

B. Tech. In Computer Science & Engineering

Specialization in: Java Fullstack



Faculty of Engineering and Technology

Table of Content

Sl. No	Title	From	To
1	General course structure	3	3
2	Java Fullstack Course Grid	4	11
3	Major Courses	13	14
4	Minor Courses	15	16
5	General Proficiency	17	17
6	Skill Courses	17	18
7	Multidisciplinary and Ability Enhancement Courses	18	18
8	Value Added Courses	19	19
9	Second Major Courses	19	21

General Course Structure of B. Tech. (Computer Science & Engg.)

Sl. No.	Category	Breakup of Credits
1	Major Elective	97
2	Minor Elective	32
3	Multidisciplinary	12
4	Ability Enhancement Courses (AEC)	10
5	Skill Enhancement Courses (SEC)	14
6	Value Added Courses common for all UG	10
7	Summer Internship, Project / Dissertation	19
8	General proficiency	8
	Total	202

B.Tech. CSE (Specialization in Java Full Stack)					
1st Year					
Course code	Semester – 1	L	T	P	Cr
Major Courses					
TCS101	Computational Thinking and Problem Solving for Software Development using 'C'	2	0	0	2
TCS102	Computational Thinking and Problem Solving for Software Development using 'C'	0	0	1	1
TEC101	Basic Electronics	2	0	0	2
TEC102	Basic Electronics Lab	0	0	1	1
TCS103	Python Programming	3	0	0	3
TCS104	Python Programming Lab.	0	0	1	1
Minor Courses					
TMN101	Ex. Innovation Management	3	0	0	3
TMN102	Ex. Innovation Management lab.	0	0	1	1
Multidisciplinary Courses					
	Engineering Mathematics-1(Differential calculus)	2	0	0	2
	Engineering Mathematics-1 Lab.	0	0	1	1
	Engineering Physics	2	0	0	2
	Engineering Physics Lab.	0	0	1	1
Ability enhancement course					
	Communicative English	1	0	0	1
	Communicative English Lab.	0	0	1	1
TAE109	IT Primer	1	0	0	1
Skill enhancement course					
TSE101	Ex- Solar panel technician level -I (Foundation) (Choices are available in skill basket)	2	0	0	2
TSE102	Ex- Solar panel technician level -I Lab. (Foundation) (Choices are available in skill basket)	0	0	1	1
Value added course					
	Happiness Connect program	0	0	2	2
TVA101	Sustainable Development Goal	0	0	1	1
General Proficiency					
TGP101	General proficiency-I	0	0	0	1

Total Credit in 1st Semester - 29

Course code	Semester – 2	L	T	P	Cr
Major Courses					
TCS104	Data structure using ‘C’	3	0	0	3
TCS105	Data structure using ‘C’ Lab.	0	0	1	1
TEE101	Basic Electrical	2	0	0	2
TEE102	Basic Electrical Lab	0	0	1	1
TAI103	Foundations to AI-ML	2	0	0	2
TAI104	Foundations to AI-ML Lab.	0	0	1	1
TAI101	Python for Machine learning	2	0	0	2
TAI102	Python for Machine learning Lab.	0	0	1	1
Minor Courses					
TMN103	Ex. Enterpenureship Development	3	0	0	3
TMN104	Enterpenureship Development Lab.	0	0	1	1
Multidisciplinary Courses					
	Engineering Mathematics-2 (Probability and statistics)	2	0	0	2
	Engineering Mathematics-2 Lab.	0	0	1	1
Ability enhancement course					
TAE103	Design Thinking & Strategic Innovation (IBM)	2	0	0	2
TAE104	Design Thinking & Strategic Innovation Lab.(IBM)	0	0	2	2
Skill enhancement course					
TSE106	Ex- Solar panel technician level – II (Advanced)	2	0	0	2
TSE107	Ex- Solar panel technician level – II Lab	0	0	1	1
TSE108	Engineering graphics and design	0	0	1	1
Value added course					
	Green goverance	2	0	0	2
	General Proficiency				
TGP102	General proficiency-II	0	0	0	1
<p>Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second Semester.</p>					

Total Credit in 2nd Semester - 32

B.Tech. CSE (Specialization in Java Full Stack)					
2nd Year					
Course code	Semester – 3	L	T	P	Cr
Major Courses					
TCS201	Computer Organization and Architecture	3	0	0	3
TCS202	Computer Organization and Architecture Lab.	0	0	1	1
TCS203	Object oriented programming using java (L&T)	3	0	0	3
TCS204	Object oriented programming using java Lab.(L&T)	0	0	1	1
TCS205	Algorithm design and analysis	3	0	0	3
TCS206	Algorithm design and analysis Lab	0	0	1	1
TFS201	Applied statistics	3	0	0	3
TFS202	Applied statistics Lab	0	0	1	1
Minor Courses					
TCC103	Network security	3	0	0	3
TCC104	Network security ab.	0	0	1	1
Skill enhancement course					
TSE201	Multimedia Technology	2	0	0	2
TSE202	Multimedia Technology Lab	0	0	1	1
Multidisciplinary Courses					
	Engineering Mathematics-3	3	0	0	3
Summer Internship					
TSI201	Internship	0	0	2	2
Value Added courses					
TVA201	Disaster management	0	0	1	1
General Proficiency					
TGP201	General proficiency-III	0	0	0	1

Total Credit in 3rd Semester - 29

Course code	Semester – 4	L	T	P	Cr
Major Courses					
TCS207	Computer Networks	3	0	0	3
TCS208	Computer Networks Lab.	0	0	1	1
TCS209	Operating Systems	3	0	0	3
TCS210	Operating Systems Lab.	0	0	1	1
TCS211	Discrete mathematics	3	0	0	3
TFS203	UI/UX (L&T)	2	0	0	2
TFS204	UI/UX Lab. (L&T)	0	0	1	1
Minor Courses					
TCC201	Practical approach to cyber security	3	0	0	3
TCC202	Practical approach to cyber security Lab.	0	0	1	1
Skill Enhancement Courses					
TSE206	Minor Project	0	0	2	2
Value added courses					
	Green Governance	2	0	0	2
General Proficiency					
TGP202	General proficiency-IV	0	0	0	1
<p>Students exiting the programme after securing minimum 80 credits will be awarded UG diploma in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship during 1st year or second year summer term</p>					

Total Credit in 4th Semester - 23

B.Tech. CSE (Specialization in Java Full Stack)					
3rd Year					
Course code	Semester – 5	L	T	P	Cr
Major Courses					
TFS301	Server side deployment and database (L&T)	2	0	0	2
TFS302	Server side deployment and database Lab. (L&T)	0	0	1	1
TCS303	Theory Of Computation	3	0	0	3
TCS304	Theory Of Computation Lab.	0	0	1	1
TCS305	Database Engineering	3	0	0	3
TCS306	Database Engineering Lab.	0	0	1	1
TFS301	Backend Framework and API (Spring Boot & Micro Services) (L&T)	2	0	0	2
TFS302	Backend Framework and API Lab.(Spring Boot & Micro Services) (L&T)	0	0	1	1
Minor Courses					
TMN301	Opportunity Spotting and evaluation	3	0	0	3
TMN302	Opportunity Spotting and evaluation Lab.	0	0	0	1
Internship					
TSI301	Internship	0	0	2	2
Ability enhancement course					
TAE301	Employability planning and preparation – 1	0	0	1	1
Value added course					
	Vedic math	0	0	1	1
General proficiency					
TGP301	General proficiency-V	0	0	0	1

Total Credit in 5th Semester - 25

Course code	Semester – 6	L	T	P	Cr
Major Courses					
TCS307	Project management for professionals (L&T)	3	0	0	3
TCS308	Project management for professionals Lab. (L&T)	0	0	1	1
TFS303	Adv Js framework using React.js (L&T)	2	0	0	2
TFS304	Adv Js framework using React.js Lab (L&T)	0	0	1	1
TFS305	Testing and deployment (L&T)	2	0	0	2
TFS306	Testing and deployment Lab. (L&T)	0	0	1	1
Minor Courses					
TCC305	Cryptography	3	0	0	3
TCC306	Cryptography Lab.	0	0	1	1
Ability Enhancement course					
TAE303	Career Readiness for Digital Era (L&T)	0	0	1	1
Skill Enhancement					
TSE301	Major project (Implementation & presentation)	0	0	2	2
Value added course					
TVA301	Universal Human values	0	0	1	1
General Proficiency					
TGP302	General proficiency-VI	0	0	0	1
Bachelor in Computer Science and Engg. (Specialization in AIML)					

Total Credit in 6th Semester - 20

B.Tech. CSE (Specialization in Java Full Stack)					
4th Year					
Course code	Semester – 7	L	T	P	Cr
Major Courses					
HONs Degree					
TFS401	Angular JS	3	0	0	3
TFS402	Angular JS Lab.	0	0	1	1
TFS403	Android App Development	3	0	0	3
TFS404	Android App Development Lab.	0	0	1	1
TFS405	Web services using Adv Java	3	0	0	3
TFS406	Web services using Adv Java Lab.	0	0	1	1
Minor Courses					
TMN401	Industry and Market Research	2	0	0	2
TMN402	Industry and Market Research	0	0	1	1
Ability Enhancement Course					
	Research Methodology-1	2	0	0	2
Summer Internship					
TSI401	Internship	0	0	0	3
Value added course					
	Indian knowledge syatem	0	0	1	1
General proficiency					
TGP401	General proficiency-VII	0	0	0	1

Total Credit in 7th Semester - 23

Course code	Semester – 8	L	T	P	Cr
Major Courses					
TCS401	IOT and Automation (Blended mode)	3	0	0	3
TCS402	IOT and Automation Lab.	0	0	1	1
TPR401	Research project in relevant specialization (The research outcomes of their project work may be published in peer-reviewed journals or may be presented in conferences /seminars or may be patented.)	0	0	0	12
Minor Courses					
TCC403	Current trends in technology & its security & forensics aspects	3	0	0	3
TCC404	Current trends in technology & its security & forensics aspects Lab.	0	0	1	1
General Proficiency					
TGP402	General proficiency-VIII	0	0	0	1
B.Tech. (Honours with research) in Computer Science and Engg. (Specialization in Java Full Stack)					

Total Credit in 8th Semester - 21

B.Tech. Computer Science & Engineering.

NEP Structure Java Fullstack



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**Department of Faculty of Engineering and Technology,
Sri Sri University,
Cuttack.**

Major Courses

Sl. No	Course Code	Core Course	L	T	P	Cr
1	TCS101	Computational Thinking and ProblemSolving for Software Development using 'C'.	2	0	1	3
2	TEC101	Basic Electronics	2	0	1	3
3	TCS103	Python Programming	3	0	1	4
4	TAI103	Foundations to AI-ML	3	0	1	4
5	TCS104	Data structure using 'C'	3	0	1	4
6	TEE101	Basic Electrical	2	0	1	3
7	TCS201	Computer Organization and Architecture	3	0	1	4
8	TCS203	Object oriented programming using java	3	0	1	4
10	TCS305	Database Engineering	3	0	1	4
11	TCS207	Computer Networks	3	0	1	4
12	TCS209	Operating Systems	3	0	1	4
13	TCS211	Discrete mathematics	2	0	1	3
14	TCS301	Internet and web technology	3	0	1	4
15	TCS303	Theory Of Computation	3	0	1	4
16	TCS205	Algorithm design and analysis	3	0	1	3
17	TCS307	Project management for professionals	3	0	1	4
18	RM1	Research methodology-1	2	0	1	3
	TCS309	Compiler Design	2	0	1	3
20						
	Course Code	Elective Courses (Specialization)	L	T	P	Cr
1	TAI103	Foundations to AI-ML (IBM)	2	0	1	3
2	TAI201	Machine learning	3	0	1	4
3	TAI203	Application of Machine Learning in Industries (IBM)	2	0	1	3
4	TAI301	Deep learning	3	0	1	4
5	TCS407	IOT and Automation	2	0	1	3
6	TAI101	Python for Machine learning	2	0	1	3
7	TAI303	Computational Linguistics andNatural Language	3	0	1	4

		Processing (IBM)				
8	TDS101	Data Analytics (IBM)	3	0	1	4
9	TDS103	Python for Data science & visualization	3	0	1	4
10	TDS203	Datawarehouse and multi-dimensional modeling	3	0	1	4
11	TDS301	Descriptive analytics	3	0	1	4
12	TDS303	Predictive analytics	3	0	1	4
13	TDS405	Social and web analytics	3	0	1	4
14	TFS203	UI/UX (L&T)	3	0	1	4
15	TFS301	Server side deployment and database(L&T)	2	0	1	3
16	TFS301	Backend Framework and API (Spring Boot & Micro Services) (L&T)	3	0	1	4
17	TFS303	Adv Js framework using React.js Lab (L&T)	3	0	1	4
18	TFS305	Testing and deployment(L&T)	3	0	1	4
19	TCC101	Fundamentals of network and OS(Bridge system)	0	0	1	1
20	TCC102	IT Land scape (Cyber Dojo)	0	0	1	1
21	TCC103	Network security(Bridge system)	2	0	1	3
22	TCC105	Information security	2	0	1	3
23	TCC201	Practical approach to cyber security(TCS)	2	0	1	3
24	TCC203	Cyber defence (Bridge system)	0	0	1	1
25	TCC206	Advanced cyber security (TCS)	2	0	1	3
26	TCC204	Incident response and redressal	2	0	1	3
27	TCC303	Penetration testing (Bridge System)	2	0	1	3
28	TCC305	Cryptography (TCS)	2	0	1	3
29	TCC308	Web application security .(Bridge)	2	0	1	3
Sl. No	Course Code	Honours Courses	L	T	P	Cr
1	TAI405	Pattern recognition & Anamoly detection	3	0	1	4
2	TAI401	High Performance Computing	3	0	1	4
3	TAI403	Generative AI and prompt engg.	3	0	1	4
4	TDS401	Social and web analytics	3	0	1	4
5	TDS403	Big Data Analytics	3	0	1	4

7	TFS401	Angular JS	3	0	1	4
8	TFS403	Android App Development	3	0	1	4
9	TFS405	Web services using Adv. Java	3	0	1	4
10	TCC401	IoT Security Testing & It's Applications (TCS)	3	0	1	4
11	TCC403	Current trends in technology & its security & forensics aspects	3	0	1	4
12	TCC405	Red Teaming (Bridge Systems)	3	0	1	4

Minor courses

Minor (Relevant Discipline Baskets)

Sl. No	Course Code	Minor Course	L	T	P	Cr
AIML Basket						
1	TAI103	Foundations to AI-ML	3	0	1	4
2	TAI201	Machine learning	3	0	1	4
3	TAI303	Computational linguistics & NLP	3	0	1	4
4	TAI405	Pattern recognition & Anamoly detection	3	0	1	4
Data science Basket						
1	TDS103	Python for Data science and visualization	3	0	1	4
2	TDS301	Descriptive analytics	3	0	1	4
3	TDS203	Data Warehousing and Multidimensional Modeling	3	0	1	4
4	TDS401	Social and web analytics	3	0	1	4
Cyber Security Basket						
1	TCC103	Network security	3	0	1	4
2	TCC201	Practical approah to cyber security	3	0	1	4
3	TCC403	Current trends in technology & its security & forensics aspects	3	0	1	4
4	TCC305	Cryptography	3	0	1	4
Java Full stack Basket						
1	TFS203	UI/UX	3	0	1	4

2	TFS301	Backend Framework and API (Spring Boot & Micro Services)	3	0	1	4
3	TFS303	Adv Js framework using React.js (3	0	1	4
4	TFS403	Android App Development	3	0	1	4

Minor (General Discipline Baskets)

Sl. No	Course Code	Minor Course	L	T	P	GP	Cr
		Inovation and Enterpenurship	3	0	0	1	4
1	TMN103	Enterpenureship Development	3	0	0	1	4
2	TMN101	Innovation Management	3	0	0	1	4
3	TMN301	Opportunity Spotting and evaluation	3	0	0	1	4
4	TMN401	Industry and Market Research	3	0	0	1	4
		HR Management					
1		Human Resource Management: HR for People Managers	3	0	0	1	4
2		Senior Professional in Human Resources	3	0	0	1	4
3		HR Management and Analytics	3	0	0	1	4
4		Urban Environmental Governance (Smart and Eco cities)	3	0	0	1	4
		Financial Management					
1		Principles of Accounting	3	0	0	1	4
2		Financial Modeling	3	0	0	1	4
3		Business Intelligence	3	0	0	1	4
4		Managerial Economics	3	0	0	1	4
		Marketing Management					

1		Principles of Marketing Management	3	0	0	1	4
2		Digital and social media Marketing	3	0	0	1	4
3		Business strategy	3	0	0	1	4
4		Social media management	3	0	0	1	4

General Proficiency

Sl. No	Course Code	General Proficiency shall be assessed based on the participation in NCC, NSS, Conferences (Research paper Publication (Journal/ Conference)), Organizing events, participations in events (Conf/Workshop/Training/Webinar/seminar), competitions (Inter University, State, National, International level) including Music, Debate, Sports, Hackathon and so on.	L	T	P	Cr	
1	TGP101	General proficiency-I	0	0	0	0	1
2	TGP102	General proficiency-II	0	0	0	0	1
3	TGP201	General profeciency-III	0	0	0	0	1
4	TGP202	General profiency -IV	0	0	0	0	1
5	TGP301	General profeciency-V	0	0	0	0	1
6	TGP302	General profiency -VI	0	0	0	0	1
7	TGP401	General profeciency-VII	0	0	0	0	1
8	TGP402	General profiency -VIII	0	0	0	0	1

Skill courses

Sl. No	Course Code	Skill Courses	L	T	P	Cr
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1	TSE101	Solar panel Technician level -I (Foundation) (Choices are available in in skill basket)	2	0	1	3
2	TSE106	Solar panel Technician level – II (Advanced)	2	0	1	3
	TSE108	Engineering graphics and design	0	0	1	1
3	TSE120	Electronic Technician level -I (Foundation)	2	0	1	3
4	TSE130	Electronic Technician level -II (Advanced)	2	0	1	3
5	TSE140	Electrician level -I (Foundation)	2	0	1	3
6	TSE150	Electrician level -II (Advanced)	2	0	1	3
7	TSE160	CISCO Networking (Foundation)	2	0	1	3
8	TSE170	CISCO Networking (Advanced)	2	0	1	3
9	TSE180	Web Development & Management (Foundation)	2	0	1	3
10	TSE182	Web Development & Management (Advanced)	2	0	1	3
11	TSE183	Fortinet Network Security Expert Program (Foundation)	2	0	1	3
12	TSE184	Fortinet Network Security Expert Program (Advanced)	2	0	1	3
13	TSE185	Digital Marketing (Foundation)	2	0	1	3
14	TSE186	Digital Marketing (Advanced)	2	0	1	3
15	TSE187	Digital Embedded System (Foundation)	2	0	1	3
16	TSE188	Digital Embedded System (Advanced)	2	0	1	3
17	TSE210	Mobile Technology	2	0	1	3
18	TSE230	Software testing	2	0	1	3
19	TSE201	Multimedia Technology	2	0	1	3
20	TSE240	Free and open source software	2	0	1	3

Multi-disciplinary courses

Sl. No	Course Code	Multidisciplinary Courses	L	T	P	Cr
1		Engineering Mathematics-1	2	0	1	3
2		Engineering Physics	2	0	1	3
3		Engineering Mathematics-2	2	0	1	3
4		Engineering Mathematics-3	3	0	0	3

5	Engineering Chemistry	2	0	1	3
6	Basic Biology	2	0	1	3

Ability Courses

Sl. No.	Course Code	Ability Enhancement Course	L	T	P	Cr
1		Communicative English-I	1	0	1	2
2		Arabic Language	1	0	1	2
3		French	1	0	1	2
4		German	1	0	1	2
5	TAE103	Design Thinking & Strategic Innovation (IBM)	0	0	1	1
6	TAE301	Employability planning & preparation – I	0	0	1	1
7	TAE302	Employability planning & preparation – II	0	0	1	1
8	TAE303	Career Readiness for Digital Era (L&T)	0	0	1	1
9		Research Methodology	0	0	2	2

Value-Added courses

Sl. No	Course Code	Value-added Courses	L	T	P	Cr
1		Happiness Connect program	0	0	2	2
2	TVA101	Sustainable Development Goal	1	0	0	1
3	TVA201	Disaster management	0	0	1	1
4		Indian knowledge system	2	0	0	2
5		Green Governance	2	0	0	2
6	TVA202	Constitution of India	1	0	0	1
7	TVA301	Universal human values	1	0	0	1
8		Vedic mathematics	1	0	0	1
		Niti Shastra	1	0	0	1

Second Major

(Electronics and communication Engineering)

Sl. No.	Course Code	Courses	L	T	P	Cr
1	TEC213	Signals and Systems	3	0	1	4
2	TEC214	Analog Communication technique	3	0	1	4
3	TEC215	Digital Communication Technique	3	0	1	4
4	TEC216	Telecommunication Network and Optimization	3	0	1	4
5	TEC217	VLSI Design	3	0	1	4
6	TEC314	Mobile Communication and Networks	3	0	1	4
7	TEC315	Microwave Theory and Techniques	3	0	1	4
8	TEC316	Fiber Optic Communications	3	0	1	4
9	TEC317	Digital Audio Processing	3	0	1	4
10	TEC318	Adaptive Signal Processing	3	0	1	4
11	TEC408	Antennas and Propagation	3	0	1	4
12	TEC409	Advanced Mobile Communications	3	0	1	4
13	TEC410	Digital Image Processing	3	0	1	4
14	TEC411	Satellite Communication	3	0	1	4
15	TEC412	High Speed Electronics	3	0	1	4
16	TEC413	Nanoelectronics	3	0	1	4
		Total credit				64

Second Major

(Mechatronics)

Sl. No.	Course Code	Courses	L	T	P	Cr
1	TMC203	Machine Design and Manufacturing Processes	3	0	1	4
2	TMC205	Applied Thermodynamics,	3	0	1	4
3	TMC301	Fluid Mechanics and Kinematics & Dynamics of Machines	3	0	1	4
4	TMC303	Theory of Finite Element Methods,	3	0	1	4

5	TMC101	Engg. Mechanics	3	0	1	4
6	TEE209	Digital Control System-I	3	0	1	4
7	TMC401	EV Data Analytics & Cyber Security	3	0	1	4
8	TMC403	Industrial Automation & Robotics	3	0	1	4
9	TMC314	Automotive Chassis	3	0	1	4
10	TMC315	Basic Concepts of Mechatronics	3	0	1	4
11	TMC316	Strength of Materials	3	0	1	4
12	TMC317	Electrical Machines	3	0	1	4
13	TMC318	Embedded Systems	3	0	1	4
14	TMC309	Kinematics and Theory of Machines	3	0	1	4
15	TMC406	Design of Machine Elements	3	0	1	4
16	TMC407	Computer Aided Manufacturing	3	0	1	4
		Total credit				64

Second Major
(Electrical Engineering)

Sl. No.	Course Code	Courses	L	T	P	Cr
1	TEE303	Power Electronics	3	0	1	4
2	TEE213	Electrical Measurement & Instrumentation	3	0	1	4
3	TEE209	Power System protection and switchgear	3	0	1	4
4	TEE316	Electric Power Transmission and Distribution	3	0	1	4
5	TEE311	Industrial Automation and Control	3	0	1	4
6	TEE317	Vehicle Dynamics	3	0	1	4
7	TEE318	Electric Drives	3	0	1	4
8	TEE319	Renewable Power Generation Systems	3	0	1	4

9	TEE214	Power Systems – I (Apparatus and Modelling)	3	0	1	4
10	TEE215	Power Systems – II (Operation and Control)	3	0	1	4
11	TEE401	Vehicle Dynamics	3	0	1	4
12	TMC403	Automotive Electrical and Electronics System	3	0	1	4
13	TEE407	Automotive Pollution and Control	3	0	1	4
14	TEE408	Vehicle Body Engineering	3	0	1	4
15	TEE307	Design of Vehicle Components	3	0	1	4
16	TEE410	Optimization in Engineering	3	0	1	4
		Total credit				64