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

2024

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	4	0	0	4	0	0	4	4
2.	BS	MAT154	Engineering Mathematics	4	0	0	4	0	0	4	4
3.	ES	ME101	Engineering Graphics and Design	4	0	0	4	0	0	4	4
4.	ES	EE102	Basic Electrical Engineering	4	0	0	4	0	0	4	4
5.	AEC	AEC0010	Communication Skill-I	2	0	0	2	0	0	2	2
6.	VAC	VAC015	Yoga	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.	BS	CHM107	Engineering Chemistry Practical	0	0	2	0	0	1	2	1
8.	ES	EE104	Basic Electrical Engineering Laboratory	0	0	2	0	0	1	2	1
9.	MC	PT101/ PT103/ PT105	Physical Training-I (NSO/NCC/NSS)	0	0	2	NC	2	NC	2	NC

Total Contact Hours = 27

Total Credit Hours = 23

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	**4**	**0**	**0**	**4**	**0**	**0**	**4**	**4**
2.	ES	CE101	Basics of Civil Engineering	**4**	**0**	**0**	**4**	**0**	**0**	**4**	**4**
3.	BS	PHY115	Engineering Physics	4	0	0	4	0	0	4	4
4.	AEC	AEC0011	Communication Skill-II	**2**	**0**	**0**	**2**	**0**	**0**	**2**	**2**
5.	VAC	VAC022	Environmental Education	**3**	**0**	**0**	**3**	**0**	**0**	**3**	**3**
6.	MDC	MDC023	Indian Knowledge System	**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.	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.	MC	PT102/ PT104/ PT106	Physical Training-II (NSO/NCC/NSS)	0	0	2	NC	2	NC	2	NC

Total Contact Hours = 32

Total Credit Hours = 25

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	1	0	3	1	0	4	4
2.	PC	EE217	Analog Electronics Circuits	3	1	0	3	1	0	4	4
3.	PC	EE219	Electrical Machines-I	3	1	0	3	1	0	4	4
4.	PC	EE221	Electromagnetic Fields	3	1	0	3	1	0	4	4
5.	ES	EE227	Basic Electronics Engineering	3	1	0	3	1	0	4	4
6.	AEC	AEC0015	Effective Technical Communication Skills	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.	PC	EE223	Analog Electronics Circuits Laboratory	0	0	2	0	0	1	2	1
7.	PC	EE225	Electrical Machines-I Laboratory	0	0	2	0	0	1	2	1
8.	MC	PT201/PT203/PT205	Physical Training-III (Sports and Yoga /NCC/NSS)	0	0	2	NC			2	NC

Total Contact Hours = 28

Total Credit Hours = 24

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	1	0	3	1	0	4	4
2.	PC	EE218	Electrical Machines-II	3	1	0	3	1	0	4	4
3.	PC	EE220	Power Electronics	3	1	0	3	1	0	4	4
4.	PC	EE222	Signals and Systems	3	0	0	3	0	0	3	3
5.	HS	SSC007	Universal Human Values: Understanding Harmony	3	0	0	3	0	0	3	3
6.	MC	EVS002	Environmental Sciences	3	0	0	NC			3	NC
7.	PC	EE230	Electrical Safety	3	0	0	3	0	0	3	3
8.	PC	EE232	Estimation and Costing in Electrical Engineering	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		
9.	PC	EE224	Digital Electronics Laboratory	0	0	2		0	1	2	1
10.	PC	EE226	Electrical Machines-II Laboratory	0	0	2	0	0	1	2	1
11.	PC	EE228	Power Electronics Laboratory	0	0	2	0	0	1	2	1
12.	MC	PT202/ PT204/ PT206	Physical Training-IV (Sports and Yoga/NCC/NSS)	0	0	2	NC			2	NC

Total Contact Hours = 35

Total Credit Hours = 27

Note:- Students have to undergo a 4-week industrial training after completion of the 4th 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.	PC	EE335	Measurements and Instrumentation	2	0	0	2	0	0	2	2
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.	PC	EE337	Measurements and Instrumentation Laboratory	0	0	2	0	0	1	2	1
13.	MC	PT301/303/ 305	Physical Training-V (Sports and Yoga /NCC/NSS)	0	0	2	NC			2	NC

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

Total Contact Hours = 30

Total Credit Hours = 24

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
7.	PC	EE360	Energy Storage Systems	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		
8.	PC	EE336	Power Systems-II Laboratory	0	0	2	0	0	1	2	1
9.	PC	EE358	Microcontroller Laboratory	0	0	2	0	0	1	2	1
10.	PC	EE340	Electronics Design Laboratory	1	0	4	1	0	2	5	3
11.	MC	PT302/ PT304/ PT306	Physical Training-VI (Sports and Yoga /NCC/NSS)	0	0	2	NC			2	NC

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	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 = 32

Total Credit Hours = 26

Note:- Students have to undergo a 4 week industrial training after completion of the 6th 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.	PC	EE443	Smart Grid	3	0	0	3	0	0	3	3
4.	PC	EE445	Distributed Generation	3	0	0	3	0	0	3	3
5.	PE		Professional Elective – VI	3	0	0	3	0	0	3	3
6.	OE		Open Elective – III	3	0	0	3	0	0	3	3
7.	PC	EE447	PLC & SCADA	3	0	0	3	0	0	3	3
8.	PC	EE449	Power Generation and Economics	3	0	0	3	0	0	3	3
9.	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		
10.	PROJ	EE413	Project Work	0	0	6	0	0	3	6	3

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

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

III. Professional Electives-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

Total Contact Hours = 30

Total Credit Hours = 30

SEMESTER VIII

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		
1.	SI	EE416	Six Months Industrial Training	0	0	40	0	0	20	40	20

Total Contact Hours = 40

Total Credit Hours = 20

DETAILS OF B. TECH (EE) COURSES

Course	Credit			Total
	Lecture	Tutorial	Practical	
	(#Subject * Credit)	(#Tutorial * Credit)	(#Practical * Credit)	
I. PC	20x3=60 1x2=2	7x1=7	11x1=11 1x2=2	82
II. PE	4x3=12			12
III. ES	4x4=16 1x3=3	1x1=1	2x2=4 1x1=1	25
IV. BS	2x4=8 1x2=2	4x1=4	2x2=4	18
V. HS	2x3=6			6
VI. OE	3x3=9			9
VII. SI			2x3=6 1x20=20	26
VIII. AEC	3x2=6			6
IX. VAC	2x3=6			6
X. MDC	1x3=3			3
XI. SEC			1x3=3	3
XII. PROJ			1x3=3	3
Total				**199**

SUMMARY OF SCHEME

Sem	L	T	P	Contact hrs/wk	Credits	HS	BS	ES	PC	PE	OE	Project	SI	MDC	AEC	VAC	SEC	MC
1	21	0	6	27	23		9	9							2	3		1unit(NC)
2	20	0	12	32	25		5	9						3	2	3	3	1unit(NC)
3	17	5	6	28	24			4	18						2			1unit(NC)
4	24	3	8	35	27	3			24									1unit(NC)
5	20	0	10	30	24				15	3	3		3					1unit(NC)
6	22	0	10	32	26	3			14	6	3							1unit(NC)
7	24	0	6	30	30				12	9	3	3	3					
8	0	0	40	40	20							20						
Total	**148**	**8**	**92**	**254**	**199**	**6**	**14**	**22**	**83**	**18**	**9**	**23**	**6**	**3**	**6**	**6**	**3**	**6units(NC)**