# B. TECH. (ELECTRICAL ENGINEERING) COMPONENT WISE DISTRIBUTION

Main Curriculum	Sub Components	<b>Approved Credits</b>	Approved	<b>Proposed Credits for</b>	<b>Proposed Credits</b>
Components	Sub Components	for B. Tech.	<b>Credits Range</b>	B. Tech. by Department	Range
	HSSC	5		5	
	HSSEC	6		6	
	MC	3		3	
Institute Core	BSC	12-20	52-58	16	53
Course	ESC	8-20	32-36	12	
	DSC	4		4	
	ESSC	3		3	
	TM	4		4	
	CCCC	40-48		40	
	AI/ML	2		2	
Program Core	Engg. Analysis and design (design thinking based project)/Industry Oriented Problem Solving/ Lab based Project/ Practical Problem/ Case study	4		4	
Course	Technical Communication	2	87-91	2	88
Course	BTP/Entrepreneurship/ Project-based internship/PEC	6-10		8	
	PEC	22-26		24	
	TEB	6-8		8	
	OEC	9-12	9-12	9-12	9-12
	CORE	2	2	2	2
	Total	150-1	160	152-1	55
	MSC/DHC	18/2	20	18/2	0
	Grand Total			170/1	75

## DEPARTMENT OF ELECTRICAL ENGINEERING INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code : 115 B. Tech. (Electrical Engineering)

Department : EE Electrical Engineering

## **Teaching Scheme**

Year	Credits in Autumn Semester	Credits in Spring Semester	Credits (Year – wise)
1	23	20	43
2	21/22	24/25	45/47
3	22/23	18	40/41
4	16	08	24
Grand Total			152/155
Total with MSC/DHC	With addition 18-	20 credits	170/175

	Components	Maximum Units	Minimum	Comments
Non-Credit Elements			Units	
(NCE)	Discipline (DIS)	16	8	To be evaluated by DoSW
	NCC/NSS/NSO	8	4	To be evaluated by DoSW
	Internship (INT)	24	8	1-week internship= 1 unit (to be coordinated by the deptt. /Centres/School)
	Participation in professional development programs by Industry experts/ field experts (PPD-1 & PPD-2)	8	4	To be coordinated by the departments/Centres/school (2 <sup>nd</sup> & 3 <sup>rd</sup> Years)
		Minimum non	-credit units to	be earned: 24

Program Code : 115 B. Tech. (Electrical Engineering)

Department : EE Department of Electrical Engineering

Year : I

		Teaching Scheme				Contac irs/We			xam ration rs.)		Relat	ive Weiş	ghts(%)	
S. No.	Subject Code	Course Title	Subject Area	Credits	L	Т	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
	1		(Au	tumn)								L		
1	HSI-101	Soft Skills	HSSC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
2	MAI-101	Mathematics-I	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	PHI-101	Physics-I	BSC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
4	EEC-101	Programming with C++	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	
5	TMI-102	Tinkering and Mentoring*	TMI	2	-	-	-	-	-	60	40	-	-	-
6	TMI-103	Basics of IP and Entrepreneurship*	TMI	2	2	0	0	2	-	50	1	-	50	ı
7	ECE-101	Fundamentals of Electronics	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
		Total		23										
			(Sp	ring)										
1	IKS-102	Indian Knowledge System	HSSC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2	MAI-102	Mathematics-II	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	ESS-102	Environmental Science and Sustainability	ESSC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4	ECE-103	Digital Electronics	ESC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
5	EEC-102	Basic Electrical Science	PCC	3	2	1	0	3	0	20-35	-	20-30	40-50	-
6	EEC-104	Signals and Systems	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
		Total		20										

<sup>\*</sup> These two courses were taught as single course (TMI-101: Tinkering & Mentoring – 4 Credits) for 2023-24 admitted students.

Program Code : 115 B. Tech. (Electrical Engineering)

Department : EE Department of Electrical Engineering

Year : II

		Teaching Scheme			_	Contac irs/W		Du	Exam Iration Irs.)		Relat	ive Weiş	ghts (%)	
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
	l	1	(Auti	ımn)										
1	MSI-101	Fundamentals of Management	MC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2	MAB-103	Numerical Methods	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	CSE-101	Data Structures and Algorithms	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	EEC-201	Network Theory	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	HSSEC-I	HSS Elective Course	HSSEC	3										
6	OEC-I	Open Elective Course-I	OEC	3/4										
		Total		21/22										
			(Spr	ing)										
1	DAI-101	Data Science	DSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	EEC-202	Electrical & Electronic Measurements	PCC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
3	EEC-204	Control Systems	PCC	5	3	1	2	3	0	10-25	25	15-25	30-40	-
4	EEC-206	Electrical Machines	PCC	4	3	1	2	3	3	10-25	25	15-25	30-40	-
5	EEC-208	Power Systems-I	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
6	OEC-II	Open Elective Course-II	OEC	3/4										
		Total		24/25										

Program Code : 115 B. Tech. (Electrical Engineering)

Department : EE Department of Electrical Engineering

Year : III

		Teaching Scheme			_	Conta ırs/W			Ouration (rs.)		Relat	ive Weiş	ghts (%)	)
S. No.	Subject Code	Course Title	Subject Area	Credits	L	Т	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
			(Au	tumn)		•								
1	EEC-351	Fundamentals of AI/ML	PCC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2	EEC-301	Power Systems-II	PCC	4	3	0	2			10-25	25	15-25	30-40	-
3	EEC-303	Power Electronics	PCC	4	3	1	2/2	3	2	15-30	20	15-25	30-40	-
4	EEC-399	Community Outreach	CORE	2								100		
5	EET-I	Talent Enhancement Course-I	TEB	4	0	0	8	-	-	-	50	-	-	50
6	HSSEC-II	HSS Elective Course-II	HSSEC	3										
7	OEC-III	Open Elective Course-III	OEC	3/4										
		Total		22/23										
			(Sp	ring)		•								
1	EEL-I	Program Elective Course - I	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	EEL-II	Program Elective Course - II	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	EEC-300	Engineering Analysis and Design	PCC	4	2	0	2	2	0	10-25	25	15-25	30-40	-
5	EEC-391	Technical Communication	PCC	2	0	0	4	0	0	-	-	-	100	-
6	EET-II	Talent Enhancement Course-II	TEB	4	0	0	8	-	-	-	50	_	-	50
7	MSC/DHC - I	Minor Specialization Course - I / Departmental Honours Course - I	MSC/ DHC	3/4										
		Total		18										
				/21-22										

Program Code : 115 B. Tech. (Electrical Engineering)

Department : EE Department of Electrical Engineering

Year : IV

		Teaching Scheme				Con ours/	tact Week	Du	Exam uration Hrs.)		Relat	tive Wei	ghts (%)	)
S. No.	Subject Code	Course Title	Subject Area	Credits	L	Т	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
			(A	utumn)		ı					1			1
1	EEL-III	Program Elective Course -III	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	
2	EEL-IV	Program Elective Course -IV	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	EEL-V	Program Elective Course -V	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	EEL-VI	Program Elective Course -VI	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	MSC/DHC-II	Minor Specialization Course -II /Departmental Honours Course - II	MSC/ DHC	3/4										
6	MSC/DHC- III	Minor Specialization Course -III /Departmental Honours Course - III	MSC/ DHC	3/4										
		Total		16/22-24										
			(S	pring)			1	1	1	•	•	•		
1	EEP- 400/EEL	BTP/Project/Internship/Entrepreneurship/ PEC*	PCC/PEC*	8								100		
4	MSC/DHC- IV	Minor Specialization Course -IV /Departmental Honours Course – IV	MSC/ DHC	3/4										
5	MSC/DHC-V		MSC/ DHC	3/4										
		Total		08/14-16										

## **ELECTRICAL ENGINEERING DEPARMENT PEC List Undergraduate Program**

#### **General Elective List**

		Teaching Scheme				ontact irs/We			am. ation		Rela	tive Wei	ght (%)	
S. No.	Sub Code	Course Title	Sub. Area	Credits	L	T	P	Th	Pr	CWS	PRS	MTE	ETE	PRE
1.	EEL-351	Artificial Neural Networks	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
2.	EEL-352	Digital Image Processing	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	EEL-353	Digital Design with VHDL	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4.	EEL-354	Digital Control Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	EEL-355	Digital Signal Processing	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
6.	EEL-357	Advanced Microprocessors and Interfacing	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
7.	EEL-358	Data Structures	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
8.	EEL-359	Single Chip Microcontroller and Its Applications	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
9.	EEL-360	Embedded Systems	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
10.	EEL-365	Digital Signal Processors	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
11.	EEL-361	Optimization Techniques	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	EEL-363	Fuzzy Logic Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	EEL-364	Utilization and Traction	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	EEL-362	Numerical Methods for Electrical Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15.	EEL-366	Computational Electromagnetics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16.	EEL-XXX	Cyber Security Aspects in Power Systems	PEC											
17.	EEL-XXX	AI Application in Modern Power Systems	PEC											
18.	EEL-XXX	Dynamic Estimation and Control of Modern Power System	PEC											

## **Program Elective List (PEC) suggested by different Group**

### 1. Power Electronics and Electric Drives (EDPE)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	EEL-540	Advanced Power Electronics	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
2.	EEL-542	Advanced Electric Drives	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	EEL-543	FACTS Devices	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	EEL-641	Microcontroller and Its Applications to Power Converters	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5.	EEL-642	DSP Controlled Electric Drives	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
6.	EEL-643	Electric Drives for Hybrid Vehicles	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	EEL-647	Control Techniques in Power Electronics for AC Drives	PEC	4	3	0	2	3	0	10-25	25	15-25		
8.	EEL-648	Pulse Width Modulation for Power Converters	PEC	4	3	1	0	3	0	20-35	-	20-30		
9.	EEL-649	Enhanced Power Quality AC-DC Converters	PEC	4	3	0	2	3	0	10-25	25	15-25		
10.	EEL-650	Switch Mode Power Supply	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	EEL-651	Power Quality Improvement Techniques	PEC	4	3	0	2	3	0	10-25	25		30-40	
12.	EEL-690	Advanced Computer Controlled Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	EEL-541	Analysis of Electrical Machines	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
14	EEL-542	Advanced Electric Drives	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
15	EEL-643	Electric Drives for Hybrid Vehicles	PEC	4	3	1	0	3	0	20-35	-	20-30		
16		Design of Electric Drives	PEC	4	3	1	0	3	0	20-35	-	20-30	1	
17	EEL-645	Instrumentation in Electric Drives	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18	EEL-646	Drive System in Electric Traction	PEC	4	3	1	0	3	0	20-35	-	20-30	1	
19	EEL-652	CAD of Power Apparatus	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
20	EEL-653	Selected Topics in Machines and Transformers	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
21	EEL-654	Synchronous Machines and System Stability	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
22	EEL-655	Special Machines	PEC	4	3	1	0	3	0	20-35	1	20-30	40-50	-
23	EEL-656	Testing and Commissioning of Electrical Equipment	PEC	4	3	1	0	3	0	20-35	ı	20-30		
24	EEL-501	Electric Vehicles: Power Train & Drives	PEC	4	3	0	2	3	-	10-25	25	15-25		
25	EEL-503	Energy Storage Techniques	PEC	4	3	0	0	3	-	20-35	-	20-30		
26	EEL-505	Charging Infrastructure	PEC	4	3	0	2	3	-	10-25	25	15-25		
27	EEL-509	Automobile Engineering for Electric Vehicles	PEC	4	3	1	0	3	-	20-35	1	20-30	40-50	-

28	EEL-673	Design of WBG Device based Power Converters	PEC	4	3	0	2/2	3	0	15-30	20	15-25	30-40	-
29	EEL-302	Electric Drives	PEC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
30	EEL-634	High Power Converters for EV	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
31	EEL-635	Digital Implementation for Power Electronics Systems	PEC	4	3	0	2/2	3	0	15-30	20	15-25	30-40	-

### 2. Power System Engineering (PSE)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	EEL-543	FACTS Devices	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	EEL-560	Computer Aided Power System Analysis	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	EEL-561	Power System Operation and Control	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	EEL-562	Distribution System Analysis and Operation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	EEL-563	EHV AC Transmission Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	EEL-564	HVDC Transmission Systems	PEC	4	3	1	0	3	0	20-35	1	20-30	40-50	-
7.	EEL-651	Power Quality Improvement Techniques	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
8.	EEL-660	High Voltage Technique	PEC	4	3	1	0	3	0	20-35	1	20-30	40-50	-
9.	EEL-661	Power System Planning	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	EEL-663	Flexible AC Transmission Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	EEL-664	Wind Energy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	EEL-665	Relaying and Switchgear	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	EEL-666	Distribution System Automation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	EEL-667	Power System Reliability	PEC	4	3	1	0	3	0	20-35	1	20-30	40-50	-
15.	EEL-668	Digital Protection of Power Systems	PEC	4	3	1	0	3	0	20-35	ı	20-30	40-50	-
16.	EEL-669	Power System Dynamics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17.	EEL-670	Substation Automation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18.	EEL-671	Power System Deregulation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
19.	EEL-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	0	20-35	1	20-30	40-50	-
20.	EEL-612	Electrical Transients in Power System	PEC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
21	EEL-672	Smart Grid Technology	PEC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
22	EEL-XXX	Engineering Optimization Methods	PEC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
23	EEL-695	Modelling and Control of Sustainable Energy System	PEC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
24	EEL-XXX	Micro-grid Analysis, Control, and Protection	on To be approved.											

## 3. Systems and Control (S & C):

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	EEL-580	Advanced Linear Control Systems	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
2.	EEL-581	Intelligent Control Techniques	PEC	4	3	0	2	3		10-25	25	15-25	30-40	
3.	EEL-582	Advanced System Engineering	PEC	4	3	0	2	3	1	10-25	25	15-25	30-40	-
4.	EEL-585	Non Linear Systems and Control	PEC	4	3	1	0	3	ı	20-35	-	20-30	40-50	-
5.	EEL-508	Machine Learning	PEC	4	3	1	0	3	ı	20-35	-	20-35	40-50	-
6.	EEL-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	EEL-682	Advanced Digital System Design	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
8.	EEL-683	Introduction to Robotics	PEC	4	3	1	0	3	ı	20-35	-	20-30	40-50	-
9.	EEL-684	System Reliability	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
10.	EEL-685	Stochastic Systems	PEC	4	3	1	0	3	ı	20-35	-	20-30	40-50	-
11.	EEL-686	Optimal Control	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
12.	EEL-687	Operation Research	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
13.	EEL-688	Interval Control Systems	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
14.	EEL-689	Modeling and Simulation	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
15.	EEL-690	Advanced Computer Controlled Systems	PEC	4	3	1	0	3	1	20-35	1	20-30	40-50	-
16.	EEL-692	Graph Theory and Applications	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
17.	EEL-657	Digital Control of Power Converters	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	EEL-659	Control and Management of Smart Grid	PEC	4	3	1	0	3	ı	20-35	-	20-30	40-50	-
19.	EEL-672	Smart Grid Technology	PEC	4	3	0	2	3	2	10-25	25	15-25	30-40	-
20	EEL-584	Mathematics for Systems and Control	PEC	4	3	1	0	3	ı	20-35	-	20-30	40-50	-
21	EEL-615	Robust Control	PEC	4	3	1	0	3	ı	20-35	ı	20-30	40-50	-
22	EEL-694	Advances in Model Order Reduction Techniques	PEC	4	3	1	0	3	1	20-35	1	20-30	40-50	-
23	EEL-696	Intelligent Control of Robotic Systems	PEC	4	3	0	2/2	3	ı	15-30	20	15-25	30-40	-
24	EEL-697	Dynamics and Control of Autonomous Vehicles	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
25	EEL-698	Advances in Sampled-Data Systems	PEC	4	3	1	0	3	ı	20-35	0	20-30	40-50	-
26	EEL-507	Control Systems for Electric Vehicle	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
27	EEL-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

28	EEL-611	FPGA Implementation of Signal Processing	PEC	4	3	1	0	3	-	20-35	1	20-30	40—50	-
29	EEL-521	Digital Signal and Image Processing	PEC	4	3	0	2	3	ı	10-25	ı	15-25	30-40	-
30	EEL-620	Process Instrumentation and Control	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
31	EEL-624	Telemetry and SCADA	PEC	4	3	1	0	3	-	20-35	1	20-30	40-50	-
32	EEL-612	Electrical Transients in Power Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
33	EEL-667	Power system Reliability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
34	EEL-669	Power System Dynamics	PEC	4	3	1	0	3		20-35	ı	20-30	40-50	-
35	EEL-561	Power System Operation and Control	PEC	4	3	1	0	3	-	20-35	ı	20-30	40-50	-

## 4. Instrumentation and Signal Processing

Sl. No.	Code	Subject	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EEL-XXX	Sensors and Instrumentation	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2	EEL-XXX	Biomedical Instrumentation	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3	EEL-XXX	Measurement Errors and Statistical Analysis	PEC	4	3	1	0	3	-	20-35	0	20-30	40-50	-
4	EEL-XXX	Noise and Interference in Instrumentation	PEC	4	3	1	0	3	-	20-35	0	20-30	40-50	-
5	EEL-XXX	Ultrasonic and Laser Instrumentation	Ultrasonic and Laser Instrumentation PEC 4 3 1 0 3 - 2		20-35	0	20-30	40-50	-					
6	EEL-XXX	Power System Instrumentation		4	3	1	0	3	-	20-35	0	20-30	40-50	-
7	EEL-620	Process Instrumentation and Control		4	3	1	0	3	-	20-35	5 0	20-30	40-5	0 -
8	EEL-516	Bioelectric Signals and Processing		4	3	0	2	3	-	10-25	5 25	15-25	30-4	0 -
9	EEL-XXX	Medical Imaging		4	3	0	2	3	-	10-25	25	15-25	30-40	-
10	EEL-XXX	Computer Applications in Medical Engineering	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
11	EEL-611	FPGA Implementation of Signal Processing Systems	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
12	EEL-683	Introduction to Robotics	PEC	4	(1)		) 2	(*)		10-2	25 25	15-2	25 30-	40 -
13	EEL-XXX	Biomedical Robotics	PEC	4	3	0	2	3	ı	10-25	25	15-25	30-40	-
14	EEL-XXX	Machine Learning for Signal Processing	PEC	4	3	0	2	3	ı	10-25	25	15-25	30-40	-
15	EEL-XXX	Intelligent Sensors and Instrumentation		4	3	0	2	3	-	10-25	25	15-25	30-40	-
16	EEL-XXX	Advanced Industrial and Electronic	PEC	4	3	0	2	3	ı	10-25	25	15-25	30-40	-
17	EEL-XXX	Telemetry and SCADA	PEC	4	3	1	0	3	-	20-35	0	20-30	40-50	-

## **List of Talent Enhancement Course**

		Teaching Scheme			Н	Contac lours/W	-	Exam Duration			Rela	ntive	Weigh	t (%)	
S. No.	Course Code	Course Title	Area	Cr.	L	T	P	Th.	Pr.	cws	PRS M T E		ETE	PRE	
	TEB-A														
1.	EET-101	Microprocessor and Applications-I	TEB	4	0	0	8	-	-	<u> </u>	5	50	-	-	50
2.	EET-102	Microcontroller and Applications-II	TEB	4	0	0	8	-	-	-	5	0	-	-	50
TEB-B															
1.	EET-103	Design of Electronic Circuits	TEB	4	0	0	8	-	-	-	5	50	-	-	50
2.	EET-104	PCB Design and Fabrications	TEB	4	0	0	8	-	-	-	5	0	-	-	50
TEB-C															
1.	EET-105	Special Experiment on Machines	TEB	4	0	0	8	-	-	-	5	0	-	-	50
2.	EET-106	Special Experiment on Power Electronics and Devices	TEB	4	0	0	8	-	-	-	5	50	-	-	50
				TI	EB-D										
1.	EET-107	Prototyping and Design of Power Converters	TEB	4	0	0	8	-	-	-	5	50	-	-	50
2.	EET-108	Development of BMS	TEB	4	0	0	8	-	-		5	0	-	-	50
				TI	ЕВ-Е										
1.	EET-109	Power and Energy Management-I	TEB	4	0	0	8	-	-	-	_	0	-	-	50
2.	EET-110	Power and Energy Management-II	TEB	4	0	0	8	-	-	-	5	0	-	-	50
				TI	E <b>B-F</b>										
1.	EET-111	Substation automation-I	TEB	4	0	0	8	-	-	-	5	0	-	-	50
2.	EET-112	Substation automation-II	TEB	4	0	0	8	-	-	-	5	50	-	-	50

	TEB-G													
1	EET-113	Distribution System SCADA-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-114	Distribution System SCADA-II	TEB	4	0	0	8	-	-	-	50	-	-	50
ТЕВ-Н														
1	EET-115	Numerical Modeling of Power Apparatus-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-116	Numerical Modeling of Power Apparatus-II	TEB	4	0	0	8	-	-	-	50	-	-	50
TEB-I														
1	EET-117	Solar Energy System for EV Application-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-118	Solar Energy System for EV Application-II	TEB	4	0	0	8	-	-	-	50	-	-	50
TEB-J														
1	EET-119	Dynamic Estimation and Control of Power System-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-120	Dynamic Estimation and Control of Power System-II	TEB	4	0	0	8	-	-	-	50	-	-	50
				TEI	3-K									
1	EET-121	Digital Design for Industrial Applications-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-122	Digital Design for Industrial Applications-II	TEB	4	0	0	8	-	-	-	50	-	-	50
TEB-L														
1	EET-123	Industrial Controller Design-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-124	Industrial Controller Design-II	TEB	4	0	0	8	-	-	-	50	-	-	50

				TEB	В-М									
1 EET-125		Introduction to Robotic Operating System	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-126	Introduction to Robot Design	TEB	4	0	0	8	-	-	-	50	-	-	50
				TEI	3-N									
1.	EET-127	SCADA and Application-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-128	SCADA and Application-II	TEB	4	0	0	8	-	-	-	50	-	-	50
				TEI	3-0									
1.	EET-129	Instrumentation Laboratory-I	TEB	4	0	0	8	-	-	-	50	-	-	50
2.	EET-130	Instrumentation Laboratory-II	TEB	4	0	0	8	-	-	-	50	-	-	50
TEB-P														
1.	EET-131	Medical Signal Monitoring	TEB	4	0	0	8	-		-	50	-	-	50
2.	EET-132	Medical Signal Analysis	TEB	4	0	0	8	-	-	-	50	-	-	50

### **Minor Specializations Courses (18-20 credits)**

S.No.	<b>Subject Code</b>	Course Title	Semester		Credits
			Autumn	Spring	
1	EEC-202	Electrical and Electronic Measurement		•	4
2	EEC-208	Power System-I		•	4
3	EEC-204	Control Systems		•	5
4	EEC-206	Electrical Machines		•	4
5	EEC-303	Power Electronics	•		4
6	EEC-201	Network Theory	•		4
7	EEC-104	Signals and Systems		•	4

### **Departmental Honours Courses (18-20 credits)**

S.No.	Code	Title	Credits
1.	EEL-540	Advanced Power Electronics	4
2.	EEL-650	Switch Mode Power Supply	4
3.	EEL-541	Analysis of Electrical Machines	4
4.	EEL-655	Special Machines	4
5	EEL-561	Power System Operation and Control	4
6.	EEL-564	HVDC Transmission Systems	4
7.	EEL-668	Digital Protection of Power Systems	4
8.	EEL-612	Electrical Transients in Power System	4
9.	EEL-580	Advanced Linear Control Systems	4
10.	EEL-585	Non-Linear Systems and Control	4
11.	EEL-686	Optimal Control	4
12.	EEL-694	Advances in Model Order Reduction Techniques	4
13	EEL-XXX	Biomedical Instrumentation	4

14	EEL-XXX	Digital Signal and Image Processing	4
15	EEL-XXX	Advanced Industrial and Electronic Instrumentation	4
16	EEL-XXX	Telemetry and SCADA	4