

# **CURRICULUM & SYLLABUS**



**CHOICEBASEDCREDITSYSTEM(CBCS)**

**FOR**

**BACHELOROFTECHNOLOGY(B.Tech.)**

**(4YearUndergraduateDegreeProgramme)**

**IN**

**ELECTRICAL AND ELECTRONICS**

**ENGINEERING**

**[ 2023-24]**

**FACULTYOFENGINEERINGANDTECHNOLOGY  
SRMUNIVERSITYDELHI-NCR,SONEPAT**

**Plot No.39, Rajiv Gandhi Education City, P.S. Rai,  
SonapatHaryana-131029**

## **B. TECH (ELECTRICAL AND ELECTRONICS ENGINEERING) PROGRAMME STRUCTURE**

The curriculum for Bachelor of Technology in Electrical and Electronics Engineering is tailor-made so that the graduate must have a strong foundation in the discipline and in-depth knowledge of the tools used to tackle both, conventional and new challenging problems. In order to earn a B.Tech. degree in Electrical and Electronics Engineering, a student should must earn a minimum of 184 credits in the course of their study. The credit requirements for their program of study is comprised of the following Programme Structure:

- **Basic Applied Sciences (BAS) and Engineering Science (ES):**

The purpose of Basic Applied Sciences in Engineering study is to lay a strong foundation of basic principles of various disciplines such as Mathematics, Physics, Chemistry in the mind of the learners, so that they proceed to rest of their years of study with up to date knowledge and training of basic engineering skills. The Engineering Sciences requirements support multiple objectives: first, the courses provide a strong foundation in the basic tools and methodologies common to all engineering disciplines; second, all students are exposed to basics of each discipline allowing for cross-disciplinary competencies; last, there is a multi-disciplinary project component where students from different engineering disciplines come together on a design project, allowing for practice in collaborative team work.

- **Professional Core Courses (PC):** The Professional core courses are aimed at providing the student with a solid foundation in their chosen field of study as per Industry 4.0 skills and knowledge.

- **Professional Electives (PE) – Programme specific Specialization Electives:**

The Professional electives, on the other hand, provide the student with an option to gain exposure to different specializations within the discipline, or an opportunity to study one of the subfields in some depth.

- **Open Electives (OE) – Courses from other Technical areas and Emerging fields:**

The open elective subject courses provide the student with wide latitude to pursue their interests, be it in humanities, arts or their own chosen field of study in order to have a multidisciplinary approach.

Students have choice to select Advanced Undergraduate Subjects, from other technical areas and Emerging fields for acquiring sound holistic multidisciplinary knowledge

& Skills. The students can elect to consider these additional options upon joining the university.

- **Skill Enhancement Courses (SEC) – Technical & Soft Skills:**

- **Technical Skills:** Under Technical Skills Broad categories of training to be imparted in Engineering Graduates of various disciplines with common nomenclature. The training is categorized into three categories: Elementary, Intermediate & Advanced keeping in view interdisciplinary approach. (One Credit Each from 3<sup>rd</sup> semester to 7<sup>th</sup> semester)
- **Soft Skills:** Under Soft skill training six soft skill courses with defined Nomenclature and course content common to all Engineering disciplines introduced to inculcate Group Dynamics, Team work & Leadership Traits by engaging students for interactive sessions through Role Play, Group Discussions and for improving presentation & Communication skills of engineering graduates. (One Credit Course from 2<sup>nd</sup> Semester to 7<sup>th</sup> semester).

- **Practical (P):**

The labs are fully furnished and well equipped with latest software's to conduct practical as per the requirement of the University Curriculum.

- **Live Projects (LP) & Industrial Visits (IV) and Summer Internship**

**(SI): Live Projects & Industrial Visits:**

- ❖ Live Projects is being introduced for all Engineering disciplines from 3<sup>rd</sup> semester onwards till 6<sup>th</sup> Semester to develop an ability in engineering graduates to apply skills and knowledge attained to solve real life complex problems (One Credit each semester).
- ❖ Apart from this, it will be mandatory to conduct at least 2 Industrial Visits each semester to provide students a proper industrial exposure.

**Summer Internship (SI):**

- ❖ Student will be monitored on periodic basis, both by the Industry Expert and the Faculty In-charge. The Industry In-charge will submit the Mid-Term and End-Term Evaluation

report. However, the faculty In-charge will take periodic presentation to keep a check on the progress of Student.

- ❖ Students are provided with the internship related document which helps them to prepare, report. In addition to this, it provides a detail to students about internship/project evaluation parameters.

- **Humanities and Social Sciences including Management Courses (HSS)**

- ❖ Under this category for holistic development of engineering graduates following courses have been introduced in various engineering Programme:
  - ✓ Communicative English
  - ✓ Indian Constitution & Polity
  - ✓ Management and Organizational Behavior

**PROGRAM STRUCTURE FOR BACHELOR OF  
TECHNOLOGY(ELECTRICALANDELECTRONICS  
ENGINEERING)DEGREECOURSE**

SL.No.	CourseCategory	CourseCo de	NumberofCourses
1	BasicAppliedSciences	BAS	9
2	EngineeringSciences	ES	12
3	ProfessionalCore	PC	18
4	Professional Electives -Program SpecificSpecializedElectiveCourses	PE	5
5	OpenElectives- Coursesfromotherareaandemergingfiel ds	OE	5
6	SkillEnhancementcourses(TechnicalandSo ftskills)	SEC	10
7	Practical/Workshop	P/W	10
8	LiveProject&IndustrialVisitandSummer Internship	LP/SI	6
9	Humanities and Social Sciences(IncludingManagement Courses)	HSS	5
TOTALNUMBEROFCOURSES			80

**SRMUNIVERSITYDELHI-NCR,SONEPAT**  
**PROGRAMCREDITSTRUCTUREFORBACHELOROFTECHNOLOGY(ELECTRICAL&ELECTRONICSENGINEERING)DEGR**  
**EECOURSE**  
**CREDITDISTRIBUTIONSEMESTERWISE**

SL. No	CourseCategory	Course Code	Credits PerSemester								Total Credits	% AG E
			I	II	III	IV	V	VI	VII	VIII		
1	BasicAppliedSciences	BAS	9	9	4	4	4	-	-	-	30	16
2	EngineeringSciences	ES	13	13	-	-	-	-	-	-	26	14
3	ProfessionalCore	PC	-	-	16	13	9	6	13	-	57	30
4	Professional Electives -Program SpecificSpecializedElective Courses	PE	-	-	-	-	6	6	3	-	15	8
5	Open Electives-Courses from other areaandemerging fields	OE	-	-	2	2	3	3	3	-	13	7
6	Skill Enhancement courses (Technical andSoftskills)	SEC	-	-	2	2	2	2	2	-	10	5
7	Practical/ Workshop	P/W	-	-	2	3	2	2	1	-	10	5
8	LiveProject&IndustrialVisitandSu mmer Internship	LP/SI	-	-	-	1	1	1	5	12	20	10
9	HumanitiesandSocial Sciences(Including ManagementCourses)	HSS	3	3	-	-	-	3	-	-	9	5
<b>TOTAL</b>			<b>25</b>	<b>25</b>	<b>26</b>	<b>25</b>	<b>27</b>	<b>26</b>	<b>27</b>	<b>12</b>	<b>193</b>	<b>100</b>

**BACHELOR OF TECHNOLOGY (ELECTRICAL AND ELECTRONICS ENGINEERING) DEGREE COURSE**  
**PROGRAM COURSE'S STRUCTURE SEMESTERWISE**  
**Semester-I**

SL.No	Code	Category	CourseName	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	22AS101	(BAS)	Engineering Mathematics-I	3	1	0	4	4
2	21AS102/21AS103	(BAS)	EngineeringPhysics/Engineering Chemistry	3	1	0	4	4
3	21EE101/21EC101	(ES)	BasicElectricalEngineering/Basic ElectronicsEngineering	3	1	0	4	4
4	21ME101/21CS101	(ES)	Engineering Mechanics/Fundamentals of Computer & C Programming	3	1	0	4	4
5	21HS101/21HS102	(HSS)	Communicative English/Indian Constitution and Polity	2	0	0	2	2
6	22ES101/21CE101	(ES)	Environmental Studies/Basic Civil Engineering and Earth Sciences	2	0	0	2	2
TotalCredits(Theory)				16	4	0	20	20
Practical								
7	21AS152/21AS153	(BAS)	EngineeringPhysics Lab/Engineering ChemistryLab	0	0	2	2	1
8	21EE151/21EC151	(ES)	BasicElectricalEngineeringLab/Basic ElectronicsEngineeringLab	0	0	2	2	1
9	21ME151/21CS151	(ES)	BasicMechanicalEngineeringLab/C ProgrammingLab	0	0	2	2	1
10	21HS151/21SE151	(HSS)	CommunicativeEnglish Lab/NSS-Yoga-NCC	0	0	2	2	1
11	21ME152/21ME153	(ES)	Mechanical Workshop Lab/Engineering Graphics & DesignLab	0	0	2	2	1
TotalCredits(Practical)				0	0	10	10	5
	TotalCredits(Theory+ Practical)			16	4	10	30	25

[L=Lecture, T=Tutorials, P=Practical's & C=Credits]

**\*3 Week long Induction Programme right at the start of the 1<sup>st</sup> Semester. Normal class start only after the induction programme is over.**

## Semester-II

SL.No	Code	Category	CourseName	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	22AS0201	(BAS)	EngineeringMathematics-II	3	1	0	4	4
2	21AS0202/21AS0203	(BAS)	Engineering Physics/Engineering Chemistry	3	1	0	4	4
3	21EE0201/21EC0201	(ES)	BasicElectricalEngineering /Basic ElectronicsEngineering	3	1	0	4	4
4	21ME0201/21CS0201	(ES)	Engineering mechanics/Fundamentals ofComputer&CP rogramming	3	1	0	4	4
5	21HS0201/21HS0202	(HSS)	CommunicativeEnglish/ Indian ConstitutionandPolity	2	0	0	2	2
6	22ES201/21CE201	(ES)	Environmental Studies / Basic Civil Engineering and Earth Sciences	2	0	0	2	2
TotalCredits(Theory)				16	4	0	20	20
Practical								
7	21AS0252/21AS0253	(BAS)	Engineering PhysicsLab/EngineeringChemistry Lab	0	0	2	2	1
8	21EE0251/21EC0251	(ES)	BasicElectrical EngineeringLab/Basic ElectronicsEngineeringLab	0	0	2	2	1
9	21ME251/21CS251	(ES)	BasicMechanical Engineering Lab/ CProgrammingLanguageLab	0	0	2	2	1
10	21HS0251/21SE251	(HSS)	Communicative EnglishLab/NSS- Yoga-NCC	0	0	2	2	1
11	21ME0251/21ME0252	(ES)	Mechanical Workshop Lab/EngineeringGraphics& DesignLab	0	0	2	2	1
TotalCredits(Practical)				0	0	10	10	5
TotalCredits(Theory+ Practical)				16	4	10	30	25

[L=Lecture,T=Tutorials,P=Practical's&C=Credits]



## Semester-III

SL.No	Code	Category	Course	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	21FLGR301/ 21FLFR301	(OE)	GermanLanguage Phase-I/FrenchLanguagePhase -I	2	0	0	2	2
2	21AS301	(BAS)	EngineeringMa thematics-III	3	1	0	4	4
3	21EE0203	(PC)	ElectricalMachines-1	3	1	0	4	4
4	21EE0205	(PC)	ElectromagneticTheory	3	0	0	3	3
5	21EE0207	(PC)	DigitalSystemDesign	3	0	0	3	3
6	21EE0209	(PC)	Electrical &Electronics,Mea surements andInstrumentatio n	3	0	0	3	3
7	21EE0211	(PC)	NetworkAnalysisand Synthesis	3	0	0	3	3
TotalCredits(Theory)				20	2	0	22	22
Practical								
8	21EE0253	(P)	ElectricalMachines Laboratory-I	0	0	2	2	1
9	21EE0257	(P)	DigitalElectronicsLab	0	0	2	2	1
TotalCredits(Practical)				0	0	4	4	2
SkillEnhancement								
10	21CS0201	(SEC)	EssentialsofBloc kchainand InternetofThings	0	0	2	2	1
11	21SS351	(SEC)	EffectiveCommunicat ionSkills	0	0	2	2	1
TotalCredits(SkillEnhancement)				0	0	4	4	2
TotalCredits(Theory+Practical+SkillEnhancement)				20	2	8	30	26

[L=Lecture, T=Tutorials, P=Practical's & C=Credits]

## Semester-IV

SL.No	Code	Category	Course	Hoursperweek				Credits
				L	T	P	TotalH ours	
Theory								
1	21FLGR401/ 21FLFR401	(OE)	GermanLanguage Phase-II/FrenchLanguageP hase-II	2	0	0	2	2
2	21AS401	(BAS)	NumericalMethods	3	1	0	4	4
3	21EE0204	(PC)	ElectricalMachines II	3	1	0	4	4
4	21EE0206	(PC)	ControlEngineeri ng	3	0	0	3	3
5	21EE0208	(PC)	Linear IntegratedCircuit s	3	0	0	3	3
6	21EE0210	(PC)	Electron DevicesandCirc uits	3	0	0	3	3
TotalCredits(Theory)				17	2	0	19	19
Practical								
7	21EE0254	(P)	Electrical MachinesLa boratoryII	0	0	2	2	1
8	21EE0256	(P)	ElectricalMeasure ment &ControlLaborator y	0	0	2	2	1
9	21EE0258	(P)	Linear IntegratedCircuitsL aboratory	0	0	2	2	1
10	21EE0260	(LP/SI)	#LiveProject- I&IndustrialVisit s	0	0	1	1	1
TotalCredits(Practical)				0	0	7	7	4
SkillEnhancement								
11	21SS452	(SEC)	Teamwork &InterpersonalSkill s	0	0	2	2	1
12	21CS0202	(SEC)	Artificial Intelligence andMachineLearnin g	0	0	2	2	1
	TotalCredits(SkillEnhancement)			0	0	4	4	2
TotalCredits(Theory+Practical+SkillEnhancement)				17	2	11	30	25

[L=Lecture, T=Tutorials, P=Practical's & C=Credits]

**#To be carried out after 3<sup>rd</sup> Semester during semester break. Evaluation to be carried out in 4<sup>th</sup> Semester**

## Semester–V

SL.No	Code	Category	CourseName	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	21ESUG202	(OE)	SustainableGrowth& Development	3	0	0	3	3
2	21AS502	(BAS)	DiscreteMathematics	3	1	0	4	4
3	21EE0305	(PC)	PowerElectronics	3	0	0	3	3
4	21EE0307	(PC)	Generation, Transmissionand Distribution	3	0	0	3	3
5	21EE0309	(PC)	DiscreteTransformand SignalProcessing	3	0	0	3	3
6	*21EEPEXX	(PE)	ProfessionalElective-I	3	0	0	3	3
7	*21EEPEXX	(PE)	ProfessionalElective-II	3	0	0	3	3
TotalCredits(Theory)				21	1	0	22	22
Practical								
8	21EE0355	(P)	PowerElectronicsLab	0	0	2	2	1
9	21EE0357	(P)	Electrical SimulationandProgra mmingLab	0	0	2	2	1
10	21EE0359	(LP/SI)	#Live Project II &IndustrialVisit	0	0	1	1	1
TotalCredits(Practical)				0	0	5	5	3
SkillEnhancement								
11	21SS553	(SEC)	Presentation &SpeakingSki lls	0	0	2	2	1
12	21CS0301	(SEC)	DesignThinkingand Augmented VirtualReality/	0	0	2	2	1
TotalCredits(SkillEnhancement)				0	0	4	4	2
TotalCredits(Theory+Practical+SkillEnhancemen t)				21	1	9	31	27

[L=Lecture,T=Tutorials,P=Practical's&C=Credits]

**\*The XX part of the course code will depend upon the elective chosen by the student  
#To be carried out after 4<sup>th</sup> semester during semester break. Evaluation to be carried out in 5<sup>th</sup> Semester.**

## Semester–VI

SL.No	Code	Category	Course	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	SEC-FT-01	(OE)	Entrepreneurshipand NewVenture Management	3	0	0	3	3
2	21BS101	(HSS)	Managementand OrganizationalBehavi our	3	0	0	3	3
3	21EE0306	(PC)	PowerSystemProtection	3	0	0	3	3
4	21EE0308	(PC)	MicroprocessorandMicro controller	3	0	0	3	3
5	*21EEPEXX	(PE)	Professional Elective- III	3	0	0	3	3
6	*21EEPEXX	(PE)	ProfessionalElective-IV	3	0	0	3	3
TotalCredits(Theory)				21	0	0	21	21
Practical								
7	21EE0356	(P)	Power SystemSimulationLab oratory	0	0	2	2	1
8	21EE0358	(P)	Microprocessors andMicrocontrollers Lab	0	0	2	2	1
9	21EE0360	(LP/SI)	#LiveProjectIII&Indu strialVisit	0	0	0	1	1
TotalCredits(Practical)				0	0	4	5	3
SkillEnhancement								
10	21SS655	(SEC)	ProfessionalWriting Skills	0	0	2	2	1
11	21CS0302	(SEC)	Big Data Analytics,ToolsandT echniques	0	0	2	2	1
TotalCredits(SkillEnhancement)				0	0	4	4	2
TotalCredits(Theory+Practical+SkillEnhancement)				21	0	8	30	26

[L=Lecture, T=Tutorials, P=Practical's & C=Credits]

**\*The XX part of the course code will depend upon the elective chosen by the student#To be carried out after 5<sup>th</sup> semester during semester break. Evaluation to be carried out in 6<sup>th</sup> Semester.**

## Semester–VII

SL.No	Code	Category	Course	Hoursperweek				Credits
				L	T	P	Total Hours	
Theory								
1	21ESUG203	(OE)	WasteManagement	3	0	0	3	3
2	21EE0405	(PC)	SolidStateElectrical DrivesandControl	3	0	0	3	3
3	21EE0407	(PC)	Renewable EnergySources	3	0	0	3	3
4	21EE0409	(PC)	ModernControlSystem	3	1	0	4	4
5	21EE0411	(PC)	PowerSystemAnalysi s	3	0	0	3	3
6	*21EEPEXX	(PE)	ProfessionalElective -V	3	0	0	3	3
TotalCredits(Theory)				18	1	0	19	19
Practical								
7	21EE0455	(P)	ElectricDrivesand Renewable EnergyLaboratory	0	0	2	2	1
8	21EE0457	(LP)	**MinorProject	0	0	8(4)**	4	4
9	21EE0459	(LP/SI)	#LiveProject- IV&IndustrialVisit s	0	0	1	1	1
TotalCredits(Practical)				0	0	7	7	6
SkillEnhancement								
10	21SS756	(SEC)	InterpersonalSkills: Strategies	0	0	2	2	1
11	21CS0401	(SEC)	DataStructureandAlgo rithmsusingC++	0	0	2	2	1
TotalCredits(SkillEnhancement)				0	0	4	4	1
TotalCredits(Theory+Practical+SkillEnhancement)				18	1	11	30	27

[L=Lecture, T=Tutorials, P=Practical's & C=Credits]

**\*TheXXpartsofthecoursecodewilldependupontheselectivechosenby thestudent.**

**\*\*Tobemonitoredat theInstituteLevel.Teaching LoadforERP**

**#Tobecarrriedoutafter6<sup>th</sup>semesterduringsemesterbreak. Evaluationtobecarrriedoutin 7<sup>th</sup>Semester.**

## Semester–VIII

SL.No	Code	Category	Course	Hoursperweek				Credits
				L	T	P	TotalH ours	
Practical								
1	21EE0430	(LP/SI)	*MajorProject(Ind ustrialInternshi p)	0	0	24	24(6)**	12
TotalCredits(Practical)				0	0	24	24(6)**	12

\*ToBeMonitoredatTheInstituteLevel

\*\* Teaching Load

## List of Skill Enhancement Courses

Subject Code	Course	Category	L	T	P	Credits
Technical Training						
21CS0201	Essentials of Blockchain and IoT	SEC	0	0	2	1
21CS0202	Artificial Intelligence and Machine Learning	SEC	0	0	2	1
21CS0301	Design Thinking and Augmented Virtual Reality-Level	SEC	0	0	2	1
21CS0302	Big Data Analytics, Tools and Techniques	SEC	0	0	2	1
21CS0401	Data Structure and Algorithms using C++	SEC	0	0	2	1
Soft Skill						
21SS251	Effective Communication Skills	SEC	0	0	2	1
21SS351	Teamwork & Interpersonal Skills	SEC	0	0	2	1
21SS451	Presentation & Speaking Skills	SEC	0	0	2	1
21SS551A	Professional Writing Skills	SEC	0	0	2	1
21SS651A	Interpersonal Skills: Strategies	SEC	0	0	2	1

## List of Open Elective Courses

### Courses from other Technical Areas & Emerging Fields

Code	Category	Course	L	T	P	C
<b>Open Elective-I</b>						
21OE0301	OE	German Language Phase-I	2	0	0	2
21OE0203	OE	French Language Phase-I	2	0	0	2
<b>Open Elective-II</b>						
21OE0202	OE	German Language Phase-II	2	0	0	2
21OE0204	OE	French Language Phase-II	2	0	0	2
<b>Open Elective-III</b>						
21OEXXX X	OE	Sustainable Growth & Development	3	0	0	3
<b>Open Elective-IV</b>						
21OEXXX X	OE	Entrepreneurship and New Venture Management	3	0	0	3
<b>Open Elective-V</b>						
21OEXXX X	OE	Waste Management	3	0	0	3