ST. JOSEPH'S
COLLEGE OF ENGINEERING
AND TECHNOLOGY,
- PALAI -
AUTONOMOUS

SJCET B. Tech (ME) CURRICULUM 2024

B. Tech in
MECHANICAL ENGINEERING

Signed By:Devassia V P
Approved by SJCET Academic Council held on 29.11.2024

FIRST SEMESTER

(July-December)

10 Days Compulsory Induction Program and UHV

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIE	ESE		
1	A	24SJGYMAT101	BSC	GC	Mathematics for Electrical Science and Physical Science - 1	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	24SJGCPHT121	BSC	GC	Physics for Physical Science and Life Science	3	0	2	0	5.5	40	60	4	5
		24SJGCCYT122			Chemistry for Physical Science									
3	C	24SJGCEST103	ESC	GC	Engineering Mechanics	3	0	0	0	4.5	40	60	3	3
4	D	24SJGCEST104	ESC	GC	Introduction to Mechanical Engineering and Civil Engineering (Part1: Mechanical Engineering)	2	0	0	0	3	20	30	2+2 =4	4
					(Part 2: Civil Engineering)	2	0	0	0	3	20	30		
5	F	24SJICEST105	ESC	IC	Algorithmic Thinking with Python	3	0	2	0	5.5	40	60	4	5
6	L	24SJGCESL106	ESC	GC	Engineering Workshop	0	0	2	0	1	50	50	1	2
7	I* S1/ S2	24SJICHWT127	HWP	IC	Health and Wellness	1	0	1	0	0	50	0	1	2/3
		24SJICHUT128	HMC		Life Skills and Professional Communication	2	0	1	0	3.5	100			
8	S1/ S2	24SJICSEM129	SEC	IC	**Skill Enhancement Course: *Digital 101(NASSCOM)*	MOOC				2			-	
Total										**30/ 32**			**20**	**24/ 25**

Bridge Course (Mathematics or Introduction to Computer Science) *: Total 15 Hrs.

No Grade Points will be awarded for the MOOC course and I slot course.

SECOND SEMESTER

(January-June)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIE	ESE		
1	A	24SJGYMAT201	BSC	GC	Mathematics for Electrical Science and Physical Science - 2	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	24SJGCPHT121	BSC	GC	Physics for Physical Science and Life Science	3	0	2	0	5.5	40	60	4	5
		24SJGCCYT122			Chemistry for Physical Science									
3	C	24SJGCEST203	ESC	GC	Engineering Graphics and Computer Aided Drawing	2	0	2	0	4	40	60	3	4
4	D	24SJGCEST204	ESC	GC	Basic Electrical and Electronics Engineering (Part 1: Electrical Engineering)	2	0	0	0	3	20	30	2+2 =4	4
					(Part 2: Electronics Engineering)	2	0	0	0	3	20	30		
5	E	24SJPCMET205	PC	PC	Material Science and Engineering	3	1	0	0	5	40	60	4	4
6	F	24SJICEST206	ESC	IC	Engineering Entrepreneurship and IPR	3	0	0	0	4.5	60	40	3	3
7	I* S1/ S2	24SJICHWT127	HWP	IC	Health and Wellness	1	0	1	0	0	50	0	1	2/3
		24SJICHUT128	HMC		Life Skills and Professional Communication	2	0	1	0	3.5	100	0		
8	L	24SJGCESL208	ESC	GC	Basic Electrical and Electronics Engineering workshop	0	0	2	0	1	70	30	1	2
9	S1/ S2	24SJICSEM129	SEC	IC	**Skill Enhancement Course: *Digital 101(NASSCOM)*	MOOC							1	
Total										**34**			**24**	**27/ 28**

No Grade Points will be awarded for the MOOC course and I slot course.

Note: *Physics, Chemistry, Health and Wellness and Life Skill and Professional Communication can be offered in both Semester 1 (S1) and Semester 2 (S2).*

Digital 101 (NASSCOM)		
Sl. No:	**Technologies Covered**	**Hours**
1	Artificial Intelligence and Big Data Analytics (AI/BDA)	11
2	Internet of Things (IoT)	2.5
3	Cyber Security	2.5
4	Block Chain	2.5
5	Robotic Process Automation	1.5
6	Augmented and Virtual Reality (AR and VR)	2.5
7	Cloud Computing	2.5
8	3D Printing and Modelling	2
9	Web, Mobile Dev and Marketing	2
10	Responsible AI	1
	Total Hours	**30**

****Skill Enhancement Course:** Digital 101 is an introductory Massive Open Online Course (MOOC) offered by NASSCOM. It is designed to provide students with foundational knowledge and skills in digital technologies, preparing them for further studies and careers in the digital domain. By incorporating the Digital 101 course into the curriculum, it can be ensured that all students gain valuable digital skills early in their academic journey, enhancing their readiness for advanced courses and future careers in technology.

Course Registration and Completion:

- Students have the flexibility to register and complete the Digital 101 course either in their first semester (S1) or second semester (S2).
- The credit for this course (1 credit) will be officially recorded in the second semester grade card.

THIRD SEMESTER

(July-December)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIE	ESE		
1	A	24SJGYMAT301	BSC	GC	Mathematics for Electrical Science and Physical Science -3	3	0	0	0	4.5	40	60	3	3
2	B	24SJPCMET302	PC	PC	Mechanics of Solids	3	1	0	0	5	40	60	4	4
3	C	24SJPCMET303	PC	PC	Fluid Mechanics and Machinery	3	1	0	0	5	40	60	4	4
4	D	24SJPBMET304	PC-PBL	PB	Manufacturing Processes	3	0	0	1	5.5	60	40	4	4
5	F	24SJGYEST305	ESC	GC	Introduction to Artificial Intelligence and Data Science	3	1	0	0	5	40	60	4	4
6	G S3/ S4	24SJICHUT346	HMC	IC	Economics for Engineers	2	0	0	0	3	50	50	2	2
		24SJICHUT347			Engineering Ethics and Sustainable Development									
7	L	24SJPCMEL307	PCL	PC	Computer Aided Machine Drawing and Modelling	0	0	3	0	1.5	50	50	2	3
8	Q	24SJPCMEL308	PCL	PC	Material Testing Lab	0	0	3	0	1.5	50	50	2	3
9	R/M		VAC		REMEDIAL / MINOR COURSE	3	1	0	0	5			4*	4*
Total										**31 /36**			**25 /29***	**27 /31***

FOURTH SEMESTER

(January-June)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIE	ESE		
1	A	24SJGCMAT401	BSC	GC	Mathematics for Physical Science - 4	3	0	0	0	4.5	40	60	3	3
2	B	24SJPCMET402	PC	PC	Machine Tools and Metrology	3	1	0	0	5	40	60	4	4
3	C	24SJPCMET403	PC	PC	Engineering Thermodynamics	3	1	0	0	5	40	60	4	4
4	D	24SJPBMET404	PC-PBL	PB	Mechanics of Machinery	3	0	0	1	5.5	60	40	4	4
5	E	24SJPEMET41N	PE	PE	***Program Elective - 1***	3	0	0	0	4.5	40	60	3	3
6	G S3/S4	24SJICHUT346	HMC	IC	Economics for Engineers	2	0	0	0	3	50	50	2	2
		24SJICHUT347			Engineering Ethics and Sustainable Development									
7	L	24SJPCMEL407	PCL	PC	Fluid Mechanics and Hydraulics Machine Lab	0	0	3	0	1.5	50	50	2	3
8	Q	24SJPCMEL408	PCL	PC	Manufacturing Technology Lab	0	0	3	0	1.5	50	50	2	3
9	R/M/H		VAC		REMEDIAL / MINOR / HONOURS COURSE	3	1	0	0	5			4*	4*
Total										**31/ 36**			**24/ 28***	**26/ 30***

Note: *Engineering Economics and Engineering Ethics and Sustainable Development shall be offered either in S3 or S4.*

PROGRAM ELECTIVE I: 24SJPEMET41N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
E	24SJPEMET411	Turbo Machinery	3-0-0-0	**3**	3
	24SJPEMET412	Nuclear Energy	3-0-0-0		3
	24SJPEMET413	Composite Materials	3-0-0-0		3
	24SJPEMET414	Components of Intelligent Systems	3-0-0-0		3
	24SJPEMET416	Advanced Metal Joining Techniques	3-0-0-0		3
	24SJPEMET417	Technology Management	3-0-0-0		3
	24SJPEMET418	Supply Chain and Logistics Management	3-0-0-0		3
	24SJPEMET415*	**Advanced Mechanics of Solids**	**3-0-0-0**		**5 or 3**

***Note:** Level 5 courses in the B. Tech curriculum carry a total of 5 credits, consisting of 3 credits for the Programme Elective and 2 additional credits. The additional 2 credits shall be awarded only if the student meets the eligibility conditions specified in the SJCET B. Tech. Academic Regulation 2024. If those conditions are not fulfilled, the student will receive only 3 credits for the course.*

FIFTH SEMESTER

(July-December)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIE	ESE		
1	A	24SJPCMET501	PC	PC	Dynamics of Machinery	3	1	0	0	5	40	60	4	4
2	B	24SJPCMET502	PC	PC	Advanced Manufacturing Engineering	3	1	0	0	5	40	60	4	4
3	C	24SJPCMET503	PC	PC	Heat and Mass Transfer	3	0	0	0	4.5	40	60	3	3
4	D	24SJPBMET504	PC- PBL	PB	Management for Engineers	3	0	0	1	5.5	60	40	4	4
5	E	24SJPEMET52N	PE	PE	***Program Elective - 2***	3	0	0	0	4.5	40	60	3	3
6	I*	24SJICHUM506	HMC	IC	Constitution of India **(MOOC)**	-	-	-	-	2	-	-	1	-
7	L	24SJPCMEL507	PCL	PC	Thermal Engineering Lab - 1	0	0	3	0	1.5	50	50	2	3
8	Q	24SJPCMEL508	PCL	PC	Mechanical Engineering Lab	0	0	3	0	1.5	50	50	2	3
9	R /M/ H		VAC		Remedial / Minor / Honours Course	3	1	0	0	5			4*	4*
	S5/ S6	Industrial Visit (Maximum 6 Days are permitted, Not Exceeding more than 4 Working Days) / Industrial Training												
Total										**30/35**			**23/27***	**24/28***

**No Grade Points will be awarded for the MOOC course and I slot course.*

Industrial Training:

Students who are not participating in the industrial visit must attend industrial training during that period

PROGRAM ELECTIVE 2: 24SJPEMET52N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
E	24SJPEMET521	Computational Fluid Dynamics	3-0-0-0	**3**	3
	24SJPEMET522	Design for Manufacture and Assembly	3-0-0-0		3
	24SJPEMET523	Computer Aided Design and Analysis	3-0-0-0		3
	24SJPEMET524	Additive Manufacturing	3-0-0-0		3
	24SJPEMET526	Energy Economics and Policy	3-0-0-0		3
	24SJPEMET527	Human Resources Management	3-0-0-0		3
	24SJPEMET528	Operations Research	3-0-0-0		3
	24SJPEMET525	**Instrumentation and Control Systems**	**3-0-0-0**		**5 or 3**

SIXTH SEMESTER

(January – June)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIE	ESE		
1	A	24SJPCMET601	PC	PC	Industrial and System Engineering	3	0	0	0	4.5	40	60	3	3
2	B	24SJPCMET602	PC	PC	Machine Design	3	0	0	0	4.5	40	60	3	3
3	C	24SJPEMET63N	PE	PE	***Program Elective - 3***	3	0	0	0	4.5	40	60	3	3
4	D	24SJPBMET604	PC-PBL	PB	Thermal Engineering	3	0	0	1	5.5	60	40	4	4
5	F	24SJGCEST605	ESC	GC	Design Thinking and Product Development *(Group Specific Syllabus)*	2	0	0	0	3	40	60	2	2
6	O#	24SJOE - - T61N 24SJIE - - T61N	OE/ ILE	OE/IE	***Open Elective - 1*** ***Industry Linked Elective - 1***	3	0	0	0	4.5	40	60	3	3
7	L	24SJPCMEL607	PCL	PC	Computer Aided Design and Analysis Lab	0	0	3	0	1.5	50	50	2	3
8	P	24SJPCMEP608	PWS	PC	Mini Project: Socially Relevant Project	0	0	0	3	3	50	50	2	3
9	Q	24SJPCMEL609	PCL	PC	Thermal Engineering Lab - 2	0	0	2	0	1	50	50	1	2
10	R/ M/ H		VAC		REMEDIAL / MINOR / HONOURS COURSE	3	1	0	0	5			4*	4*
	S5/ S6	Industrial Visit (Maximum of 6 Days are permitted, Not Exceeding more than 4 Working Days) / Industrial Training												
Total										**32/37**			**23/26***	**26/29***

#*Open Elective or Industry linked Elective applicable for ME Students only*

***Note**: Open Electives are such courses which will be offered by other departments. Like ME department students have to opt open electives from EC/CS/EE etc. departments.*

***Industrial Training:** Students who are not participating in the industrial visit must attend industrial training during that period.*

PROGRAM ELECTIVE 3: 24SJPEMET63N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
C	24SJPEMET631	Power Plant Engineering	3-0-0-0	3	3
	24SJPEMET632	Compressible Fluid Flow	3-0-0-0		3
	24SJPEMET633	Industrial Tribology	3-0-0-0		3
	24SJPEMET634	Finite Element Methods	3-0-0-0		3
	24SJPEMET636	Non-destructive Testing	3-0-0-0		3
	24SJPEMET637	Industrial Safety Engineering	3-0-0-0		3
	24SJPEMET638	Marketing Management	3-0-0-0		3
	24SJPEMET635	**Advanced Materials**	**3-0-0-0**		**5 or 3**

Open Electives offered by ME department to students of other departments

OPEN ELECTIVE 1: 24SJOEMET61N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
O	24SJOEMET611	Introduction to Business Analytics	3-0-0-0	3	3
	24SJOEMET612	Quantitative Techniques for Engineers	3-0-0-0		3
	24SJOEMET613	Automotive Technology	3-0-0-0		3
	24SJOEMET614	Renewable Energy Engineering	3-0-0-0		3
	24SJOEMET615	Quality Engineering and Management	3-0-0-0		3
	24SJOEMET616	Additive Manufacturing	3-0-0-0		3
	24SJOEMET617	Solar Energy Conservation Systems	3-0-0-0		3

SEVENTH SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIE	ESE		
1	A	24SJPEMET74N 24SJPEMEM74N#	PE	PE	***Program Elective - 4*** Internship Students: Self-Study / MOOC / Online Class	3	0	0	0	4.5	40	60	3	3
2	B	24SJPEMET75N 24SJPEMEM75N#	PE	PE	***Program Elective - 5*** Internship Students: Self-Study / MOOC / Online Class	3	0	0	0	4.5	40	60	3	3
3	O+	24SJOE - - T72N 24SJIE - - T72N 24SJOE - - M72N#	OE/ ILE	OE/IE	***Open Elective - 2*** ***Industry Linked Elective - 2*** Internship Students: Self-Study / MOOC / Online Class	3	0	0	0	4.5	40	60	3	3
4	I*	24SJIEHUT704 24SJIEHUM70N#	HMC	IE	***Institution Elective*** Internship Students: Self-Study / MOOC / Online Class	2	0	0	0	3	50	50	2	2
5	S	24SJPCMES705	PWS	PC	Seminar	0	0	3	0	1.5	50	0	2	3
6	P**	24SJPCMEP706 24SJPCMEI706	PWS	PC	***Option 1:*** Major Project ***Option 2:*** Internship (4-6 Months)	0	0	0	8	8	100	0	4	8
7	R/H		VAC		REMEDIAL / HONOURS COURSE	3	0	0	0	4.5			3*	3*
Total										**26/ 31**			**17/ 20***	**22/ 25***

#*MOOC Courses approved by Institution (for Internship Students)*

+*Open Elective or Industry linked Elective applicable for ME Students only*

**No Grade Points will be awarded for the I slot courses.*

Students can opt for the internship either in the **7th or 8th semester.

***Option 1**: Work on a Project in the institute/department under the mentorship of faculty members.*

***Option 2**: Full semester Internship in an Industry/organization (**7th or 8th semester**)*

***Note**: Open Electives are such courses which will be offered by other departments.*

PROGRAM ELECTIVE - 4: 24SJPEMET74N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
A	24SJPEMET741	Gas Turbine and Jet Propulsion	3-0-0-0	3	3
	24SJPEMET742	Automobile Engineering	3-0-0-0		3
	24SJPEMET743	Design of Machine Elements	3-0-0-0		3
	24SJPEMET744	Failure Analysis and Design	3-0-0-0		3
	24SJPEMET746	Lean Manufacturing	3-0-0-0		3
	24SJPEMET747	Reliability Engineering	3-0-0-0		3
	24SJPEMET748	Robotics	3-0-0-0		3
	24SJPEMET745	**Mechatronics**	**3-0-0-0**		**5 or 3**

PROGRAM ELECTIVE - 5: 24SJPEMET75N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
B	24SJPEMET751	Refrigeration and Air Conditioning	3-0-0-0	3	3
	24SJPEMET752	Acoustics and Noise Control	3-0-0-0		3
	24SJPEMET753	Aerospace Engineering	3-0-0-0		3
	24SJPEMET754	Renewable Energy Engineering	3-0-0-0		3
	24SJPEMET756	Mobile Robotics	3-0-0-0		3
	24SJPEMET757	Flexible Manufacturing Systems	3-0-0-0		3
	24SJPEMET758	Quality Engineering and Management	3-0-0-0		3
	24SJPEMET755	**Optimization Techniques**	**3-0-0-0**		**5 or 3**

Open Electives offered by ME department to students of other departments

OPEN ELECTIVE - 2: 24SJOEMET72N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
O	24SJOEMET721	Engineering Materials	3-0-0-0	3	3
	24SJOEMET722	Robotics	3-0-0-0		3
	24SJOEMET723	Finite Element Methods	3-0-0-0		3
	24SJOEMET724	Non-destructive Testing	3-0-0-0		3
	24SJOEMET725	Engineering Instruments and Measurements	3-0-0-0		3
	24SJOEMET726	Computational Heat Transfer	3-0-0-0		3
	24SJOEMET727	Power Plant Engineering	3-0-0-0		3

Sl. No.	Course Code	Slot I: HMC Elective
1	24SJIEHUT704	Project Management: Planning, Execution, Evaluation and Control
2	24SJIEHUM701	Proficiency course in French (B1 level) *(MOOC)*
3	24SJIEHUM702	Proficiency Course in German (B1 Level) *(MOOC)*
4	24SJIEHUM703	Proficiency Course in Spanish (B1 Level) *(MOOC)*
5	24SJIEHUM704	Introduction to Japanese Language and Culture (N5 level) *(MOOC)*

EIGHTH SEMESTER

(January-June)

Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIE	ESE		
1	A	24SJPEMET86N 24SJPEMEM86N#	PE	PE	***Program Elective - 6*** Internship Students: Self-Study / MOOC / Online Classes	3	0	0	0	4.5	40	60	3	3
2	O+	24SJOE - - T83N 24SJIE - - T83N 24SJOE - - M83N#	OE/ILE	OE/IE	***Open Elective - 3*** ***Industry Linked Elective - 3*** Internship Students: Self-Study / MOOC / Online Class	3	0	0	0	4.5	40	60	3	3
3	I*	24SJICHUT803 24SJICHUM803#	HMC	IC	Organizational Behaviour and Business Communication Internship Students: Self-Study / MOOC / Online Class	2	0	0	0	3	50	50	1	2
4	P**	24SJPCMEP806 24SJPCMEI806 24SJPCMEJ806	PWS	PC	***Option 1***: Major Project ***Option 2***: Internship (4-6 Months) ***Option 3***: Major Project Phase -II	0	0	0	8	8	100	0	4	8
5	R/H		VAC		PROJECT: HONOURS COURSE	0	0	0	4	4			4*	4*
Total										**24 /28**			**11 /15***	**16 /20**

#*MOOC Courses approved by Institution (for Internship Students)*

+*Open Elective or Industry linked Elective applicable for ME Students only*

No Grade Points will be awarded for the I slot courses.

Students can opt for the internship either in the 7th or 8th semester.

***Option 1**: For the students who have opted for an internship in S7.*

***Option 2**: Full semester Internship in an Industry/organization.*

***Option 3**: For the students who have not opted for internship in S7.*

PROGRAM ELECTIVE - 6: 24SJPEMET86N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
A	24SJPEMET861	Cryogenic Engineering	3-0-0-0	3	3
	24SJPEMET862	Pressure Vessel and Piping Design	3-0-0-0		3
	24SJPEMET863	Hybrid and Electric Vehicles	3-0-0-0		3
	24SJPEMET864	Micro and Nano Manufacturing	3-0-0-0		3
	24SJPEMET866	Advanced Numerical Control in Manufacturing	3-0-0-0		3
	24SJPEMET867	Metal Additive Manufacturing	3-0-0-0		3
	24SJPEMET868	Nanotechnology	3-0-0-0		3
	24SJPEMET865	**Aircraft Design**	**3-0-0-0**		**5 or 3**

Open Electives offered by ME department to students of other departments

OPEN ELECTIVE - 3: 24SJOEMET83N					
SLOT	COURSE CODE	COURSES	L-T-P-R	HOURS	CREDIT
O	24SJOEMET831	Industrial Hydraulics and Automation	3-0-0-0	3	3
	24SJOEMET832	3D Printing and Tooling	3-0-0-0		3
	24SJOEMET833	Numerical Techniques Engineering	3-0-0-0		3
	24SJOEMET834	Business Organization and Development	3-0-0-0		3
	24SJOEMET835	World Class Manufacturing	3-0-0-0		3
	24SJOEMET836	Micro Electro Mechanical Systems	3-0-0-0		3
	24SJOEMET837	Product Design and Innovation	3-0-0-0		3

HMC Courses			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S1/S2**	Life Skills and Professional Communication	1
2	**S3/S4**	Economics for Engineers	2
3		Engineering Ethics and Sustainable Development	2
4	**S5**	Constitution of India. (MOOC)	1
5	**S7**	Elective (Project Management/Foreign Languages)	2
6	**S8**	Organizational Behaviour and Business Communication	1
Total Credits			**9**

BSC Courses			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S1**	Group Specific Mathematics-1	3
2	**S1/S2**	Physics for Engineers	4
3		Chemistry for Engineers	4
4	**S2**	Group Specific Mathematics-2	3
5	**S3**	Group Specific Mathematics-3	3
6	**S4**	Group Specific Mathematics-4	3
Total Credits			**20**

ESC Courses			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S1**	Engineering Mechanics	3
2		Introduction to Mechanical Engineering and Civil Engineering	4
3		Algorithmic Thinking with Python	4
4		Engineering Workshop	1
5	**S2**	Engineering Graphics and Computer Aided Drawing	3
6		Basic Electrical and Electronics Engineering	4
7		Engineering Entrepreneurship and IPR	3
8		Basic Electrical and Electronics Engineering Workshop	1
9	**S3**	Introduction to Artificial Intelligence and Data Science	4
10	**S6**	Design Thinking and Creativity	2
Total Credits			**29**

Programme Core Courses (PC)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S2**	Material Science and Engineering	4
2	**S3**	Mechanics of Solids	4
3		Fluid Mechanics and Machinery	4
4		Computer Aided Machine Drawing and Modelling	2
5		Materials Testing lab	2
6	**S4**	Machine Tools and Metrology	4
7		Engineering Thermodynamics	4
8		Fluid Mechanics and Hydraulic Machines Lab	2
9		Manufacturing Technology Lab	2
10	**S5**	Dynamics of Machinery	4
11		Advanced Manufacturing Engineering	4
12		Industrial and Systems Engineering	3
13		Thermal Engineering Lab - 1	2
14		Mechanical Engineering Lab	2
15	**S6**	Heat and Mass Transfer	3
16		Machine Design	3
17		Computer Aided Design and Analysis Lab	2
18		Thermal Engineering Lab - 2	1
Total Credits (Theory -10, Lab-8)			**52**

Programme Core-Project Based Learning (PBL)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S3**	Manufacturing Processes	4
2	**S4**	Mechanics of Machinery	4
3	**S5**	Thermal Engineering	4
4	**S6**	Management for Engineers	4
Total Credits			**16**

Programme Elective Courses (PE)			
Sl. No:	**Semester**	**Course Type**	**Credits**
1	**S4**	PE-1	3
2	**S5**	PE-2	3
3	**S6**	PE-3	3
4	**S7**	PE-4	3
5		PE-5	3
6	**S8**	PE-6	3
Total Credits			**18**

Open Elective Courses/ Industry linked Elective (OE/ILE)			
Sl. No:	**Semester**	**Course Type**	**Credits**
1	**S6**	OE/ILE-1	3
2	**S7**	OE/ILE-2	3
3	**S8**	OE/ILE-3	3
Total Credits			**9**

Project/ Internship and Seminar (PWS)			
Sl. No:	**Semester**	**Course Type**	**Credits**
1	**S6**	Mini Project	**2**
2	**S7**	Seminar	2
3		Major Project / Internship	4
4	**S8**	Major Project / Internship / Major Project - II	4
Total Credits			**12**

Activity Points				
Sl. No.	**Group**	**Courses**	**Credits**	**Minimum Credit Requirements**
1	I	NSS, NCC, NSO (National Sports Organization)	1 (40 Points)	**3 Credits** (One credit from each Group)
2		Arts/Sports/Games		
3		Union/Club Activities		
4	II	English Proficiency Certification (TOFEL, IELTS, BEC etc.)	1 (40 Points)	
5		Aptitude Proficiency Certification (GRE, CAT, GMAT etc.)/ Valid Gate Score.		
6		Short Term Internship (Minimum 2 weeks), Clinical Exposure/Training (Minimum 2 weeks), Conferences/Paper Presentation/ Workshop Activities/ Professional Body Activities, Participation in University level/State Level/ National Level Hackathons		
7	III	Journal Publication, Patents, Start-Up, Innovation, Winners of National/ International Level Hackathons	1 (40 Points)	
8		**Skilling Certificates**		

- ***Students are required to acquire a minimum of 120 activity points, with at least 40 points per group, to fulfil the curriculum requirement of 3 activity credits.***
- ***For B. Tech Lateral Entry students, 30 points per group are required. A minimum of 90 activity points must be acquired to obtain the 3 activity credits mandated by the curriculum.***

Course classifications of the B. Tech Programmes and Overall Credit Structure			
Sl. No	**Category**	**Code**	**Credits**
1	Humanities and Social Sciences including Management Courses	HMC	9
2	Basic Science Courses	BSC	20
3	Engineering Science Courses	ESC	29
4	Programme (Professional) Core Courses	PCC	52
5	Programme (Professional) Core Courses-Project Based Learning	PBL	16
6	Programme Elective Courses	PEC	18
7	Open Elective Courses/Industry Linked Elective	OEC/ILE	9
8	Mini Project, Project Work/Internship and Seminar	PWS	12
9	Health and Wellness	HWP	1
10	Skill Enhancement Courses (Digital 101)	SEC	1
11	Mandatory Student Activities	MSA	3
Total Credits			**170**

COURSE CODING PATTERN

A course code in an engineering degree curriculum is a unique identifier assigned to a specific academic course. It is a combination of letters and numbers that serves as a shorthand reference for the course.

- Each course is denoted by a unique code consisting of Twelve alphanumeric characters
  - Format: [24SJYYXXCSNN]
  - Eg: 24SJICMAT201
- The first four characters (24SJ) denote the year of introducing the scheme and curriculum followed by institution code
- The next five characters (YYXXC) will be alphabets, representing the course category (YY), name of the department (XX) offering that course followed by the nature of the course(C).
  - **YY** - Institution Core (**IC**), Group Core (**GC**), Programme Core (**PC**) etc.
  - **XX** - Mechanical Engineering (**ME**)
  - **C** - Theory(**T**), Lab(**L**), Seminar(**S**), Project(**P**) etc.
  - The last three characters (**SNN**) will be digits, providing a unique numerical identifier for the course.
  - **S** - Semester Number (It can have a number from 1 to 8) in which the course is offered
  - **NN** - Course Sequence Number

This format aims to create a clear and consistent structure for course codes, making it easier for students, faculty, and administrative staff to identify and manage different courses within the institution. These course numbers are to be given in the curriculum and syllabi.

For eg: 24SJGA**PHT1**21- is a theory course offered in the first semester. 24SJ**PC**ME**L5**07 - is a Programme core laboratory course in the fifth semester. 24SJ**PB**MET**6**04 - is a Project-Based Learning course offered in the sixth semester. 24SJ**IC**HU**T8**03 is an institution core theory course in the Eighth semester.

Course Category

- **Institution Core (IC):** The Institution core is a compulsory set of courses for all B. Tech students, which includes basic courses in Humanities and Computer Science.
- **Institution Elective (IE):** These are elective courses from a basket of courses in the Humanities and Social Sciences.
- **Group Core (GC):** Courses listed under Group Core of a curriculum are group specific. These courses ensure that students gain specialized knowledge and skills in their chosen field of study.

COURSE CODING

Course Category	Branch/ Department Code	Codes for the nature of the Course	Semester Number	Identification Number for Each Course
YY	XX	C	S	NN
IC	HU, HW	T-Theory M-MOOC L- Lab S-Seminar P-Project J-Project Phase II I-Internship	1 to 8	01, 02, 03…
IE				
GC	AD, CS, CA, CC, CE, EC, EE, ER, ME			
PC				
PB				
PE, OE/IE				
HN - Honours MN - Minor				

- **L-T-P-R**: Lecture-Tutorial-Practical-Project
- T- Theory based courses (Other than the lecture hours, these courses can have tutorial, practical and project hours, e.g. L-T-P-R structures 3-1-0-0, 3-0-0-1, 3-0-0-0,2-0-2-0 etc.
- **SS** (Self Study) Hours= 1.5L+0.5 T+0.5P+R
- **CIE**: Continuous Internal Evaluation
- **ESE**: End Semester Examination

Group Code:

SJCET offers various Engineering branches are grouped into three broad categories based on their specialization.

Group	Branches
A	Artificial Intelligence and Data Science (AD) Computer Science and Engineering (CS) Computer Science and Engineering (Artificial Intelligence) (CA) Computer Science and Engineering (Cyber Security) (CC)
B	Electrical and Electronics Engineering (EE) Electronics and Communication Engineering (EC) Electronics and Computer Engineering (ER)
C	Civil Engineering (CE) **Mechanical Engineering (ME)**

CODE	DESCRIPTION	EXAMPLE
GA	Courses Common to Group A	24SJGAMAT101
GB	Courses Common to Group B	24SJGBPHT121
GC	Courses Common to Group C	24SJGCEST103
GX	Courses Common to Group A and B	24SJGXCYT122
GY	Courses Common to Group B and C	24SJGYMAT101