

M. Tech. (Electrical Engineering) Specialization: Power & Energy Systems

Year 2020-2023: Scheme of Studies as per Choice-Based Credit System (CBCS) and Learning Outcome-Based Curriculum

SOET

ODD SEMESTER								EVEN SEMESTER							
Year	SNo	Course Code	Course Title	L	T	P	C	SNo	Course Code	Course Title	L	T	P	C	
First	1	ETEE701A	POWER SYSTEM ANALYSIS	4	0	0	4	1	ETEE702A	POWER SYSTEM DYNAMICS	4	0	0	4	
	2	ETEE703A	RENEWABLE ENERGY	4	0	0	4	2	ETEE704A	NON-CONVENTIONAL	4	0	0	4	
	3		ELECTIVE-I	4	0	0	4	3		ELECTIVE-II	4	0	0	4	
	4	ETEE751A	POWER SYSTEM ANALYSIS	0	0	2	1	4	ETEE752A	POWER SYSTEM DYNAMICS	0	0	2	1	
	5	ETEE753A	RENEWABLE ENRGY LAB	0	0	2	1								
TOTAL				12	0	4	14	TOTAL				12	0	2	13
Second	1	ETEE711A	DIGITAL PROTECTION	4	0	0	4	1	ETEE712A	SOLAR AND WIND SYSTEMS	4	0	0	4	
	2	ETEE713A	POWER SYSTEM	4	0	0	4	2	ETEE714A	RESEARCH METHODOLOGY	4	0	0	4	
	3		ELECTIVE-III	4	0	0	4	3		ELECTIVE-IV	4	0	0	4	
	4	ETEE755A	POWER SYSTEM	0	0	2	1	4	ETEE754A	MINI PROJECT WITH	0	0	4	2	
TOTAL				12	0	2	13	TOTAL				12	0	4	14
Third	1	ETEE721A	SMART GRID	4	0	0	4	1	ETEE759A	DISSERTATION PHASE -II	0	0	32	16	
	2		OPEN ELECTIVE	3	0	0	3								
	3	ETEE757A	DISSERTAION PHASE -I	0	0	12	6								
TOTAL				7	0	12	13	TOTAL				0	0	32	16
Total Hours: Lect [L]+Prac [P]+Tut [T]											111				
Total Credits [C]											83				

ELECTIVES FOR SPECIALIZATION IN POWER SYSTEMS				L	T	P	C
1	ETEE731A	HIGH POWER CONVERTERS	4	0	0	4	
2	ETEE732A	ELECTRICAL POWER DISTRIBUTION	4	0	0	4	
3	ETEE733A	MATHEMATICAL METHODS FOR	4	0	0	4	
4	ETEE734A	PULSE WIDTH MODULATION FOR	4	0	0	4	
5	ETEE735A	ELECTRIC AND HYBRID VEHICLES	4	0	0	4	
6	ETEE736A	RECONSTRUCTED POWER SYSTEMS	4	0	0	4	
7	ETEE737A	DYNAMICS OF ELECTRICAL	4	0	0	4	
8	ETEE738A	POWER APPARATUS DESIGN	4	0	0	4	
9	ETEE739A	ADVANCED MICRO-CONTROLLER	4	0	0	4	
10	ETEE740A	SCADA SYSTEMS AND	4	0	0	4	
11	ETEE741A	POWER QUALITY	4	0	0	4	
12	ETEE742A	AI TECHNIQUES	4	0	0	4	
13	ETEE743A	FACTS AND CUSTOM POWER	4	0	0	4	
14	ETEE744A	INDUSTRIAL LOAD MODELLING AND	4	0	0	4	
15	ETEE745A	DYNAMICS OF LINEAR SYSTEMS	4	0	0	4	

ELECTIVES FOR SPECIALIZATION IN POWER & ENERGY				L	T	P	C
1	ETEE746A	ENGINEERING OPTIMIZATION	4	0	0	4	
2	ETEE747A	HIGH VOLTAGE ENGINEERING	4	0	0	4	
3	ETEE748A	SWITCHED MODE POWER CONTROL	4	0	0	4	
4	ETEE749A	OPTIMAL AND ADAPTIVE CONTROL	4	0	0	4	
5	ETEE750A	ENERGY CONVERSION PROCESSES	4	0	0	4	
6	ETEE734A	PULSE WIDTH MODULATION FOR	4	0	0	4	
7	ETEE735A	ELECTRIC AND HYBRID VEHICLES	4	0	0	4	
8	ETEE741A	POWER QUALITY	4	0	0	4	
9	ETEE742A	AI TECHNIQUES	4	0	0	4	
10	ETEE743A	FACTS AND CUSTOM POWER	4	0	0	4	
11	ETEE744A	INDUSTRIAL LOAD MODELLING AND	4	0	0	4	

OPEN ELECTIVES				L	T	P	C
1	ETMC901A	BUSINESS ANALYTICS	3	0	0	3	
2	ETME901A	INDUSTRIAL SAFETY	3	0	0	3	
3	ETMA901A	OPERATIONS RESEARCH	3	0	0	3	
4	ETCE901A	COST AND MANAGEMENT OF	3	0	0	3	
5	ETCE902A	COMPOSITE MATERIALS	3	0	0	3	
6	ETME902A	WASTE TO ENERGY	3	0	0	3	



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M.Tech (Electrical Engineering)

ETEE757	Dissertation Phase-I	L	T	P	C
Version 1.0		0	0	12	6
Pre-requisites/Exposure	--				
Co-requisites	--				

Course Objectives

1. To learn how to carry out literature survey
2. To be associated with an area of research/research project and contribute towards domain knowledge.
3. To learn the art of technical report writing
4. To learn the art of verbal communication with the help of modern presentation techniques

Course Outcomes

On completion of this course, the students will be able to

- CO1. Carry out the extensive literature survey.
- CO2. Learn to write and present technical reports/articles.
- CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.
- CO4. Have practical knowledge on the applications of topic of study on society.

Catalog Description

This is the first part of the major dissertation/industrial project wherein every student shall be expected to contribute to domain knowledge incrementally. It is expected that the research/project work should be focused in a particular area for concept, design, implementation and/or analysis. Each student will have to undertake a research/project work under a supervisor. Research/project work may be carried out within department or in any other academic / research / industrial / commercial organization under the guidance of the thesis supervisor who must be a faculty member of the department or under a joint supervision including at least one such faculty member. The student will have to submit a typewritten or printed report on the work done by him / her according to a schedule to be announced by the department. The project-report should be duly approved by the supervisor concerned and should embody results of research / development work carried out by the student.

Student will be continuously evaluated during the semester in form of Dissertation/project Progress Seminars. At the end of the semester, assessment of the research/project work of each


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student will be made by the board of examiners including supervisors on the basis of a viva-voce examination and the report submitted by the student.

Course Content

The assignment to normally include:

1. Review and finalization of the Approach to the Problem relating to the assigned topic.
2. Preparing an Action Plan for conducting the investigation, including team work.
3. Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed.
4. Final development of product/process, testing, results, conclusions and future directions.
5. Preparing a report in the standard format for being evaluated by the Department.
6. Final Dissertation Presentation before a Departmental Committee.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination Examination Scheme:

Components	Quiz	Attendance	Mid Term Exam	Presentation/ Assignment/ etc.	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Carry out the extensive literature survey.	PO2
CO2	Learn to write and present technical reports/articles.	PO5
CO3	Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.	PO2
CO4	Have practical knowledge on the applications of topic of study on society.	PO6



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		En gi ne eri ng K no wl ed ge	Pr ob le m an al ysi s	De sig n/d eve lop me nt of sol uti ons	Con duct inve stiga tions of com plex pro ble ms	M o d e r n gi n g co o pe ra ti o n s	T h e e n gi n g co o pe ra ti o n s	Envi ron men t and sust aina bilit y	E t h ic s	In di vi du al or tea m wor k	Co m mu nic atio n	Pro ject ma nag em ent and fin anc e	Lif e- lon g Lea rning	Ap plic ation of Co nce pts	Res ear ch Ori ent ate d	Glo bal Per spe ctiv e	Rea son ing and Co mm uni cati on Ski lls
Course Code	Course Title	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4
ETE E757	Dissertation-Phase I		3			3	3							3			

1=weakly mapped
2= moderately mapped
3=strongly mapped



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M.Tech (Electrical Engineering)

ETEE759A	Dissertation Phase-II	L	T	P	C
Version 1.0		0	0	32	16
Pre-requisites/Exposure	Dissertation-I				
Co-requisites	--				

Course Objectives

1. To learn how to carry out literature survey
2. To be associated with an area of research/research project and contribute towards domain knowledge.
3. To learn the art of technical report writing
4. To learn the art of verbal communication with the help of modern presentation techniques.

Course Outcomes

On completion of this course, the students will be able to

- CO1. Carry out the extensive literature survey.
- CO2. Learn to write and present technical reports/articles.
- CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.
- CO4. Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.

Catalog Description

This will be culmination of Dissertation I. Research work may be carried out with in department or in any other academic / research / industrial / commercial organization under the guidance of the thesis supervisor who must be a faculty member of the depart mentor under a joint supervision including at least one such faculty member. The student will have to submit typewritten or printed report on the work done by him / her according to a schedule to be announced by the department. The project-report should be duly approved by the supervisor concerned and should embody results of research / development work carried out by the student.

Student will be continuously evaluated during the semester in form of Dissertation Progress Seminars. At the end of the semester, assessment of the research work of each student will be made by the board of examiners including supervisors on the basis of a viva-voce examination and the report submitted by the student.



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Students are required to publish their research work in form of research publication. The result will be declared only after acceptance or publication of full length paper in peer reviewed Conference or Journal.

Course Content

The assignment to normally include:

1. Review and finalization of the Approach to the Problem relating to the assigned topic.
2. Preparing an Action Plan for conducting the investigation, including team work.
3. Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed.
4. Final development of product/process, testing, results, conclusions and future directions.
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		En gi ne eri ng Kn ow led ge	Pr ob le m an aly sis	De sig n/d eve lop me nt of sol uti ons	Con duct inve stiga tion s of com plex prob lems	M o d e r n co m m u ni ca ti on	T e c h n o lo gy an d so ci ety	Envi ron ment and susta inabi lity	E th ic s	In di vi du al or tea m wo rk	Co mm uni cati on	Pro ject ma nag em ent and fina nce	Lif e- lon g Lea rnin g	Ap plic atio n of Co nce pts	Res ear ch Ori ent ate d	Glo bal Per spe ctiv e	Rea son ing and Co mm uni cati on Skil ls
Course Code	Course Title	P O1	P O2	PO 3	PO4	P O 5	P O 6	PO7	P O 8	P O9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4
ETE E759 A	Disser tation Phase- II		3			3	3							3	3		

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3=strongly mapped



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