ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

No. Acd./3230 /IAPC-76 Dated: February 10 , 2020

Head, Department of Electrical Engineering

The IAPC in its 76th meeting held on 07.11.2019 vide **Item No. 76.2.1** considered and approved the proposal of Department of Electrical Engineering to modify the program structure of following specializations of M.Tech.:

1. System and Control
2. Instrumentation and Signal Processing
3. Power System Engineering
4. Electric Drives and Power Electronics

The approved structure and syllabi is attached as **Appendix-A**.

Rasti

Assistant Registrar (Curriculum)

Copy to (through e mail):-

1. Chairman, Senate and Director
2. All faculty
3. All Heads of Departments/ Centres
4. Dean, Academic Affairs
5. Associate Dean of Academic Affairs(Curriculum)
6. Channel I/ Academic webpage of iitr.ac.in

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **28** **M.Tech. (Systems & Control)**
Department: **EE** **Department of Electrical Engineering**
Year: **I II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	MAN-561	Mathematics	PCC	4	3	1	0	3	-	25	-	25	50	-
2.	EEN-580	Advanced Linear Control Systems	PCC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
3.	EEN-581	Intelligent Control Techniques	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	EEN-582	Advanced System Engineering	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.	EEN-583	Non Linear and Robust Control	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
		Total		20				-	-	-	-	-	-	-
Semester-II (Spring)														
1.	EEN-xxx	Program Elective Course-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.	EEN-xxx	Program Elective Course-II	PEC	4										
3.	EEN-xxx	Program Elective Course-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.	EEN-xxx	Program Elective Course-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.	EEN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		18				-	-	-	-	-	-	-

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **28** **M.Tech. (Systems & Control)**
Department: **EE** **Department of Electrical Engineering**
Year: **II II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	EEN-701A	Dissertation Stage–I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		12										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
Semester-II (Spring)														
1.	EEN-701B	Dissertation –II (contd. From III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		18										

Summary

Semester	1	2	3	4
Semester-wise Total Credits	**20**	**18**	**12**	**18**
Total Credits	**68**			

Program Elective Courses (S&C)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	EEN-680	Machine Learning	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	EEN-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	EEN-682	Advanced Digital System Design	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	EEN-683	Introduction to Robotics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	EEN-684	System Reliability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	EEN-685	Stochastic Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	EEN-686	Optimal Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	EEN-687	Operations Research	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	EEN-688	Interval Control Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	EEN-689	Modeling and Simulation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	EEN-690	Advanced Computer Controlled Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	EEN-691	Data Structures	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
13.	EEN-692	Graph Theory and Applications	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	EEN-693	Advanced Microprocessor and Applications	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
15	EEN-694	Advances in Model Order Reduction Techniques	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	EEN-561	Power System Operation and Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
17.	EEN-667	Power System Reliability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	EEN-669	Power System Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

19.	EEN-521	Digital Signal and Image Processing	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
20.	EEN-620	Process Instrumentation and Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
21.	EEN-624	Telemetry and SCADA	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
22.	EEN-626	Advances in Signal and Image Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
23.	EEN-611	FPGA Implementation of Signal Processing Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
24.	EEN-612	Electrical Transients in Power Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
25.	EEN-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **26** **M.Tech. (Instrumentation & Signal Processing)**
Department: **EE** **Department of Electrical Engineering**
Year: **I**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	EEN-520	Advanced Industrial and Electronic Instrumentation	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	EEN-521	Digital Signal and Image Processing	PCC	4	3	0	2	3	-	10 -25	25	15-25	30-40	-
3.	EEN-522	Biomedical Instrumentation	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	EEN-523	Instrumentation laboratory	PCC	2	0	0	4	-	-	-	50	-	-	50
5.	EEN-524	Intelligent Sensors and Instrumentation	PCC	4	3	0	2	3	-	10-15	25	15-25	30-40	-
		Total		18	-	-	-	-	-	-	-	-	-	-
Semester-II (Spring)														
1.	EEN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
2.	EEN-xxx	Program Elective Course-I	PEC	4	-	-	-	-	-	-	-	-	-	-
3.	EEN-xxx	Program Elective Course-II	PEC	4	-	-	-	-	-	-	-	-	-	-
4.	EEN-xxx	Program Elective Course-III	PEC	4	-	-	-	-	-	-	-	-	-	-
5.	EEN-xxx	Program Elective Course-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
		Total		18	-	-	-	-	-	-	-	-	-	-

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **26** **M.Tech. (Instrumentation & Signal Processing)**
Department: **EE** **Department of Electrical Engineering**
Year: **II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	EEN-701A	Dissertation Stage–I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		12										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
Semester-II (Spring)														
1.	EEN-701B	Dissertation Stage–II (contd. From III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		18										

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	**18**	**18**	**12**	**18**
Total Credits	**66**			

Program Elective Courses (I&SP)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	EEN-620	Process Instrumentation and Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	EEN-621	Noise and Interference in Instrumentation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	EEN-622	Power System Instrumentation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	EEN-623	Measurement Errors and Statistical Analysis	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	EEN-624	Telemetry and SCADA	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	EEN-625	Virtual Instrumentation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	EEN-626	Advances in Signal and Image Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	EEN-627	Ultrasonic and Laser Instrumentation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	EEN-628	Medical Imaging	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	EEN-629	Bioelectric Signals and Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	EEN-630	Computer Applications in Medical Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	EEN-631	Microprocessor Based Medical Instruments	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	EEN-632	Hospital Informatics and safety Measures	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	EEN-633	Clinical Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

15.	EEN-668	Digital Protection of Power Systems	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
16.	EEN-682	Advanced Digital System Design	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
17.	EEN-690	Advanced Computer Controlled Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	EEN-611	FPGA Implementation of Signal Processing Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
19.	EEN-614	Bio-Medical Robotics	PEC	4	3	1	2	3	1	10-25	25	15-25	30-40	-
20.	EEN-612	Electrical Transients in Power System	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
21.	EEN-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **27** **M.Tech. (Power System Engineering)**
Department: **EE** **Department of Electrical Engineering**
Year: **I**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	EEN-560	Computer Aided Power System Analysis	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	EEN-561	Power System Operation and Control	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	EEN-562	Distribution System Analysis and Operation	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	EEN-563	EHV AC Transmission Systems	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	EEN-564	HVDC Transmission Systems	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
		Total		20	-	-	-	-	-	-	-	-	-	-
Semester-II (Spring)														
1.	EEN-~~564~~	Program Elective Course-I	PEC	4	-	-	-	-	-	-	-	-	--	
2.	EEN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
3.	EEN-xxx	Program Elective Course-II	PEC	4	-	-	-	-	-	-	-	-	-	-
4.	EEN-xxx	Program Elective Course-III	PEC	4	-	-	-	-	-	-	-	-	-	-
5.	EEN-xxx	Program Elective Course-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
		Total		18	-	-	-	-	-	-	-	-	-	-

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **27** **M.Tech. (Power System Engineering)**
Department: **EE** **Department of Electrical Engineering**
Year: **II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	EEN-701A	Dissertation Stage–I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		12										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
Semester-II (Spring)														
1.	EEN-701B	Dissertation Stage–II (contd. From III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		18										

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	**20**	**18**	**12**	**18**
Total Credits	**68**			

Program Elective Courses (PSE)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	EEN-660	High Voltage Technique	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	EEN-661	Power System Planning	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	EEN-662	Power System Harmonics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	EEN-663	Flexible AC Transmission Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	EEN-664	Wind Energy	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	EEN-665	Relaying and Switchgear	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	EEN-666	Distribution System Automation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	EEN-667	Power System Reliability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	EEN-668	Digital Protection of Power Systems	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
10.	EEN-669	Power System Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	EEN-670	Substation Automation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	EEN-671	Power System Deregulation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	EEN-521	Digital Signal and Image Processing	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
14.	EEN-540	Advanced Power Electronics	PCC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
15.	EEN-543	FACTS Devices	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	EEN-651	Power Quality Improvement Techniques	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-

17.	EEN-580	Advanced Linear Control Systems	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
18.	EEN-583	Non Linear and Robust Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
19.	EEN-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
20.	EEN-611	FPGA implementation of Signal Processing Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
21.	EEN-612	Electrical Transients in Power Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
22.	EEN-613	Sliding Mode Control and Observations	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

DEPARTMENT OF ELECTRICAL ENGINEERING

M.Tech. (Electric Drives & Power Electronics)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1st YEAR			Semester- I (Autumn)											
1.	EEN-580	Advanced Linear Control Systems	PCC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
2.	EEN-540	Advanced Power Electronics	PCC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
3.	EEN-541	Analysis of Electrical Machines	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	EEN-542	Power Electronic Controlled Electric Drives	PCC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
5.	EEN-543	FACTS Devices	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
		Total		20										
			Semester-II (Spring)											
1.	EEN-xxx	Program Elective Course-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.	EEN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
3.	EEN-xxx	Program Elective Course-II	PEC	4	-	-	-	-	-	-	-	-	-	-
4.	EEN-xxx	Program Elective Course-III	PEC	4	-	-	-	-	-	-	-	-	-	-
5.	EEN-xxx	Program Elective Course-IV	PEC	4										
		Total		18										
2nd YEAR			Semester- I (Autumn)											
1.	EEN-701A	Dissertation Stage–I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		12										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
			Semester-II (Spring)											
1.	EEN-701B	Dissertation Stage–II (contd. From III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		18										
		Total Credits		**68**										

Program Elective Courses (EDPE)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	EEN-640	Advanced Electric Drives	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	EEN-641	Microcontroller and its Applications to Power Converters	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.	EEN-642	DSP Controlled Electric Drives	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	EEN-643	Electric Drives for Hybrid Vehicles	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	EEN-644	Design of Electric Drives	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	EEN-645	Instrumentation in Electric Drives	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	EEN-646	Drive System in Electric Traction	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	EEN-647	Control Techniques in Power Electronics for AC Drives	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
9.	EEN-648	Pulse Width Modulation for Power Converters	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	EEN-649	Enhanced Power Quality AC-DC Converters	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
11.	EEN-650	Switch Mode Power Supply	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	EEN-651	Power Quality Improvement Techniques	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
13.	EEN-652	CAD of Power Apparatus	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	EEN-653	Selected Topics in Machines and Transformers	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
15.	EEN-654	Synchronous Machines and System Stability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	EEN-655	Special Machines	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
17.	EEN-656	Testing and Commissioning of Electrical Equipment	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	EEN-564	HVDC Transmission Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
19.	EEN-690	Advanced Computer Controlled Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
20.	EEN-657	Digital Control of Power Converters	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
21.	EEN-658	Communication Techniques in Smart Grid	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
22.	EEN-659	Control and Management of Smart Grid	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
23.	EEN-660	Power Converter Topologies in Smart Grid	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

24	EEN-611	FPGA Implementation of Signal Processing Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
25	EEN-612	Electrical Transients in Power Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
26	EEN-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-