SCHEME & SYLLABUS

B. Tech (Electrical Engineering)

Choice Based Credit System

National Higher Education Qualifications Framework (NHEQF) Level=6.0

Department of Electrical Engineering
University Institute of Engineering and Technology
Sant Baba Bhag Singh University

2025

Course Scheme for B. Tech (Electrical Engineering)

SEMESTER-I

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	BS	CHM105	Engineering Chemistry	3	1	0	3	1	0	4	4
2.	BS	MAT171	Engineering Mathematics-I	4	0	0	4	0	0	4	4
3.	ES	ME101	Engineering Graphics and Design	2	0	4	2	0	2	6	4
4.	ES	EE102	Basic Electrical Engineering	4	0	0	4	0	0	4	4
5.	AEC	AEC0010	Communication Skills-I	2	0	0	2	0	0	2	2

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
6	BS	CHM107	Engineering Chemistry Practical	0	0	2	0	0	1	2	1
7.	ES	EE104	Basic Electrical Engineering Laboratory	0	0	2	0	0	1	2	1
8.	PT	PT101/ PT103/ PT105/	Physical Training-I (Sports and Yoga/NCC/NSS)	0	0	2	NC			2	NC
9.	EMC	EMC105	Entrepreneurship Mindset Curriculum-I	0	0	4	0	0	2	4	2

Total Contact Hours = 30

Total Credit Hours = 22

SEMESTER-II

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	ES	CSE111	Introduction to Programming in C	3	0	0	3	0	0	3	3
2.	BS	MAT172	Engineering Mathematics-II	4	0	0	4	0	0	4	4
3.	BS	PHY115	Engineering Physics	4	0	0	4	0	0	4	4
4.	VAC	EVS002	Environmental Sciences	3	0	0	NC			3	NC
5.	MDC	MDC023	Indian Knowledge System	3	0	0	3	0	0	3	3
6.	BS	ME107	Smart Materials	2	0	0	2	0	0	2	2

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
7.	ES	CSE113	Programming in C Practical	0	0	2	0	0	1	2	1
8.	BS	PHY107	Engineering Physics Practical	0	0	2	0	0	1	2	1
9.	SEC	ME105	Workshop/ Manufacturing Practices Practical	0	0	6	0	0	3	6	3
10.	PT	PT102/ PT104/ PT106	Physical Training-II (Sports and Yoga/NCC/NSS)	0	0	2	NC			2	NC
11.	EMC	EMC112	Entrepreneurship Mindset Curriculum -II	0	0	4	0	0	2	4	2

Total Contact Hours = 35

Total Credit Hours = 23

Note:- Students have to undergo a 4-week industrial/ institutional training after completion of the 2nd semester. Evaluation will be done in 3rd semester.

SEMESTER III

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PC	EE215	Electrical Circuit Analysis	3	0	0	3	0	0	3	3
2.	PC	EE217	Analog Electronics Circuits	3	0	0	3	0	0	3	3
3.	PC	EE219	Electrical Machines-I	3	0	0	3	0	0	3	3
4.	PC	EE221	Electromagnetic Fields	3	0	0	3	0	0	3	3
5.	ES	EE227	Basic Electronics Engineering	3	0	0	3	0	0	3	3
6.	BS	MAT271	Engineering Mathematics-III	3	1	0	3	1	0	4	4
7.	AEC	AEC0015	Effective Technical Communication Skills	2	0	0	2	0	0	2	2
8.	SI	EE229	Summer Internship undertaken after 2nd semester						3		3

II. Practical Subjects

S. No	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
9.	PC	EE223	Analog Electronics Circuits Laboratory	0	0	2	0	0	1	2	1
10.	PC	EE225	Electrical Machines-I Laboratory	0	0	2	0	0	1	2	1
11.	MC	PT201/ PT203/ PT205	Physical Training-III (Sports and Yoga /NCC/NSS)	0	0	2	NC			2	NC
12.	EMC	EMC205	Entrepreneurship Mindset Curriculum (EMC)-III: Business Model Canvas	0	0	4	0	0	2	4	2

Total Contact Hours = 31

Total Credit Hours = 28

SEMESTER IV

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PC	EE216	Digital Electronics	3	0	0	3	0	0	3	3
2.	PC	EE218	Electrical Machines-II	3	0	0	3	0	0	3	3
3.	PC	EE220	Power Electronics	3	0	0	3	0	0	3	3
4.	PC	EE222	Signals and Systems	3	0	0	3	0	0	3	3
5.	MDC	MDC019	Universal Human Values: Understanding Harmony	3	0	0	3	0	0	3	3
6.	PC	EE230	Measurements and Instrumentation	2	0	0	2	0	0	2	2

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
7.	PC	EE224	Digital Electronics Laboratory	0	0	2		0	1	2	1
8.	PC	EE226	Electrical Machines-II Laboratory	0	0	2	0	0	1	2	1
9.	PC	EE228	Power Electronics Laboratory	0	0	2	0	0	1	2	1
10.	PC	EE232	Measurements and Instrumentation Laboratory	0	0	2	0	0	1	2	1
11.	MC	PT202/ PT204/ PT206	Physical Training-IV (Sports and Yoga/ NCC/ NSS)	0	0	2	NC			2	NC
12.	EMC	EMC206	Entrepreneurship Mindset Curriculum (EMC)-IV: Prototyping	0	0	4	0	0	2	4	2

Total Contact Hours =31

Total Credit Hours =23

Note:- Students have to undergo a 4-week industrial/ institutional training after completion of the 4th semester. Evaluation will be done in 5th semester.

SEMESTER V

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PC	EE319	Power Systems-I (Apparatus and Modelling)	3	0	0	3	0	0	3	3
2.	PC	EE321	Control Systems	3	0	0	3	0	0	3	3
3.	PC	EE323	Microprocessors	3	0	0	3	0	0	3	3
4.	PE		Professional Elective-I	3	0	0	3	0	0	3	3
5.	OE		Open Elective-I	3	0	0	3	0	0	3	3
6.	MC	LAW005	Constitution of India	3	0	0	NC			3	NC
7.	MDC	MDC018	Gender, Culture and Development	3	0	0	3	0	0	3	3
8.	SI	EE339	Summer Internship undertaken after 4th semester						3		3

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
9.	PC	EE325	Power Systems-I Laboratory	0	0	2	0	0	1	2	1
10.	PC	EE327	Control Systems Laboratory	0	0	2	0	0	1	2	1
11.	PC	EE329	Microprocessors Laboratory	0	0	2	0	0	1	2	1
12.	MC	PT301/303/305	Physical Training-V (NSO/NCC/NSS)	0	0	2	NC			2	NC
13.	EMC	EMC305	Entrepreneurship Mindset Curriculum (EMC)-V: Legal Procedures	0	0	4	0	0	2	4	2

III. Professional Elective-I

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE331	Electrical Machine Design	3	0	0	3	0	0	3	3
2.	PE	EE333	Foundation of Artificial Intelligence	3	0	0	3	0	0	3	3
3.	PE	EE341	Sensors and Actuators	3	0	0	3	0	0	3	3
4.	PE	EE343	Electrical Safety	3	0	0	3	0	0	3	3
5.	PE	EE345	Estimation and Costing in Electrical Engineering	3	0	0	3	0	0	3	3

Total Contact Hours = 33

Total Credit Hours = 26

SEMESTER VI

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PC	EE330	Power Systems-II (Operation and Control)	3	0	0	3	0	0	3	3
2.	PC	EE334	Microcontroller	3	0	0	3	0	0	3	3
3.	PE		Professional Elective-II	3	0	0	3	0	0	3	3
4.	PE		Professional Elective-III	3	0	0	3	0	0	3	3
5.	OE		Open Elective-II	3	0	0	3	0	0	3	3
6.	HS	MGT007	Organizational Behaviour	3	0	0	3	0	0	3	3

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
7.	PC	EE336	Power Systems-II Laboratory	0	0	2	0	0	1	2	1
8.	PC	EE358	Microcontroller Laboratory	0	0	2	0	0	1	2	1
9.	PC	EE340	Electronics Design Laboratory	1	0	4	1	0	2	5	3
10.	MC	PT302/ PT304/ PT306	Physical Training-VI (NSO/NCC/NSS)	0	0	2	NC			2	NC
11.	EMC	EMC306	Entrepreneurship Mindset Curriculum (EMC)-VI: Plan Execution	0	0	4	0	0	2	4	2

III. Professional Elective-II

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE342	Control Systems Design	3	0	0	3	0	0	3	3
2.	PE	EE344	Power System Protection	3	0	0	3	0	0	3	3
3.	PE	EE346	Line Commutated and Active Rectifiers	3	0	0	3	0	0	3	3
4.	PE	EE354	Data Acquisition and Telemetry	3	0	0	3	0	0	3	3
5.	PE	EE360	Energy Storage Systems	3	0	0	3	0	0	3	3
6.	PE	EE362	Robotics and Automation	3	0	0	3	0	0	3	3

IV. Professional Elective-III

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE348	Computer Architecture	3	0	0	3	0	0	3	3

2.	PE	EE350	Computational Electromagnetics	3	0	0	3	0	0	3	3
3.	PE	EE352	Electromagnetic Waves	3	0	0	3	0	0	3	3
4.	PE	EE356	Biomedical Instrumentation	3	0	0	3	0	0	3	3

Total Contact Hours = 33

Total Credit Hours = 25

Note:- Students have to undergo a 4 week industrial/institutional training after completion of the 6th semester. Evaluation will be done in 7th semester

SEMESTER VII

I. Theory Subjects (including Non- Credit Courses)

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE		Professional Elective – IV	3	0	0	3	0	0	3	3
2.	PE		Professional Elective – V	3	0	0	3	0	0	3	3
3.	PE		Professional Elective – VI	3	0	0	3	0	0	3	3
4.	OE		Open Elective – III	3	0	0	3	0	0	3	3
5.	SI	EE411	Summer Internship undertaken after 6th semester						3		3

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
6.	PROJ	EE413	Project Work	0	0	6	0	0	3	6	3
7.	EMC	EMC405	Entrepreneurship Mindset Curriculum (EMC)-VII: Growth	0	0	4	0	0	2	4	2

III. Professional Elective-IV

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE415	Wind and Solar Energy Systems	3	0	0	3	0	0	3	3
2.	PE	EE417	HVDC Transmission Systems	3	0	0	3	0	0	3	3
3.	PE	EE419	Power Quality and FACTS	3	0	0	3	0	0	3	3
4.	PE	EE421	High Voltage Engineering	3	0	0	3	0	0	3	3
5.	PE	EE451	DSP based Control of Drives	3	0	0	3	0	0	3	3
6.	PE	EE443	Smart Grid	3	0	0	3	0	0	3	3

IV. Professional Elective-V

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE423	Digital Control Systems	3	0	0	3	0	0	3	3
2.	PE	EE425	Electrical Energy Conservation and Auditing	3	0	0	3	0	0	3	3
3.	PE	EE427	Industrial Electrical Systems	3	0	0	3	0	0	3	3
4.	PE	EE429	Electrical Drives	3	0	0	3	0	0	3	3
5.	PE	EE439	Optimization Techniques	3	0	0	3	0	0	3	3
6.	PE	EE447	PLC & SCADA	3	0	0	3	0	0	3	3
7.	PE	EE449	Power Generation and Economics	3	0	0	3	0	0	3	3

V. Professional Elective-VI

S. No.	Type	Subject Code	Subject Name	Contact Hours			Credits			Total Contact Hours	Total Credit Hours
				L	T	P	L	T	P		
1.	PE	EE431	Digital Signal Processing	3	0	0	3	0	0	3	3
2.	PE	EE433	Electrical and Hybrid Vehicles	3	0	0	3	0	0	3	3
3.	PE	EE435	Power System Dynamics and Control	3	0	0	3	0	0	3	3
4.	PE	EE437	Advanced Electric Drives	3	0	0	3	0	0	3	3
5.	PE	EE441	Instrumentation in Power System	3	0	0	3	0	0	3	3
6.	PE	EE445	Distributed Generation	3	0	0	3	0	0	3	3

Total Contact Hours = 22

Total Credit Hours = 20

SEMESTER VIII

II. Practical Subjects

S. No.	Type	Subject Code	Subject Name	Credits			Total Credit Hours
				L	T	P	
1.	SI	EE416	Six Months Industrial Training	0	0	20	20

Total Credit Hours = 20

Total Credits=187

DETAILS OF B. TECH (EE) COURSES

Course	Credit			Total
	Lecture	**Tutorial**	**Practical**	
	(#Subject * Credit)	**(#Tutorial * Credit)**	**(#Practical * Credit)**	
I. PC	13x3=39 1x2=2		11x1=11 1x3=3	55
II. PE	6x3=18			18
III. ES	2x4=8 2x3=6		2x1=2 1x2=2	18
IV. BS	2x3=6 3x4=12	2x1=2	2x1=2	22
V. HS	1x3=3			3
VI. OE	3x3=9			9
VII. SI			3x3=9 1x20=20	29
VIII. AEC	2x2=4			4
IX. VAC				
X. MDC	3x3=9			9
XI. SEC			1x3=3	3
XII. EMC			7x2=14	14
XII. PROJ			1x3=3	3
Total				**187**

SUMMARY OF SCHEME

Sem	L	T	P	Contact hrs/wk	Credits	HS	BS	ES	PC	PE	OE	Project	SI	MDC	AEC	VAC	SEC	EMC	MC
1	15	1	14	30	22		9	9							2			2	1unit(NC)
2	19	0	16	35	23		11	4						3			3	2	1unit(NC)
3	20	1	10	31	28		4	3	14				3		2			2	1unit(NC)
4	17	0	14	31	23				18					3				2	1unit(NC)
5	21	0	12	33	26				12	3	3		3	3				2	2units(NC)
6	19	0	14	33	25	3			11	6	3							2	1unit(NC)
7	12	0	10	22	20					9	3	3	3					2	
8	0	0	40	40	20								20						
Total	123	2	130	255	187	3	24	16	55	18	9	3	29	9	4	0	3	14	7units(NC)

x