



SRI SRINIVASA EDUCATIONAL AND CHARITABLE TRUST® SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to Visvesvaraya Technological University, Belagavi and Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" grade) Accredited by NBA (CSE, ECE, EEE, ISE, ME)
(An ISO 9001:2015 & ISO 14001:2015 Certified)



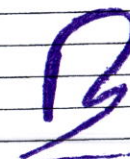
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Experiential learning details through project work/field work/internship
FIRST YEAR				
Electrical and Electronics Engineering	EE	Introduction to C Programming	BESCK104E	Servo distance indicator using ultrasonic sensor
Electrical and Electronics Engineering	EE	Introduction to Internet of Things (IOT)	BETCK105H	Transforming 2D images into 3D Images using holographic techniques
Electrical and Electronics Engineering	EE	Applied Physics for EEE Stream	BPHYE202	Tesla coil
Electrical and Electronics Engineering	EE	Elements of Electrical Engineering	BEEE203	Temperature detector using LM35 sensor
Electrical and Electronics Engineering	EE	Introduction to Electronics Communication	BESCK204B	Wireless cell phone detector
Electrical and Electronics Engineering	EE	Introduction to Python Programming	BPLCK205B	LPG GAS leakage detector
Electrical and Electronics Engineering	EE			Solar tracking system
Electrical and Electronics Engineering	EE			Security alarm using ultrasonic sensor
Electrical and Electronics Engineering	EE			Touch sensor
Electrical and Electronics Engineering	EE			Wireless electric vehicle charging system
Electrical and Electronics Engineering	EE			Automatic fire extinguisher project with hydraulic moment
Electrical and Electronics Engineering	EE			Wireless power transmission
SECOND YEAR				
Electrical and Electronics Engineering	EE	Electrical circuit analysis	IPCC BEE302	Transmission line fault detection
Electrical and Electronics Engineering	EE	Analog Electronic circuits	IPCC BEE303	Third eye for blind
Electrical and Electronics Engineering	EE	Transformer and Generators	PCC BEE304	Long range fire detector alarm
Electrical and Electronics Engineering	EE	Transformer and Generators Lab	PCCL BEEL305	
Electrical and Electronics Engineering	EE	Digital logic circuits	ESC BEE306A	
Electrical and Electronics Engineering	EE	SCI LAB for Transformer and Generator	BEEL358A	
Electrical and Electronics Engineering	EE	Electric Motors	BEE401	
Electrical and Electronics Engineering	EE	Transmission and Distribution	BEE402	
Electrical and Electronics Engineering	EE	Microcontroller	BEE403	
Electrical and Electronics Engineering	EE	Electric Motors lab	BEEL404	
Electrical and Electronics Engineering	EE	Electrical Power Generation and Economics	BEE405A	
Electrical and Electronics Engineering	EE	Basics of VHDL Lab	BEEL456A	
THIRD YEAR				
Electrical and Electronics Engineering	EE	Transmission and distribution	IPCC 21EE51	Smart parking system
Electrical and Electronics Engineering	EE	Control systems	IPCC 21EE52	Solar powered electric fence

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Electrical and Electronics Engineering	EE	Power system Analysis-1	PCC 21EE53	Solar wireless electric vehicle charging system
Electrical and Electronics Engineering	EE	Power electronics	PCC 21EE54	Sonar marine radar
Electrical and Electronics Engineering	EE	Power electronics laboratory	PCC 21EEL55	Wireless EV charging using solar energy
Electrical and Electronics Engineering	EE	Renewable Energy Project	AEC 21EE58X	Hydro Electricity Generation
Electrical and Electronics Engineering	EE	Power system analysis-2	21EE62	Solar based automatic staircase lighting system
Electrical and Electronics Engineering	EE	Signals and Digital Signal Processing	21EE63	Solar based inverter
Electrical and Electronics Engineering	EE	Electrical Machine Design	21EE643	Mini solar power system
Electrical and Electronics Engineering	EE	Digital Signal Processing Laboratory	21EEL66	Solar charged power bank
Electrical and Electronics Engineering	EE	Mini Project	21EEMP67	Solar tracking system
Electrical and Electronics Engineering	EE			Solar based automatic agriculture pump controller
Electrical and Electronics Engineering	EE			Solar powered insect detection system
Electrical and Electronics Engineering	EE			Hybrid power generation using solar and wind energy
Electrical and Electronics Engineering	EE			Solar powered automatic irrigation system
Electrical and Electronics Engineering	EE			Electricity generation by biogas
Electrical and Electronics Engineering	EE			Automatic smart street light using IR sensor
Electrical and Electronics Engineering	EE			Geothermal Energy generator
Electrical and Electronics Engineering	EE			Solar power monitoring system
Electrical and Electronics Engineering	EE			Solar grass cutter
Electrical and Electronics Engineering	EE			Solar pesticide sprayer
Electrical and Electronics Engineering	EE			Home automation using solar energy
Electrical and Electronics Engineering	EE			Fire fighting robot using solar
Electrical and Electronics Engineering	EE			Solar based automatic trash sorter using arduino uno
Electrical and Electronics Engineering	EE			Solar powered weather station
Electrical and Electronics Engineering	EE			Wind mill
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			

FOURTH YEAR

Electrical and Electronics Engineering	EE	Power system Analysis-2	18EE71	Autonomous driving delivery robot
Electrical and Electronics Engineering	EE	Power System Protection	18EE72	Amphibious vehicle
Electrical and Electronics Engineering	EE	Integrated of Distribution Generation.	18EE733	Eco-brake electric vehicle
Electrical and Electronics Engineering	EE	Industrial drives and application	18EE741	Automatic fault detection and clearing system in EV
Electrical and Electronics Engineering	EE	PSS laboratory	18EEL76	PLC based color sorting system using conveyor
Electrical and Electronics Engineering	EE	Relay & HV lab	18EEL77	Electricity generation by non-bio-degradable waste and its applications
Electrical and Electronics Engineering	EE	Project Work Phase - 1	18EEP78	Dual axis solar power tracker system
Electrical and Electronics Engineering	EE	Power system operation and control	18EE81	Magnetic Accelerator
Electrical and Electronics Engineering	EE	Power system planning	18EE824	Surveillance Morphobot
Electrical and Electronics Engineering	EE	Project Work Phase - 2	18EEP83	Home automation using Raspberry Pi



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Electrical and Electronics Engineering	EE	Technical Seminar	18EES84	Sign language to speech conversion using 4 flux sensors
Electrical and Electronics Engineering	EE	Internship	18EEI85	Object sorting Automation system
Electrical and Electronics Engineering	EE			Power generation using waste water
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			
Electrical and Electronics Engineering	EE			

for ✓
HOD, EEE

PROF & HOD
Department of Electrical & Electronic Engineering
Sapthagiri College of Engineering
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Visvesvaraya Technological University, Belagavi
Scheme of Teaching and Examinations-2022
 Outcome-Based Education (OBE) and Choice Based Credit System (CBCS)
 (Effective from the academic year 2022-23)

ISemester (Electrical & Electronics Engineering Stream)					(For Chemistry Group)								
Sl. No	Course and Course Code		Course Title	TD/PSB	TeachingHours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	*ASC(IC)	BMATE101	Mathematics-I for EES	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	BCHEE102	Chemistry for EES	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	BCEDK103	Computer-Aided Engineering Drawing	Mechanical	2	0	2	0	03	50	50	100	03
4	ESC-I	BESCK104x	Engineering Science Course-I	Respective Engg Dept	3	0	0	0	03	50	50	100	03
5	ETC-I	BETCK105x	Emerging Technology Course-I	Any Dept	3	0	0	0	03	50	50	100	03
	OR												
	PLC-I	BPLCK105x	Programming Language Course-I		2	0	2	0	03				
6	AEC	BPWSK106	Professional Writing Skills in English	Humanities	1	0	0	0	01	50	50	100	01
		OR											
		BENGK106	Communicative English										
7	HSMS	BICOK107	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
		OR											
		BKSKK107/ BKBKK107	Sanskrutika Kannada/ Balake Kannada										
8	HSMS	BSFHK158	Scientific Foundations of Health	Any Dept.	1	0	0	0	01	50	50	100	01
		OR											
		BIDTK158	Innovation and Design Thinking		1	0	0	0	01				
TOTAL										400	400	800	20

(ESC-I) Engineering Science Courses-I					(ETC-I) Emerging Technology Courses-I				
Code	Title	L	T	P	Code	Title	L	T	P
BESCK104A	Introduction to Civil Engineering	3	0	0	BETCK105A	Smart Materials and Systems	3	0	0
BESCK104B	Introduction to Electrical Engineering	3	0	0	BETCK105B	Green Buildings	3	0	0
BESCK104C	Introduction to Electronics Communication	3	0	0	BETCK105C	Introduction to Nano Technology	3	0	0
BESCK104D	Introduction to Mechanical Engineering	3	0	0	BETCK105D	Introduction to Sustainable Engineering	3	0	0
BESCK104E	Introduction to C Programming	2	0	2	BETCK105E	Renewable Energy Sources	3	0	0
					BETCK105F	Waste Management	3	0	0
					BETCK105G	Emerging Applications of Biosensors	3	0	0
					BETCK105H	Introduction to Internet of Things (IOT)	3	0	0
					BETCK105I	Introduction to Cyber Security	3	0	0
					BETCK105J	Introduction to Embedded System	3	0	0
(PLC-I) Programming Language Courses-I									
Code	Title	L	T	P					
BPLCK105A	Introduction to Web Programming	2	0	2					
BPLCK105B	Introduction to Python Programming	2	0	2					
BPLCK105C	Basics of JAVA programming	2	0	2					
BPLCK105D	Introduction to C++ Programming	2	0	2					
The course BESCK104E Introduction to C Programming, and all courses under PLC and ETC groups can be taught by faculty of ANY DEPARTMENT									

- The student has to select one course from the ESC-I group.
- EEE Students shall opt for any one of the courses from the ESC-I group **except**, BESCK104B-Introduction to Electrical Engineering and ECE/ETC/BM/ML students shall opt any one of the courses from ESC-I **except** BESCK104C Introduction to Electronics Engineering
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-I or PLC-I group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa



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II Semester (Electrical & Electronics Engineering Stream) **(For students who attended 1st semester under Chemistry Group)**

I Semester (Electrical and Electronics Engineering Stream)				II Semester (Electrical and Electronics Engineering Stream)										
Sl. No	Course and Course Code		Course Title	TD/PSB	TeachingHours/Week				Examination				Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks		
														L
1	*ASC(IC)	BMATE201	Mathematics-II for EES	Maths	2	2	2	0	03	50	50	100	04	
2	#ASC(IC)	BPHYE202	Applied Physics for EES	PHY	2	2	2	0	03	50	50	100	04	
3	ESC	BEEE203	# Elements of Electrical Engineering	EEE/ECE/TCE					03	50	50	100	03	
		2	2		0	0								
		OR												
		BBEE203	## Basic Electronics			3	0	0						0
4	ESC-II	BESCK204x	Engineering Science Course-II	Respective Engg Dept.	3	0	0	0	03	50	50	100	03	
5	PLC-II	BPLCK205x	Programming language Course-II	Any Dept	2	0	2	0	03	50	50	100	03	
	OR													
	ETC-II	BETCK205x	Emerging Technology Course-II		3	0	0	0	03					
6	AEC	BENGK206	Communicative English	Humanities	1	0	0	0	01	50	50	100	01	
		OR												
		BPWSK206	Professional Writing Skills in English											
7	HSMC	BKSKK207/ BKBKK207	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	01	50	50	100	01	
		OR												
		BICOK207	Indian Constitution		1	0	0	0						
8	AEC/SDC	BIDTK258	Innovation and Design Thinking	Any Dept	1	0	0	0	01	50	50	100	01	
		OR												
		BSFHK258	Scientific Foundations of Health		1	0	0	0	01					
TOTAL										400	400	800	20	

(ESC-II) Engineering Science Courses-II					(ETC-II) Emerging Technology Courses-II				
Code	Title	L	T	P	Code	Title	L	T	P
BESCK204A	Introduction to Civil Engineering	3	0	0	BETCK205A	Smart materials and Systems	3	0	0
BESCK204B	Introduction to Electrical Engineering	3	0	0	BETCK205B	Green Buildings	3	0	0
BESCK204C	Introduction to Electronics Communication	3	0	0	BETCK205C	Introduction to Nano Technology	3	0	0
BESCK204D	Introduction to Mechanical Engineering	3	0	0	BETCK205D	Introduction to Sustainable Engineering	3	0	0
BESCK204E	Introduction to C Programming	2	0	2	BETCK205E	Renewable Energy Sources	3	0	0
					BETCK205F	Waste Management	3	0	0
					BETCK205G	Emerging Applications of Biosensors	3	0	0
					BETCK205H	Introduction to Internet of Things(IoT)	3	0	0
					BETCK205I	Introduction to Cyber Security	3	0	0
					BETCK205J	Introduction to Embedded System	3	0	0
(PLC-II) Programming Language Courses-II									
Code	Title	L	T	P					
BPLCK205A	Introduction to Web Programming	2	0	2					
BPLCK205B	Introduction to Python Programming	2	0	2					
BPLCK205C	Basics of JAVA programming	2	0	2					
BPLCK205D	Introduction to C++ Programming	2	0	2					
The course BESCK204E, Introduction to C Programming, and all courses under PLC and ETC groups can be taught by faculty of ANY DEPARTMENT									

- The student has to select one course from the ESC-II group.
- EEE Students shall opt for any one of the courses from the ESC-I group **except**, BESCK204B-**Introduction to Electrical Engineering** and ECE/ETC/BM/ML students shall opt any one of the courses from ESC-I **except** BESCK204C **Introduction to Electronics Engineering**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-II or PLC-II group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa



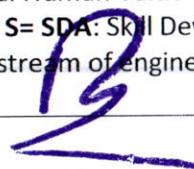
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
B.E. in Electrical & Electronics Engineering
Scheme of Teaching and Examinations 2022
 Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
 (Effective from the academic year 2023-24)

III SEMESTER

III SEMESTER													
Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PCC	BEE301	Engineering Mathematics for EEE	Maths	3	0	0		03	50	50	100	3
2	IPCC	BEE302	Electric Circuit Analysis	EEE	3	0	2		03	50	50	100	4
3	IPCC	BEE303	Analog Electronic Circuits	EEE	3	0	2		03	50	50	100	4
4	PCC	BEE304	Transformers and Generators	EEE	3	0	0		03	50	50	100	3
5	PCCL	BEEL305	Transformers and Generators lab	EEE	0	0	2		03	50	50	100	1
6	ESC	BEE306x	ESC/ETC/PLC	EEE	3	0	0		03	50	50	100	3
7	UHV	BSCK307	Social Connect and Responsibility	Any Department	0	0	2		01	100	---	100	1
8	AEC/ SEC	BEE358x	Ability Enhancement Course/Skill Enhancement Course - III	EEE	If the course is a Theory				01	50	50	100	1
					1	0	0						
					If a course is a laboratory				02				
					0	0	2						
9	MC	BNSK359	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK359	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK359	Yoga	Yoga Teacher									
Total									550	350	900	20	

PCC: Professional Core Course, **PCCL:** Professional Core Course laboratory, **UHV:** Universal Human Value Course, **MC:** Mandatory Course (Non-credit), **AEC:** Ability Enhancement Course, **SEC:** Skill Enhancement Course, **L:** Lecture, **T:** Tutorial, **P:** Practical **S= SDA:** Skill Development Activity, **CIE:** Continuous Internal Evaluation, **SEE:** Semester End Evaluation. **K:** This letter in the course code indicates common to all the stream of Engineering. **ESC:** Engineering Science Course, **ETC:** Emerging Technology Course, **PLC:** Programming Language Course



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Engineering Science Course (ESC/ETC/PLC)			
BEE306A	Digital Logic Circuits	BEE306C	Electromagnetic Field Theory
BEE306B	Electrical Measurements and Instrumentation	BEE306D	Physics of Electronic Devices
Ability Enhancement Course – III			
BEEL358A	SCI LAB/MATLAB for Transformers and Generators	BEEL358B	555 IC Laboratory
BEEL358C	Circuit Laboratory using P Spice	BEEL358D	Electrical Hardware Laboratory
<p>Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practicals of the same course. Credit for IPCC can be 04 and its Teaching-Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23 may please be referred.</p> <p>National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.</p>			



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VARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
B.E. in Electrical & Electronics Engineering
Scheme of Teaching and Examinations 2022
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 (Effective from the academic year 2023-24)

IV SEMESTER													
Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	BEE401	Electric Motors	EEE	3	0	0		03	50	50	100	3
2	PCC	BEE402	Transmission and Distribution	EEE	4	0	0		03	50	50	100	4
3	IPCC	BEE403	Microcontrollers	EEE	3	0	2		03	50	50	100	4
4	PCCL	BEEL404	Electric Motors lab	EEE	0	0	2		03	50	50	100	1
5	ESC	BEE405x	ESC/ETC/PLC	EEE	3	0	0		03	50	50	100	3
6	AEC/ SEC	BEE456x	Ability Enhancement Course/Skill Enhancement Course- IV	EEE	If the course is Theory				01	50	50	100	1
					1	0	0						
					If the course is a lab				02				
					0	0	2						
7	BSC	BBOK407	Biology For Engineers	TD / PSB: BT, CHE,	3	0	0		03	50	50	100	3
8	UHV	BUHK408	Universal human values course	Any Department	1	0	0		01	50	50	100	1
9	MC	BNSK459	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK459	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK459	Yoga	Yoga Teacher									
		Total											

PCC: Professional Core Course, **PCCL:** Professional Core Course laboratory, **UHV:** Universal Human Value Course, **MC:** Mandatory Course (Non-credit), **AEC:** Ability Enhancement Course, **SEC:** Skill Enhancement Course, **L:** Lecture, **T:** Tutorial, **P:** Practical **S= SDA:** Skill Development Activity, **CIE:** Continuous Internal Evaluation, **SEE:** Semester End Evaluation. K : This letter in the course code indicates common to all the stream of engineering.

Ability Enhancement Course / Skill Enhancement Course - IV			
BEE456A	Basics of VHDL Lab	BEE456B	Sci Lab / MATLAB for Electrical and Electronic Measurements
BEE456C	PCB Design Laboratory	BEE456D	Aurdino & Rasberry PI Based Projects
Engineering Science Course (ESC/ETC/PLC)			
BEE405A	Electrical Power Generation and Economics	BEE405C	Engineering Materials
BEE405B	Op-Amp and LIC	BEE405D	Object Oriented Programming
<p>Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching-Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23.</p> <p>National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the courses is mandatory for the award of degree.</p>			


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Scheme of Teaching and Examinations 2021
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2021 - 22)

V SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question and Paper Setting Board (PSB)	Teaching Hours /Week					Examination			Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	PCC 21EE51	Transmission and Distribution	EE	2	2	0		03	50	50	100	3
2	IPCC 21EE52	Control Systems	EE	3	0	2		03	50	50	100	4
3	PCC 21EE53	Power System Analysis - I	EE	2	2	0		03	50	50	100	3
4	PCC 21EE54	Power Electronics	EE	2	2	0		03	50	50	100	3
5	PCC 21EEL55	Power Electronics Laboratory	EE	0	0	2		03	50	50	100	1
6	AEC 21RMI56	Research Methodology & Intellectual Property Rights	TD: Any Department PSB: As identified by University	1	2	0		02	50	50	100	2
7	HSMC 21CIV57	Environmental Studies	TD: Civil/ Environmental /Chemistry/ Biotech. PSB: Civil Engg	0	2	0		1	50	50	100	1
8	AEC 21EE58X	Ability Enhancement Course-V	Concerned Board	If offered as theory courses				01	50	50	100	1
				0	2	0						
				If offered as lab. courses				02				
				0	0	2						
Total									400	400	800	18

Ability Enhancement Course - V

21EEL581	Scilab for Analysis of Power Systems	21EEP583	Energy Audit project
21EEL582	Scilab for Power Electronics	21EEP584	Renewable Energy Project

Note: BSC: Basic Science Course, PCC: Professional Core Course, IPCC: Integrated Professional Core Course, AEC –Ability Enhancement Course INT –Internship, HSMC: Humanity and Social Science & Management Courses.

L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC can be 04 and its Teaching – Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). Theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.



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(Effective from the academic year 2021 - 22)

VI SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	HSMC 21EE61	Management and Entrepreneurship	HSME/EE	3	0	0		03	50	50	100	3
2	IPCC 21EE62	Power System Analysis - 2	EE	3	0	2		03	50	50	100	4
3	PCC 21EE63	Signals and Digital Signal Processing	EE	2	2	0		03	50	50	100	3
4	PEC 21EE64x	Professional Elective Course-I	EE	3	0	0		03	50	50	100	3
5	OEC 21EE65x	Open Elective Course-I	Concerned Department	3	0	0		03	50	50	100	3
6	PCC 21EEL66	Digital Signal Processing Laboratory	EE	0	0	2		03	50	50	100	1
7	MP 21EEMP67	Mini Project	EE	Two contact hours /week for interaction between the faculty and students.				--	100	--	100	2
8	INT 21INT68	Innovation/Entrepreneurship /Societal Internship	Completed during the intervening period of IV and V semesters.					--	100	--	100	3
Total								500	300	800	22	

Professional Elective - I

21EE641	Sensors and Transducers	21EE643	Electrical Machine Design
21EE642	Electromagnetic Field Theory	21EE644	Electrical Engineering Materials

Open Electives – I offered by the Department of Electrical and Electronics Engineering to other Department students

21EE651	Utilization of Electrical Power	21EE653	Industrial Servo Control Systems
21EE652	Renewable Energy Resources	21EE654	Advanced Control Systems

Note: HSMC: Humanity and Social Science & Management Courses, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, PEC: Professional Elective Courses, OEC–Open Elective Course, MP –Mini Project, INT –Internship.
 L –Lecture, T – Tutorial, P - Practical / Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC can be 04 and its Teaching – Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech) 2021-22 may be referred.

Professional Elective Courses(PEC):

A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum students' strength for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the programme is less than 10.

Open Elective Courses:

Students belonging to a particular stream of Engineering and Technology are not entitled for the open electives offered by their parent Department. However, they can opt an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor.

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the program.
- The syllabus content of open electives is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the program.

In case, any college is desirous of offering a course (not included in the Open Elective List of the University) from streams such as Law, Business (MBA), Medicine, Arts, Commerce, etc., can seek permission, at least one month before the commencement of the semester, from the University by submitting a copy of the syllabus along with the details of expertise available to teach the same in the college.

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VII SEMESTER

VI SEMESTER												
Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	18 EE71	Power System Analysis – 2	EEE	2	2	--	03	40	60	100	3
2	PCC	18 EE72	Power System Protection	EEE	3	--	--	03	40	60	100	3
3	PEC	18 EE73X	Professional Elective - 2	EEE	3	--	--	03	40	60	100	3
4	PEC	18 EE74X	Professional Elective - 3	EEE	3	--	--	03	40	60	100	3
5	OEC	18 EE75X	Open Elective -B	EEE	3	--	--	03	40	60	100	3
6	PCC	18 EEL76	PSS laboratory	EEE	--	2	2	03	40	60	100	2
7	PCC	18 EEL77	Relay & HV lab	EEE	--	2	2	03	40	60	100	2
8	Project	18 EEP78	Project Work Phase - 1	EEE	--	--	2	--	100	--	100	1
9	Internship	--	Internship	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)								
TOTAL					14	06	06	21	380	420	800	20

te: PCC: Professional core, PEC: Professional Elective.

Professional Elective - 2

Course code under 18XX73X	Course Title
18EE731	Solar and Wind Energy
18EE732	Micro and Nano Scale Sensors and Transducers
18 EE733	Integrated of Distribution Generation.
18 EE734	Advanced Control Systems
18 EE735	Reactive Power Control in Electric Power Systems

Professional Electives - 3

Course code under 18 EE74X	Course Title
18 EE741	Industrial Drives and Application
18 EE742	Utilization of Electrical Power
18 EE743	AI Techniques for Electrical and hybrid Electric Vehicles
18 EE744	Smart Grid
18 EE745	Artificial Neural Network With Applications to Power Systems

Open Elective -B

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

Selection of an open elective shall not be allowed if,

The candidate has studied the same course during the previous semesters of the programme.

The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.

A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.



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Sapthagiri College of Engineering
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 Bengaluru - 560 057

Project work:

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

CIE procedure for Project Work Phase - 1:

(i) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the Project report shall be the same for all the batch mates.

(ii) **Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the project work phase -1, shall be based on the evaluation of project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements.

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.



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VIII SEMESTER

VIII SEMESTER												
Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	18EE81	Power System Operation and Control	EEE	3	--	--	03	40	60	100	3
2	PEC	18EE82X	Professional Elective - 4	EEE	3	--	--	03	40	60	100	3
3	Project	18EEP83	Project Work Phase - 2		--	--	2	03	40	60	100	8
4	Seminar	18EES84	Technical Seminar		--	--	2	03	100	--	100	1
5	Internship	18EEI85	Internship	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
TOTAL					06	--	04	15	260	240	500	18

Note: PCC: Professional Core, PEC: Professional Elective.

Professional Electives - 4

Course code under 18XX82X	Course Title
18EE821	FACTs and HVDC Transmission
18EE822	Electrical Estimation and Costing
18EE823	Big Data Analytics in Power Systems
18EE824	Power System Planning
18EE825	Electrical Power Quality

Project Work

CIE procedure for Project Work Phase - 2:

(i) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work phase -2, shall be based on the evaluation of project work phase -2 Report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(ii) **Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the project work phase -2, shall be based on the evaluation of project work phase -2 Report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

SEE for Project Work Phase - 2:

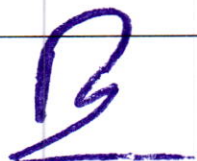
(i) **Single discipline:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.

(ii) **Interdisciplinary:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.

Internship: Those, who have not pursued /completed the internship, shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements.

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).



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