



SJCET B. Tech (EE) WORKING PROFESSIONALS

Curriculum 2024

Total credits for the award of B.Tech Degree as per SJ CET B. Tech (EE) Working Professionals shall be 162, which includes 122 academic credits from Semester III - VIII, 2 mandatory student activity based credits and 38 credits for their entry level qualification.

SEMESTER III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJMAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	24SJEET201	CIRCUITS AND NETWORKS	2-2-0	4	4
C	24SJEET203	MEASUREMENTS AND INSTRUMENTATION	3-1-0	4	4
D	24SJEET205	ANALOG ELECTRONICS	3-1-0	4	4
E 1/2	24SJEEST200	DESIGN & ENGINEERING	2-0-0	2	2
	24SJHUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	24SJMCN201	SUSTAINABLE ENGINEERING	2-0-0	2	—
S	24SJEEL201	CIRCUITS AND MEASUREMENTS LAB	0-0-3	3	2
T	24SJEEL203	ANALOG ELECTRONICS LAB	0-0-3	3	2
TOTAL				26	22

NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4.

SEMESTER IV

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJMAT204	PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	3-1-0	4	4
B	24SJEET202	DC MACHINES AND TRANSFORMERS	2-2-0	4	4
C	24SJEET204	ELECTROMAGNETIC THEORY	3-1-0	4	4
D	24SJEET206	DIGITAL ELECTRONICS	3-1-0	4	4
E 1/2	24SJEST200	DESIGN & ENGINEERING	2-0-0	2	2
	24SJHUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	24SJMCN202	CONSTITUTION OF INDIA	2-0-0	2	—
S	24SJEEL202	ELECTRICAL MACHINES LAB 1	0-0-3	3	2
T	24SJEEL204	DIGITAL ELECTRONICS LAB	0-0-3	3	2
TOTAL				26	22

NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4.

SEMESTER V

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJEET301	POWER SYSTEMS 1	3-1-0	4	4
B	24SJEET303	MICROPROCESSORS AND MICROCONTROLLERS	3-1-0	4	4
C	24SJEET305	SIGNALS AND SYSTEMS	3-1-0	4	4
D	24SJEET307	SYNCHRONOUS AND INDUCTION MACHINES	3-1-0	4	4
E 1/2	24SJHUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	24SJHUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	24SJMCN301	DISASTER MANAGEMENT	2-0-0	2	—
S	24SJEEL331	MICROPROCESSORS AND MICROCONTROLLERS LAB	0-0-3	3	2
T	24SJEEL333	ELECTRICAL MACHINES LAB II	0-0-3	3	2
TOTAL				27	23

NOTE:

1. Industrial Economics and Foreign Trade and Management for Engineers shall be offered in both S5 and S6.

SEMESTER VI

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJEET302	LINEAR CONTROL SYSTEMS	2-2-0	4	4
B	24SJEET304	POWER SYSTEMS II	3-1-0	4	4
C	24SJEET306	POWER ELECTRONICS	3-1-0	4	4
D	24SJEETXXX	PROGRAM ELECTIVE 1	2-1-0	3	3
E 1/2	24SJHUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	24SJHUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	24SJEET308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	24SJEEL332	POWER SYSTEMS LAB	0-0-3	3	2
T	24SJEEL334	POWER ELECTRONICS LAB	0-0-3	3	2
TOTAL				25	23

PROGRAM ELECTIVE I

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
D	24SJEET312	BIOMEDICAL INSTRUMENTATION	2-1-0	3	3
	24SJEET322	RENEWABLE ENERGY SYSTEMS	2-1-0		
	24SJEET332	COMPUTER ORGANIZATION	2-1-0		
	24SJEET342	HIGH VOLTAGE ENGINEERING	2-1-0		
	24SJEET352	OBJECT ORIENTED PROGRAMMING	2-1-0		
	24SJEET362	MATERIAL SCIENCE	2-1-0		
	24SJEET372	SOFT COMPUTING	2-1-0		

NOTE:

1. Industrial Economics and Foreign Trade and Management for Engineers shall be offered in both S5 and S6.
2. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJEET401	ADVANCED CONTROL SYSTEMS	2-1-0	3	3
B	24SJEETXXX	PROGRAM ELECTIVE II	2-1-0	3	3
#C	24SJ**TXXX	OPEN ELECTIVE	2-1-0	3	3
D	24SJMCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	—
S	24SJEEL411	CONTROL SYSTEMS LAB	0-0-3	3	2
T	24SJEEQ413	SEMINAR	0-0-3	3	2
U	24SJEED415	PROJECT PHASE 1	0-0-6	6	2
TOTAL				24	15

PROGRAM ELECTIVE II

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
B	24SJEET413	ELECTRIC DRIVES	2-1-0	3	3
	24SJEET423	DIGITAL CONTROL SYSTEMS	2-1-0		
	24SJEET433	MODERN OPERATING SYSTEMS	2-1-0		
	24SJEET443	DATA STRUCTURES	2-1-0		
	24SJEET453	DIGITAL SIGNAL PROCESSING	2-1-0		
	24SJEET463	ILLUMINATION TECHNOLOGY	2-1-0		
	24SJEET473	DIGITAL PROTECTION OF POWER SYSTEMS	2-1-0		

#Open Electives applicable to Electrical and Electronics Engineering students. Open Electives are such courses which will be offered by other departments.

Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance	:	10
Guide	:	20
Technical Content of the Report	:	30
Presentation	:	40

Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Electrical & Electronics Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:

- > Survey and study of published literature on the assigned topic;
- > Preparing an Action Plan for conducting the investigation, including team work;
- > Working out a preliminary Approach to the Problem relating to the assigned topic;
- > Block level design documentation
- > Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
- > Preparing a Written Report on the Study conducted for presentation to the Department;
- > Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	:	30
Interim evaluation by the evaluation committee	:	20
Final Seminar	:	30
The report evaluated by the evaluation committee	:	20

The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor.

SEMESTER VIII

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	24SJEET402	ELECTRICAL SYSTEM DESIGN AND ESTIMATION	2-1-0	3	3
B	24SJEETXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	24SJEETXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	24SJEETXXX	PROGRAM ELECTIVE V	2-1-0	3	3
T	24SJEET404	COMPREHENSIVE COURSE VIVA	1-0-0	1	1
U	24SJEED416	PROJECT PHASE II	0-0-12	12	4
TOTAL				25	17

PROGRAM ELECTIVE III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
B	24SJEET414	ROBOTICS	2-1-0	3	3
	24SJEET424	ENERGY MANAGEMENT	2-1-0		
	24SJEET434	SMART GRID TECHNOLOGIES	2-1-0		
	24SJEET444	ELECTRICAL MACHINE DESIGN	2-1-0		
	24SJEET454	SWITCHED MODE POWER CONVERTERS	2-1-0		
	24SJEET464	COMPUTER AIDED POWER SYSTEM ANALYSIS	2-1-0		
	24SJEET474	MACHINE LEARNING	2-1-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
C	24SJEET416	NONLINEAR SYSTEMS	2-1-0	3	3
	24SJEET426	SPECIAL ELECTRIC MACHINES	2-1-0		
	24SJEET436	POWER QUALITY	2-1-0		
	24SJEET446	COMPUTER NETWORKS	2-1-0		
	24SJEET456	DESIGN OF POWER ELECTRONIC SYSTEMS	2-1-0		
	24SJEET466	HVDC & FACTS	2-1-0		
	24SJEET476	ADVANCED ELECTRONIC DESIGN	2-1-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
D	24SJEET418	ELECTRIC AND HYBRID VEHICLES	2-1-0	3	3
	24SJEET428	INTERNET OF THINGS	2-1-0		
	24SJEET438	ENERGY STORAGE SYSTEMS	2-1-0		
	24SJEET448	ROBUST AND ADAPTIVE CONTROL	2-1-0		
	24SJEET458	SOLAR PV SYSTEMS	2-1-0		
	24SJEET468	INDUSTRIAL INSTRUMENTATION & AUTOMATION	2-1-0		
	24SJEET478	BIG DATA ANALYTICS	2-1-0		

NOTE

- 1. Comprehensive Course Viva:** The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
- 2. Project Phase II:** The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
 - > In depth study of the topic assigned in the light of the Report prepared under Phase I;
 - > Review and finalization of the Approach to the Problem relating to the assigned topic;
 - > Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;

- > Final development of product/process, testing, results, conclusions and future directions;
- > Preparing a paper for Conference presentation/Publication in Journals, if possible;
- > Preparing a Dissertation in the standard format for being evaluated by the Department;
- > Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide : 30

Interim evaluation, 2 times in the semester by the evaluation committee : 50

Quality of the report evaluated by the above committee : 30

(The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor).

Final evaluation by a three-member committee : 40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

Credit transfer through MOOC/SWAYAM

As per AICTE regulation (File No. AICTE/P&AP/APH/2023-24/01 dated 24/08/2023), up to 40% of credit transfer is permitted through MOOC/SWAYAM. Based on the availability of the courses and syllabus content, MOOC/SWAYAM can be approved before commencement of each semester by the academic council in recommendation from board of studies.

