25/07/13	1	Optimal scheduling of Hydrothermal System-algorithm	3;2	Nagrath & Kothari & C.L.Wadwa
3.	30/07/13	1	Hydroelectric power plant models	3;2	Nagrath & Kothari
4.	30/07/13	1	Scheduling problems	3;1,2	Nagrath & Kothari
5.	01/08/13	2	Short term Hydrothermal scheduling problem	3;2	Nagrath & Kothari
6.	06/08/13	2	Numerical problems	3;3,4	Nagrath & Kothari C.L.Wadwa

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Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.: 3

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____ to ____
1.	24/07/13	1	Optimal scheduling of Hydrothermal System	3;1,2	Nagrath & Kothari
2.	24/07/13	1	Optimal scheduling of Hydrothermal System-algorithm	3;2	Nagrath & Kothari & C.L.Wadwa
3.	29/07/13	1	Hydroelectric power plant models	3;2	Nagrath & Kothari
4.	29/07/13	1	Scheduling problems	3;1,2	Nagrath & Kothari
5.	31/07/13	2	Short term Hydrothermal scheduling problem	3;2	Nagrath & Kothari
6.	05/08/13	2	Numerical problems	3;3,4	Nagrath & Kothari C.L.Wadwa

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.: 4

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.:____to____
1.	08/08/13	1	Modelling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.	1,2;1,6	Nagrath & Kothari ,Das
2.	08/08/13	1	Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)	1;1	Nagrath & Kothari & Das
3.	13/08/13	1	State-Space II-Order Mathematical Model of Synchronous Machine.	1;1	Nagrath & Kothari
4.	13/08/13	1	Modelling of Governor:	2;1	Nagrath & Kothari, C.L.Wadwa
5.	22/08/13	1	Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function.	2;1	Nagrath & Kothari, C.L.Wadwa
6.	22/08/13	1	Modelling of Excitation System: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	3;1,2,6	Nagrath & Kothari,Das

7.	23/08/13	2	Numerical problems	2;3	Nagrath & Kothari, Das & C.L.Wadwa

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Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology
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Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.:   4

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	12/08/13	1	Modelling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.	1,2;1,6	Nagrath & Kothari ,Das
2.	12/08/13	1	Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)	1;1	Nagrath & Kothari & Das
3.	14/08/13	1	State-Space II-Order Mathematical Model of Synchronous Machine.	1;1	Nagrath & Kothari
4.	14/08/13	1	Modelling of Governor:	2;1	Nagrath & Kothari, C.L.Wadwa
5.	19/08/13	1	Mathematical Modelling of Speed Governing System – Derivation of small signal transfer function.	2;1	Nagrath & Kothari, C.L.Wadwa
6.	19/08/13	1	Modelling of Excitation System: Fundamental Characteristics of an Excitation system, Ttransfer function, Block Diagram Representation of IEEE Type-1 Model	3;1,2,6	Nagrath & Kothari,Das
	21/08/13	2	Numerical problems	2;3	Nagrath & Kothari, Das

7.					& C.L.Wadwa

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.: 5

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ___ to ___
1.	29/08/13	1	Necessity of keeping frequency constant. Definitions of Control area – Single area control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	29/08/13	1	Block diagram representation of an isolated power system	1;1,5,7	PSOC by Siva Nagaraju
3.	03/09/13	1	Steady state analysis	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	03/09/13	1	Dynamic response – Uncontrolled case.	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
5.	10/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 5

Name of the Program: B.Tech Year: IV Section: B

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ___ to ___
1.	02/09/13	1	Necessity of keeping frequency constant. Definitions of Control area – Single area control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	02/09/13	1	Block diagram representation of an isolated power system	1;1,5,7	PSOC by Siva Nagaraju
3.	11/09/13	1	Steady state analysis	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	11/09/13	1	Dynamic response – Uncontrolled case.	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
5.	18/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.:   6

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____ to ____
1.	12/09/13	1	Load frequency control of 2-area system	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	12/09/13	1	Steady state & dynamic analysis for uncontrolled case	1;1,5,7	PSOC by Siva Nagaraju
3.	19/09/13	1	Steady state & dynamic analysis controlled case	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	19/09/13	1	tie-line bias control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
5.	24/09/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 6

Name of the Program: B.Tech Year: IV Section: B

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ___ to ___
1.	23/09/13	1	Load frequency control of 2-area system	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	23/09/13	1	Steady state & dynamic analysis for uncontrolled case	1;1,5,7	PSOC by Siva Nagaraju
3.	25/09/13	1	Steady state & dynamic analysis controlled case, tie-line bias control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	25/09/13	1	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.: 7

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	26/09/13	1	Proportional plus Integral control of single area and its block diagram representation	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	26/09/13	1	steady state response	1;1,5,7	PSOC by Siva Nagaraju
3.	01/10/13	1	Load Frequency Control and Economic dispatch control	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	01/10/13	1	State space model of LFC-1 and LFC-2	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
5.	03/10/13	2	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2013-2014

Semester : I UNIT NO.: 7

Name of the Program: B.Tech Year: IV Section: B

Course/Subject: Power System Operation Control Course Code: 57015

Name of the Faculty: K.Sireesha Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1.	30/09/13	1	Proportional plus Integral control of single area and its block diagram representation, steady state response	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
2.	30/09/13	1	Load Frequency Control and Economic dispatch control	1;1,5,7	PSOC by Siva Nagaraju
3.	07/10/13	1	State space model of LFC-1 and LFC-2	1;1,5,7	PSA by Nagrath & Kothari ,PSOC by Siva Nagaraju
4.	07/10/13	1	Numerical problems	1,2;3,5,7	PSOC by Siva Nagaraju

Signature of HOD Signature of faculty

Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology
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Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.:   8

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ___ to ___
1.	08/10/13	1	Overview of Reactive Power control	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
2.	08/10/13	1	Reactive Power compensation in transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
3.	10/10/13	1	advantages and disadvantages of different types of compensating equipment for transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
4.	10/10/13	1	load compensation – Specifications of load compensator	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
5.	17/10/13	1	Uncompensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
6.	17/10/13	1	compensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
7.	24/10/13	1	shunt Compensation, Series Compensation.	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
8.	24/10/13	1	Numerical problems	3;3	PS by C.L.Wadwa ,PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year   : 2013-2014

Semester   :   I   UNIT NO.:   8

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: to
1	09/10/13	1	Overview of Reactive Power control, Reactive Power compensation in transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
2.	09/10/13	1	advantages and disadvantages of different types of compensating equipment for transmission systems	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
3.	21/10/13	1	load compensation – Specifications of load compensator	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
4.	21/10/13	1	Uncompensated transmission lines, compensated transmission lines	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
5.	23/10/13	1	shunt Compensation, Series Compensation.	3;2	PS by C.L.Wadwa ,PSOC by Siva Nagaraju
6.	23/10/13	1	Numerical problems	3;3	PS by C.L.Wadwa ,PSOC by Siva Nagaraju

Signature of HOD   Signature of faculty

Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 1   Duration of Lesson: 1 hr

Lesson Title: INTRODUCTION & IMPORATANCE OF SUBJECT.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Various power plants located in the state and country.

2.Importance of cost consideration for power generation and maintaining frequency and voltage constant.

3.Need of control systems concepts used in the subject

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Cost of generation Economic operation Load frequency control Reactive power

Assignment Question:
1.Collect various Thermal and Hydel power plants in Andhrapradesh with their capacities and location.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 1   Duration of Lesson: 1 hr

Lesson Title: INTRODUCTION & IMPORATANCE OF SUBJECT.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Various power plants located in the state and country.

2.Importance of cost consideration for power generation and maintaining frequency and voltage constant.

3.Need of control systems concepts used in the subject

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Cost of generation Economic operation Load frequency control Reactive power

Assignment Question:
1.Collect various Thermal and Hydel power plants in Andhrapradesh with their capacities and location.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 2   Duration of Lesson: 30 min

Lesson Title: I/P-O/P CHARACTERISTICS AND RELATED DEFINITIONS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1. I/P-O/P Characteristics

2. Heat rate ,Incremental production cost,Incremental efficiency

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Cost of generation
Economic operation
Load frequency control
Reactive power

Assignment Question:
1.Collect various Thermal and Hydel power plants in Andhrapradesh with their capacities and location.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 2   Duration of Lesson: 30 min

Lesson Title: I/P-O/P CHARACTERISTICS AND RELATED DEFINITIONS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1. I/P-O/P Characteristics

2. Heat rate ,Incremental production cost,Incremental efficiency

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Cost of generation
Economic operation
Load frequency control
Reactive power

Assignment Question:
1.Collect various Thermal and Hydel power plants in Andhrapradesh with their capacities and location.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

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LESSON PLAN

Academic Year   : 2013-2014   Date: 04/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 3   Duration of Lesson: 1.5 hr

Lesson Title: OPTIMIM GENERATION ALLOCATION WITH LINE LOSSES NECLEGTED.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Optimum condition for economic operation of power system neglecting line losses.

2.Algorithm and flowchart of optimum generation allocation with line losses neglected.

TEACHING AIDS   :PPTs,Board
TEACHING POINTS   :

Optimum condition
Economic operation
Algorithm
Flowchart

Assignment Question:
1..Analyse Lagrangian multiplier method of optimization.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 04/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 3   Duration of Lesson: 1.5 hr

Lesson Title: OPTIMIM GENERATION ALLOCATION WITH LINE LOSSES NECLEGTED.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Optimum condition for economic operation of power system neglecting line losses.

2.Algorithm and flowchart of optimum generation allocation with line losses neglected.

TEACHING AIDS   :PPTs,Board
TEACHING POINTS   :

Optimum condition
Economic operation
Algorithm
Flowchart

Assignment Question:
1.Analyse Lagrangian multiplier method of optimization.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 09/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 4   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-1.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in unit-1

TEACHING AIDS   :Board
TEACHING POINTS   :

Max and min capacities of the unit cost expression Incremental cost expression optimum condition

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 08/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 4   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-1.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in unit-1

TEACHING AIDS   :Board
TEACHING POINTS   :

Max and min capacities of the unit
cost expression
Incremental cost expression
optimum condition

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 11/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 5   Duration of Lesson: 1.5 hr

Lesson Title: EFFECT OF TRANSMISSION LOSSES ,LOSS COEFICIENTS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Need of consideration of transmission losses in optimum operation of power plants.

2. loss coefficients matrix and their units.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Transmission loss
Bmn coefficients

Assignment Question:
1.What is the temperature & pressure at various stages of Thermal power plant.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 10/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 5   Duration of Lesson: 1.5 hr

Lesson Title: EFFECT OF TRANSMISSION LOSSES ,LOSS COEFICIENTS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Need of consideration of transmission losses in optimum operation of power plants.

2. Loss coefficients matrix and their units.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Transmission loss Bmn coefficients

Assignment Question:
1.What is the temperature & pressure at various stages of Thermal power plant.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 16/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 6   Duration of Lesson: 1.5 hr

Lesson Title:OPTIMIM GENERATION ALLOCATION INGLUDING LINE LOSSES .

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Derive optimum condition for economic operation of power system including line losses.
2.Write Algorithm and draw flowchart of economic operation of power system including line losses.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Optimum condition
Economic operation
Algorithm
Flowchart

Assignment Question:
1.Algorithm and flowchart of economic operation of power system including losses

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 15/07/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 6   Duration of Lesson: 1.5 hr

Lesson Title:OPTIMIM GENERATION ALLOCATION INGLUDING LINE LOSSES .

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Derive optimum condition for economic operation of power system including line losses.
2.Write Algorithm and draw flowchart of economic operation of power system including line losses.

TEACHING AIDS   :PPTs
TEACHING POINTS :

Optimum condition
Economic operation
Algorithm
Flowchart

Assignment Question:
1.Algorithm and flowchart of economic operation of power system including losses

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 18/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 7   Duration of Lesson: 1.5 hr

Lesson Title: GENERAL TRANSMISSION LINE LOSS FORMULA.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Derive general transmission line loss formula.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Loss formula B_{mn} coefficients generalized representation

Question:
1.Analyse B_{mn} Coefficients for calculating transmission power loss.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

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LESSON PLAN

Academic Year   : 2013-2014   Date: 17/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 7   Duration of Lesson: 1.5 hr

Lesson Title: GENERAL TRANSMISSION LINE LOSS FORMULA.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Derive general transmission line loss formula.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Loss formula
B_{mn} coefficients
generalized representation

Question:
1.Analyse B_{mn} Coefficients for calculating transmission power loss.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 23/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 8   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-2.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems related to UNIT-2.

TEACHING AIDS   :PPTs,Board
TEACHING POINTS   :

Max and min capacities of the unit
cost expression
Incremental cost expression
Optimum condition
Transmission loss formula

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 22/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 8   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-2.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems related to UNIT-2.

TEACHING AIDS   :PPTs,Board
TEACHING POINTS   :

Max and min capacities of the unit
cost expression
Incremental cost expression
Optimum condition
Transmission loss formula

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 25/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 9   Duration of Lesson: 1 hr

Lesson Title: HYDRO ELECTRIC POWER PLANT MODELS,HYDRO THERMAL SCHEDULING.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Optimal scheduling of Hydrothermal System
2.Optimal scheduling of Hydrothermal System-algorithm

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Optimal scheduling
Hydrothermal System
Algorithm

Question:
1.How to represent the fundamental hydrothermal model.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 24/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 9   Duration of Lesson: 1 hr

Lesson Title: HYDRO ELECTRIC POWER PLANT MODELS,HYDRO THERMAL SCHEDULING.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Optimal scheduling of Hydrothermal System
2.Optimal scheduling of Hydrothermal System-algorithm

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Optimal scheduling
Hydrothermal System
Algorithm

Question:
1.How to represent the fundamental hydrothermal model.

Objective Nos.: 1,2
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 30/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 10   Duration of Lesson: 1.5 hr

Lesson Title: LONG TERM HYDRO THERMAL SCHEDULING,SCHEDULING PROBLEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Mathematical formulation of long term hydro thermal scheduling.
2.Scheduling problems.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Long term Hydro thermal scheduling

Assignment Question:
1.Review Load flow studies.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 29/07/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 10   Duration of Lesson: 1.5 hr

Lesson Title: LONG TERM HYDRO THERMAL SCHEDULING,SCHEDULING PROBLEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Mathematical formulation of long term hydro thermal scheduling.
2.Scheduling problems.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Long term Hydro thermal scheduling

Assignment Question:
1.Review Load flow studies.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 01/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 11   Duration of Lesson: 1.5 hr

Lesson Title: SHORT TERM HYDRO THERMAL SCHEDULING.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1. Short term Hydrothermal scheduling problem

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Short term
scheduling problem

Assignment Question:
1.Compare long term and short term hydrothermal scheduling problem.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 31/07/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 11   Duration of Lesson: 1.5 hr

Lesson Title: SHORT TERM HYDRO THERMAL SCHEDULING.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.Short term Hydrothermal scheduling problem

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Short term scheduling problem

Assignment Question:
1.Compare long term and short term hydrothermal scheduling problem.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 06/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 12   Duration of Lesson: 1.5 hr

Lesson Title: OPTIMAL UNIT COMMITMENT PROBLEM,NUMERICAL PROBLEMS IN UNIT-3.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand Optimal unit commitment problem.
Solve numerical problems in UNIT-3.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Optimal unit commitment problem

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 05/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 12   Duration of Lesson: 1.5 hr

Lesson Title: OPTIMAL UNIT COMMITMENT PROBLEM,NUMERICAL PROBLEMS IN UNIT-3.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand Optimal unit commitment problem.
Solve numerical problems in UNIT-3.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Optimal unit commitment problem

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 3
Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year : 2013-2014   Date: 08/08/2013

Semester : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 13   Duration of Lesson: 1.5 hr

Lesson Title: MODELLING OF TURBINE , GENERATOR LOAD MODEL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Modelling of Turbine: First order Turbine model.

2.Block Diagram representation of Steam Turbines and Approximate Linear Models.

3.Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)

TEACHING AIDS   :PPTs
TEACHING POINTS   :

First order Turbine model
Block Diagram representation
Linear Models
Swing Equation

Assignment Question:
1.Block diagram representation of important power system components.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 12/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 13   Duration of Lesson: 1.5 hr

Lesson Title: MODELLING OF TURBINE , GENERATOR LOAD MODEL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Modelling of Turbine: First order Turbine model.

2.Block Diagram representation of Steam Turbines and Approximate Linear Models.

3.Modelling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation)

TEACHING AIDS   :PPTs
TEACHING POINTS   :

First order Turbine model
Block Diagram representation
Linear Models
Swing Equation

Assignment Question:
1.Block diagram representation of important power system components.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 13/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 14   Duration of Lesson: 45 min

Lesson Title: MODELLING OF SPEED GOVERNOR.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.State-Space II-Order Mathematical Model of Synchronous Machine.
2.Modelling of Governor

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Speed Governor
Hydraullic amplifier

Assignment Question:
1.what is the importance of Speed governor operation in thermal power stations.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 14/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 14   Duration of Lesson: 45 min

Lesson Title: MODELLING OF SPEED GOVERNOR.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to understand:

1.State-Space II-Order Mathematical Model of Synchronous Machine.
2.Modelling of Governor

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Speed Governor
Hydraullic amplifier

Assignment Question:
1.what is the importance of Speed governor operation in thermal power stations.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 13/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 15   Duration of Lesson: 45min

Lesson Title: MODELLING OF EXCITATION SYSTEM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Modelling of Excitation System: Fundamental Characteristics of an Excitation system.

2.Transfer function and Block Diagram Representation of IEEE Type-1 Model.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Excitation system
IEEE Type-1 Model
Transfer function
Block Diagram

Assignment Question:
1.How Q-V control done using excitation control.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 19/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 15   Duration of Lesson: 45min

Lesson Title: MODELLING OF EXCITATION SYSTEM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Modelling of Excitation System: Fundamental Characteristics of an Excitation system.

2.Transfer function and Block Diagram Representation of IEEE Type-1 Model.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Excitation system
IEEE Type-1 Model
Transfer function
Block Diagram

Assignment Question:
1.How Q-V control done using excitation control.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 22/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 16   Duration of Lesson: 1.5 hr

Lesson Title: STATE SPACE II ORDER MATHEMATICAL MODEL OF SYNCHRONOUS MACHINE.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.State-Space II-Order Mathematical Model of Synchronous Machine.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

State-Space model
Synchronous Machine

Assignment Question:
1.Importance of representation of synchronous machine in state-space.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 19/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 16   Duration of Lesson: 1.5 hr

Lesson Title: STATE SPACE II ORDER MATHEMATICAL MODEL OF SYNCHRONOUS MACHINE.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.State-Space II-Order Mathematical Model of Synchronous Machine.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

State-Space model
Synchronous Machine

Assignment Question:
1.Importance of representation of synchronous machine in state-space.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 23/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 17   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-4

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Solve numerical problems in UNIT-4

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Transfer function
Modelling of PS components

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic **Y**ear   : 2013-2014   Date: 21/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 17   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-4

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Solve numerical problems in UNIT-4

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Transfer function
Modelling of PS components

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2,3
Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 29/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 18   Duration of Lesson: 45min

Lesson Title: NECCCESITY OF KEEPING FREQUENCY CONSTANT.DEFINITIONS OF CONTROL AREA,SINGLE AREA CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Relation between frequency and speed in ac motors.
2.Necessity of keeping frequency constant.
3.Definitions of control area,single area control.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Load frequency control
Control area
Single area control

Assignment Question:
1.Control areas in India.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 18   Duration of Lesson: 45min

Lesson Title: NECCCESITY OF KEEPING FREQUENCY CONSTANT.DEFINITIONS OF CONTROL AREA,SINGLE AREA CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Relation between frequency and speed in ac motors.
2.Necessity of keeping frequency constant.
3.Definitions of control area,single area control.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Load frequency control
Control area
Single area control

Assignment Question:
1.Control areas in India.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 29/08/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 19   Duration of Lesson: 45min

Lesson Title: BLOCKDIAGRAM REPRESENTATION OF ISOLATED POWER SYSTEM MODEL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Block diagram representation of isolated power system model.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Isolated power system model
Load frequency control
Block diagram

Assignment Question:
1.How individual block diagrams of PS components combined to get isolated power system model.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 02/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 19   Duration of Lesson: 45min

Lesson Title: BLOCKDIAGRAM REPRESENTATION OF ISOLATED POWER SYSTEM MODEL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Block diagram representation of isolated power system model.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Isolated power system model
Load frequency control
Block diagram

Assignment Question:
1.How individual block diagrams of PS components combined to get isolated power system model.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 03/09/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 20   Duration of Lesson: 45min

Lesson Title: STEADY STATE AND DYNAMIC ANALYSIS OF LFC-1.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state of LFC-1.
2.Dynamic analysis of LFC-1.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Steady state
Dynamic analysis
Single area control

Assignment Question:
1.Final value theorem proof.
2.Formulate Laplace and Inverse Laplace transforms.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 11/09/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 20   Duration of Lesson: 45min

Lesson Title: STEADY STATE AND DYNAMIC ANALYSIS OF LFC-1.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state of LFC-1.
2.Dynamic analysis of LFC-1.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Steady state
Dynamic analysis
Single area control

Assignment Question:
1.Final value theorem proof.
2.Formulate Laplace and Inverse Laplace transforms.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 03/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 21   Duration of Lesson: 45min

Lesson Title: DYNAMIC ANALYSIS -UNCONTROLLED CASE.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Analyse dynamic response for uncontrolled case.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Uncontrolled case
Dynamic response

Assignment Question:
1.Formulate Laplace and Inverse Laplace transforms.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

![GRIET Logo]

Gokaraju Rangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

LESSON PLAN

Academic Year   : 2013-2014   Date: 11/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 21   Duration of Lesson: 45min

Lesson Title: DYNAMIC ANALYSIS -UNCONTROLLED CASE.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Analyse dynamic response for uncontrolled case.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Uncontrolled case
Dynamic response

Assignment Question:
1.Formulate Laplace and Inverse Laplace transforms.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 10/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 22   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-5.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-5.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 18/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 22   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-5.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-5.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 12/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 23   Duration of Lesson: 1.5 hr

Lesson Title: LFC-2 FOR UNCONTOLLED CASE WITH BLOCK DIAGRAM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:
Derivations related to tie line power and change in frequency.
Block diagram representation of LFC-2

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Tie line power
Block diagram representation
LFC-2

Assignment Question:
1.Generalise for n-area power system.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date:23/09/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 23   Duration of Lesson: 1.5 hr

Lesson Title: LFC-2 FOR UNCONTOLLED CASE WITH BLOCK DIAGRAM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:
Derivations related to tie line power and change in frequency.
Block diagram representation of LFC-2

TEACHING AIDS   :PPTs
TEACHING POINTS :

Tie line power
Block diagram representation
LFC-2

Assignment Question:
1.Generalise for n-area power system.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 19/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 24   Duration of Lesson: 1 hr

Lesson Title: LFC-2 FOR CONTOLLED CASE WITH BLOCK DIAGRAM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Analyse the steady state response for LFC-2.
2.Representing block diagram for LFC-2

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Two area load frequency control.
Block diagram represention.

Assignment Question:
1.Compare LFC-1 and LFC-2.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 23/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 24   Duration of Lesson: 1 hr

Lesson Title: LFC-2 FOR CONTOLLED CASE WITH BLOCK DIAGRAM.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Analyse the steady state response for LFC-2.
2.Representing block diagram for LFC-2

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Two area load frequency control.
Block diagram represention.

Assignment Question:
1.Compare LFC-1 and LFC-2.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 19/09/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 25   Duration of Lesson: 30min

Lesson Title: TIE-LINE BIAS CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Formulating Tie-line bias control for LFC-2.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Tie-line
Tie-line bias control
LFC-2

Assignment Question:
1.Importance of tie line bias control in frequency control in LFC-2.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 25/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 25   Duration of Lesson: 30min

Lesson Title: TIE-LINE BIAS CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Formulating Tie-line bias control for LFC-2.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Tie-line
Tie-line bias control
LFC-2

Assignment Question:
1.Importance of tie line bias control in frequency control in LFC-2.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 24/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 26   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-6.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-6.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 25/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 26   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-6.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-6.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 26/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 27   Duration of Lesson: 45min

Lesson Title: PI CONTROL LFC-1 BLOCK DIAGRAM REPRESENTATION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state analysis of LFC-1 with PI control.
2.Block diagram representation of LFC-1 with PI control .

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Proportional and integral control
LFC-1
Steady state analysis
Block diagram representation

Assignment Question:
1.Analyse for stability if integral control included in LFC-1.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 30/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 27   Duration of Lesson: 45min

Lesson Title: PI CONTROL LFC-1 BLOCK DIAGRAM REPRESENTATION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state analysis of LFC-1 with PI control.
2.Block diagram representation of LFC-1 with PI control .

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Proportional and integral control
LFC-1
Steady state analysis
Block diagram representation

Assignment Question:
1.Analyse for stability if integral control included in LFC-1.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 26/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 28   Duration of Lesson: 45min

Lesson Title: LFC-1 WITH PI CONROL ,STEADY STATE CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state analysis of LFC-1 with PI control.
2.Block diagram representation of LFC-1 with PI control .

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Proportional and integral control
LFC-1
Steady state analysis
Block diagram representation

Assignment Question:
1.Analyse for stability if integral control included in LFC-1.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 30/09/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 28   Duration of Lesson: 45min

Lesson Title: LFC-1 WITH PI CONROL ,STEADY STATE CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Steady state analysis of LFC-1 with PI control.
2.Block diagram representation of LFC-1 with PI control .

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Proportional and integral control
LFC-1
Steady state analysis
Block diagram representation

Assignment Question:
1.Analyse for stability if integral control included in LFC-1.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 01/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 29   Duration of Lesson: 1.5 hr

Lesson Title: LFC AND ECONOMIC DISPATCH CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Understand LFC AND Economic Dispatch Control.
2.Block diagram representation of LFC AND Economic Dispatch Control.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

LFC Control
Economic Dispatch Control
Block diagram representation

Assignment Question:
1.What is the importance of co-ordinating LFC with EDC

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 07/10/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 29   Duration of Lesson: 1.5 hr

Lesson Title: LFC AND ECONOMIC DISPATCH CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Understand LFC AND Economic Dispatch Control.
2.Block diagram representation of LFC AND Economic Dispatch Control.

TEACHING AIDS   :PPTs
TEACHING POINTS :

LFC Control Economic Dispatch Control Block diagram representation

Assignment Question:
1.What is the importance of co-ordinating LFC with EDC

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 03/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 30   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-7.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-7.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 07/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 30   Duration of Lesson: 1.5 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-7.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-7.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 1,2
Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 08/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 31   Duration of Lesson: 45min

Lesson Title: OVERVIEW OF REACTIVE POWER CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Reactive power absorption and generation.
2.Need for reactive power control.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Power factor
Reactive power
capacitors
ac motors and generators

Assignment Question:
1.Indicate reactive power generators and observers in power system.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 09/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 31   Duration of Lesson: 45min

Lesson Title: OVERVIEW OF REACTIVE POWER CONTROL.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Reactive power absorption and generation.
2.Need for reactive power control.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Power factor
Reactive power
capacitors
ac motors and generators

Assignment Question:
1.Indicate reactive power generators and observers in power system.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 08/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 32   Duration of Lesson: 45min

Lesson Title: REACTIVE POWER COMPENSATION IN TRANSMISSION SYSTEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Reactive power compensation in transmission systems

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Reactive power compensation
Transmission systems

Assignment Question:
1.Compare compensated and uncompensated transmission line.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 09/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 32   Duration of Lesson: 45min

Lesson Title: REACTIVE POWER COMPENSATION IN TRANSMISSION SYSTEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Reactive power compensation in transmission systems

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Reactive power compensation
Transmission systems

Assignment Question:
1.Compare compensated and uncompensated transmission line.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 10/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 33   Duration of Lesson: 1.5 hr

Lesson Title: ADVANTAGES AND DISADVANTAGES OF DIFFERENT TYPES OF COMPENSATING
EQUIPMENT FOR TRANSMISSION SYSTEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Advantages and disadvantages of different types of compensating equipment for transmission
systems.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Compensating equipment
Transmission systems
Reactive power

Assignment Question:
1.How compensating equipment used for reactive power control in transmission lines.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 09/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 33   Duration of Lesson: 1.5 hr

Lesson Title: ADVANTAGES AND DISADVANTAGES OF DIFFERENT TYPES OF COMPENSATING EQUIPMENT FOR TRANSMISSION SYSTEMS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Advantages and disadvantages of different types of compensating equipment for transmission systems.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Compensating equipment
Transmission systems
Reactive power

Assignment Question:
1.How compensating equipment used for reactive power control in transmission lines.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 17/10/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 34   Duration of Lesson: 45min

Lesson Title: LOAD COMPENSATION AND ITS SPECIFICATIONS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Importance of Load compensation.
2.Specifications of Load compensation .

TEACHING AIDS   :PPTs
TEACHING POINTS :

Load compensation Specifications Reactive power

Assignment Question:
1.Collect any one load compensator specifications.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 21/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 34   Duration of Lesson: 45min

Lesson Title: LOAD COMPENSATION AND ITS SPECIFICATIONS.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Importance of Load compensation.
2.Specifications of Load compensation .

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Load compensation
Specifications
Reactive power

Assignment Question:
1.Collect any one load compensator specifications.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 17/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 35   Duration of Lesson: 45min

Lesson Title: UNCOMPENSATED AND COMPENSATED TRANSMISSION LINES,COMPARISION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Analysing Uncompensated transmission lines
2.Analysing compensated transmission lines
3.Comparing both cases.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Uncompensated transmission lines
Reactive power in transmission lines
compensated transmission lines

Assignment Question:
1.Need for compensating transmission lines for reactive power control.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 21/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 35   Duration of Lesson: 45min

Lesson Title: UNCOMPENSATED AND COMPENSATED TRANSMISSION LINES,COMPARISION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Analysing Uncompensated transmission lines
2.Analysing compensated transmission lines
3.Comparing both cases.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Uncompensated transmission lines
Reactive power in transmission lines
compensated transmission lines

Assignment Question:
1.Need for compensating transmission lines for reactive power control.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 24/10/2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 36   Duration of Lesson: 30min

Lesson Title: SHUNT AND SERIES COMPENSATION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Shunt compensation
Series compensation

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Shunt compensation
Series compensation
capacitor
Reactive power
SVC

Assignment Question:
1.Basic idea about STATCOM operation and control.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 23/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 36   Duration of Lesson: 30min

Lesson Title: SHUNT AND SERIES COMPENSATION.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Shunt compensation
Series compensation

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Shunt compensation
Series compensation
capacitor
Reactive power
SVC

Assignment Question:
1.Basic idea about STATCOM operation and control.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 24/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 37   Duration of Lesson: 1 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-8.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-8.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Capacity of synchronous condensor
Reactive power

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

LESSON PLAN

Academic Year   : 2013-2014   Date: 23/10/2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR

Lesson No: 37   Duration of Lesson: 1 hr

Lesson Title: NUMERICAL PROBLEMS IN UNIT-8.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Solve numerical problems in UNIT-8.

TEACHING AIDS   :PPTs
TEACHING POINTS   :

Capacity of synchronous condensor
Reactive power

Assignment Question:
1.Example and exercise problems in various text books.

Objective Nos.: 3
Outcome Nos.: 2,3

Signature of HOD   Signature of faculty
Date: Date:

ASSIGNMENT SHEET – 1

Academic Year   : 2013-2014   Date: 10-07-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 1

Q1.Collect various Thermal and Hydel power plants in Andhrapradesh with their capacities and location.

Q2.Analyse Lagrangiean multiplier method of optimization.

Objective Nos.: 1,2

Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 2

Academic Year   : 2013-2014   Date: 24-07-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 2

Q1.What is the temperature & pressure at various stages of Thermal power plant.

Objective Nos.: 1

Outcome Nos.: 1,2,3,4

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 3

Academic Year   : 2013-2014   Date: 10-08-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 3

Q1.What is the reason of grid failure (29-07-2012) in the recent black out of northern, western eastern and north eastern grids.

Objective Nos.:   1,2

Outcome Nos.:   3,5,7

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 4

Academic Year   : 2013-2014   Date: 24-08-2013

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 4

Q1.Derivation of speed governor model

Q2. Derivation of Generator load model

Q3. Derivation of IEEE Type-1 Excitation system

Objective Nos.: 1,2,3

Outcome Nos.: 1,2,6

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 5

Academic Year   : 2013-2014   Date: 10-09-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 5

Q1.Derive the steady state frequency error of single area load frequency system.

Q2. Obtain the dynamic response of load frequency control of isolated power system for first order approximation.

Objective Nos.: 1,2

Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 6

Academic **Y**ear   : 2013-2014   Date: 24-09-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 6

Q1.Show that by interconnecting two areas the steady state frequency error is reduced by 50% as compared to single area control system.

Objective Nos.: 1,2

Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 7

Academic Year   : 2013-2014   Date: 10-10-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 7

Q1.Show how the steady state error of frequency in a typical Load Frequency Control (LFC) of a power system is reduced to zero.

Q2. Obtain the dynamic response of load frequency controller with and without integral control action.

Objective Nos.: 1,2

Outcome Nos.: 1,3,5,7

Signature of HOD   Signature of faculty

Date: Date:

ASSIGNMENT SHEET – 8

Academic **Y**ear   : 2013-2014   Date: 24-10-2013

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Assignment corresponds to Unit No. 8

Q1.Seminar Load compensation

Q2.Seminar on shunt and series compensation.

Objective Nos.: 3

Outcome Nos.: 2,3

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 1

Academic Year   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 1

Q1.Algorithm and flowchart of economic operation of power system neglecting losses

Q2. Problems on economic load dispatch.

Q3.Problems on saving in cost by utilizing optimum condition for economic generations.

Q4. Problems on considering importance of the constraints for optimum operation.

Objective Nos.   1, 2

Outcome Nos.   1, 3

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 2

Academic Year   : 2013-2014   Date:

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 2

Q1.Algotithm and flowchart of economic operation of power system including losses

Q2. Problems on economic load dispatch including losses. Significance of penalty factor.

Q3.Problems on saving in cost by utilizing optimum condition for economic generations.

Q4. Problems on considering importance of the constraints for optimum operation.

Q5. Analysing B_{mn} Coefficients for calculating transmission power loss.

Objective Nos.   1, 2

Outcome Nos.   1, 3

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 3

Academic Year   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 3

Q1.solving Optimum Unit Commitment problem

Q2. Long term hydrothermal scheduling,i.e., finding water discharge rate.

Q3. Problems on short term hydrothermal scheduling, i.e., finding hydrogenation, cost quantity of water used.

Objective Nos.   1, 3

Outcome Nos.   1, 3

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 4

Academic Year   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 4

Q1.Generator load model representation.

Q2. Problems on free governor operation and calculating change in system frequency.

Objective Nos.   1, 2

Outcome Nos.   1, 3,6

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 5

Academic Year   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 5

Q1.Problems on single area load frequency control

Objective Nos.   1, 2

Outcome Nos.   1, 3,5

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 6

Academic **Y**ear   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 6

Q1.Problems on two area load frequency control calculating tie line power and change in steady state frequency.

Objective Nos.   1, 2

Outcome Nos.   1, 3,7

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 7

Academic Year   : 2013-2014   Date:

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 7

Q1.Problems on load frequency control with and without proportion and integral control (PI).

Objective Nos.   1, 2

Outcome Nos.   1, 3,5

Signature of HOD   Signature of faculty

Date: Date:

TUTOTIAL SHEET - 8

Academic **Y**ear   : 2013-2014   Date:

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

This Tutorial corresponds to Unit No. 8

Q1.Problems on calculating capacity of synchronous condenser for reactive power control.

Q2 Seminars by students on reactive power compensation.

Objective Nos.   1, 3

Outcome Nos.   1, 2

Signature of HOD   Signature of faculty

Date: Date:

_____

1. a) Write about (i) Cost curve (ii) System variables.

b) 150MW, 220MW & 220MW are ratings of three units located in a thermal power station. Their respective incremental fuel costs are:

$$dC_1/dP_{G1} = (0.11P_{G1}+12) \text{ Rs/MWh}$$

$$dC_2/dP_{G2} = (0.095P_{G2}+14) \text{ Rs/MWh}$$

$$dC_3/dP_{G3} = (0.1P_{G3}+13) \text{ Rs/MWh}$$

    Where P_{G1}, P_{G2} & P_{G3} are power outputs in MW. Determine the economic load allocation between the three units, when the total load on station is 500 MW.

2. Derive general transmission loss formula in terms of B_{mn} coefficients.

3. A two plant system having thermal station near to the load centre and hydro power station at a remote location. The characteristics of both the stations are given as :

   $C_T(P_T) = (26+0.045P_T)P_T$ Rs/hr

   $W_H = (7+0.004P_H)P_H$ m^3/sec

   $\gamma = 4\times10^{-4}$ cost/m^3

    The transmission loss coefficients is 0.0025MW^{-1}. Determine the power generation at each station and power received by the load when λ=65 Rs/MWh .

4. a)   With   a   neat   sketch   explain   about   speed   governing   system.
    b) Derive the transfer function of generator load model and draw its block diagram.

5. a) Explain the necessity of maintaining a constant frequency in power system operation?

    b) Define (i) Control area   (ii) Single area control   (iii) Area Control Error(ACE).

6. For two area load frequency control with gain blocks, for simultaneously applied unit step load disturbance inputs in the two areas, derive an expression for steady state values of

    a)   Change in frequency   and   b) Tie line power.

7. a) Obtain the dynamic response of load frequency control of isolated power system for first order approximation.

   b) Obtain the dynamic response of load frequency controller with and without integral control action.

8. What is load compensation? Discuss its objectives in power system.

****

EVALUATION STRATEGY

Academic Year   : 2013-2014

Semester   : I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

1. TARGET:

 a) Percentage for pass: 90%

 b) Percentage of class: 70%

2. COURSE PLAN & CONTENT DELIVERY

1. By presenting PowerPoint presentation for giving clear idea about theory part in subject.
2. Using OHP slides for representing block diagrams.
3. Displaying videos of speed governor (mechanical) operation used for controlling steam valve of steam turbines.
4. Giving assignments related to subject and conducting seminars.
5. Utilizing marker board for deriving derivations and doing numerical problems.
6. Giving various models in numerical problems and allow students to solve different model problems.

3. **METHOD OF EVALUATION**

)1   Regular attendance to classes.

)2   Viva-voce during the class.

)3   Written tests clearly linked to learning objectives

)4   Classroom assessment techniques like tutorial sheets and assignments

)5   Seminars.

List out any new topic(s) or any innovation you would like to introduce in teaching the subjects in this Semester.

● **Introduce concept of grid systems in India and about national grid.**

Signature of HOD   Signature of faculty
Date: Date:

Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440

COURSE COMPLETION STATUS

Academic Year : 2013-2014

Semester : I

Name of the Program: B.Tech   Year: IV   Section: A

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

Actual Date of Completion & Remarks, if any

Units	Remarks	No. of Objectives Achieved	No. of Outcomes Achieved
Unit 1	Completed on 09/07/13	1	1,2,3,4
Unit 2	Completed on 23/07/2013	1	1,2,3,4
Unit 3	Completed on 06/08/13	3	1,2,3,4
Unit 4	Completed on 23/08/13	1,2,3	1,2,3,6
Unit 5	Completed on 10/09/13	1,2	1, 3,5,7
Unit 6	Completed on 24/09/13	1,2	1, 3,5,7
Unit 7	Completed on 03/10/13	1,2	1,3,5,7
Unit 8	To be completed by 24/10/13	-	-

Signature of HOD   Signature of faculty

Date: Date:

COURSE COMPLETION STATUS

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

DESIGNATION: ASST.PROFESSOR.

Actual Date of Completion & Remarks, if any

Units	Remarks	No. of Objectives Achieved	No. of Outcomes Achieved
Unit 1	Completed on 08/07/13	1	1,2,3,4
Unit 2	Completed on 22/07/13	1	1,2,3,4
Unit 3	Completed on 05/08/13	3	1,2,3,4
Unit 4	Completed on 21/08/13	1,2,3	1,2,3,6
Unit 5	Completed on 18/09/13	1,2	1, 3,5,7
Unit 6	Completed on 25/09/13	1,2	1, 3,5,7
Unit 7	Completed on 08/10/13	1,2	1,3,5,7
Unit 8	To be completed by 23/10/13	-	-

Signature of HOD   Signature of faculty

Date: Date:

Previous Result Analysis

Academic Year   : 2013-2014

Semester   :   I

Name of the Program: B.Tech   Year: IV   Section: A,B

Course/Subject: Power System Operation Control   Course Code: 57015

Name of the Faculty: K.Sireesha   Dept.: Electrical & Electronics Engineering

Designation: ASST.PROFESSOR.

Academic Year	No. of students appeared	No. of students passed	No. of students failed	<60	60- 70	>70	100% Marks	Pass Percentage
2010-2011	132	126	6	30	27	68	1	95.45
2011-2012	131	129	2	21	29	77	2	98.47
2012-2013	126	117	9	61	30	26	-	92.85

Signature of HOD   Signature of faculty

Date: Date:25-09-13