



Program Structure of Bachelor of Technology in Computer Science & Engineering

Level – UG

Duration: 4 Years

1. Program Mission

To equip and build competency necessary to work as software professionals in the field related to computing and/or computing applications and to develop strong foundation in mathematical, computing fundamentals, programming, management and problem solving Skills, with ability to communicate effectively with the various stakeholders, have pleasing personality and practice their profession with high regards to ethics, societal needs, diversity, constraints in the workplace, yearning of perfection and imbibe attributes of courage of conviction and action. Our aim is to serve the student by imparting computer education and generating innovative knowledge and skills required to sustain in disruptive technological environment.

2. Programme Educational Objectives/Goals(PEOs)

- i. The student will have the ability to support and practice independent and life-long learning for professional development.
- ii. The students shall have the ability to apply knowledge of mathematics, science, computing and technology for research, design and development of novel products and solutions as an individual / member of a team/ leader in diverse teams and as an entrepreneur.
- iii. The students shall have the ability to examine the impact of computer science and application solutions in societal, health, safety, legal, cultural, and environmental contexts.
- iv. The students will be able to demonstrate professional attitudes, effective communication, and behavioural skills and sustain effective performance in professional/entrepreneurial careers.
- v. The students will be able to practice professional ethics and academic integrity and demonstrate these as an individual / team member / leader in diverse teams.

3. Programme Operational Objective(POOs)

- i. The Programme of B.Tech (CSE) will create appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students
- ii. The Programme will provide Professional development programmes/opportunities to the faculty and staff to regularly upgrade their knowledge about industry 4.0 and Education 4.0 and bring excellence in teaching, learning and research
- iii. The Programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services.
- iv. The Programme will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry.
- v. The Programme will arrange all necessary support system for the students to facilitate campus recruitment, higher education or starting their own ventures.

Semester 1

S. No .	Course Code	Course Name	Course Type	Total Credits	L	T	P	FW	SW	Arch/De s Studio
1	MATH114	Applied Mathematics-I	Basic Sciences Courses	4	3	0	0	0	2	0
2	PHYS132	Engineering Physics	Basic Sciences Courses	5	3	1	2	0	0	0
3	BC105	Technical Communication -I	Communication Skills	4	3	0	0	0	2	0
4	ES101	Engineering Mechanics	Engineering Sciences Courses	4	3	0	2	0	0	0
5	ES202	Introduction to Computers and Programming in C	Engineering Sciences Courses	3	2	0	2	0	0	0
6	ETTP101	Term paper - I	Non-Teaching Credit Course	1	0	0	0	0	0	0
7	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
8	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
9	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	23						

Semester 2

S. No .	Course Code	Course Name	Course Type	Total Credits	L	T	P	F W	S W	Arch/Des Studio
1	CHEM136	Engineering Chemistry	Basic Sciences Courses	5	3	1	2	0	0	0
2	MATH122	Applied Mathematics - II	Basic Sciences Courses	4	3	0	0	0	2	0
3	BC106	Technical Communications - II	Communication Skills	4	3	0	0	0	2	0
4	ES103	Basic Electrical Engineering	Engineering Sciences Courses	4	2	0	2	0	2	0
5	ES104	Engineering Graphics Lab	Engineering Sciences Courses	1	0	0	2	0	0	0
6	IT423	Introduction to Cloud Computing	Engineering Sciences Courses	3	3	0	0	0	0	0
7	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
8	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
9	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	23						

Semester 3

S. No .	Course Code	Course Name	Course Type	Total Credits	L	T	P	FW	SW	Arch/De s Studio
1	MATH211	Applied Mathematics - III	Basic Sciences Courses	4	3	0	0	0	2	0
2	CSE207	Digital Electronics and Computer Organization	Core Courses	5	3	0	2	0	2	0
3	CSIT124	Data Structures using C	Core Courses	4	3	0	2	0	0	0
4	ES201	Basic Electronics Engineering	Engineering Sciences Courses	4	3	0	2	0	0	0
5	ES203	Object Oriented Programming Using C++	Engineering Sciences Courses	5	3	0	2	0	2	0
6	ETTP101	Term Paper - I	Non Teaching Credit Course	1	0	0	0	0	0	0
7	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
8	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
9	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	25						

Semester 4

S. No.	Course Code	Course Name	Course Type	Total Credits	L	T	P	FW	SW	Arch/Des Studio
1	MATH242	Applied Mathematics - IV	Basic Sciences Courses	4	3	0	0	0	2	0
2	CSE202	Operating System	Core Courses	4	2	0	2	0	2	0
3	CSE204	Theory of Computation	Core Courses	3	2	0	0	0	2	0
4	CSE208	Discrete Mathematical Structures	Core Courses	3	3	0	0	0	0	0
5	IT201	Java Programming	Core Courses	4	3	0	2	0	0	0
6	MATS201	Material Science	Engineering Sciences Courses	2	2	0	0	0	0	0
7	BS207	Self-Reliance and Socialization	Human Social Sciences & Management Courses	4	3	0	0	0	2	0
8	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
9	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
10	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	26						

Semester 5

S. No.	Course Code	Course Name	Course Type	Total Credits	L	T	P	FW	SW	Arch/Des Studio
1	BS309	Cognitive Skills, Leadership and Decision Making	Behavioural Sciences	4	3	0	0	0	2	0
2	CSE201	Database Management Systems	Core Courses	5	3	0	2	0	2	0
3	CSE303	Analysis and Design of Algorithms	Core Courses	5	3	0	2	0	2	0
4	CSE205	Programming in Python	Core Courses	5	3	0	2	0	2	0
5	CSE332	Immersive Technologies	Specialisation Electives	3	3	0	0	0	2	0
6	CSE437	R Programming	Specialisation Electives		3	0	2	0	0	0
7	IT403	Information Storage Management	Specialisation Electives		3	1	0	0	0	0
8	CSE305	Fundamentals of Mobile Computing	Specialisation Electives		3	0	0	0	0	0
9	CSE404	Principle of Programming Language	Specialisation Electives		3	0	0	0	0	0
10	CSE422	Real Time Operating System	Specialisation Electives		3	0	0	0	0	0
11	ECE303	Microprocessors and Interfacing	Specialisation Electives		3	0	2	0	0	0

12	IT405	Open Source Application Development	Specialisation Electives		2	0	2	0	0	0
13	CSE443	Fundamentals of Big Data Analytics	Specialisation Electives		3	0	2	0	0	0
14	CSE438	Linux for Devices	Specialisation Electives		3	0	2	0	0	0
15	ETPT100	In-House Practical Training	Non-Teaching Credit Course	2	0	0	0	0	0	0
16	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
17	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
18	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	26						

Semester 6

S. No.	Course Code	Course Name	Course Type	Total Credits	L	T	P	FW	SW	Arch/Des Studio
1	PFE301	Professional Ethics and Social Responsibility	Professional Ethics	2	0	1	0	0	2	0
2	IT301	Software Engineering	Core Courses	5	3	0	2	0	2	0
3	CSE401	Artificial Intelligence	Core Courses	5	3	0	2	0	2	0

4	CSE304	Compiler Construction	Core Courses	5	3	0	2	0	2	0
5	CSE405	Software Architecture and Design	Specialisation Electives	7	3	0	0	0	0	0
6	CSE313	Fundamentals of Machine Learning	Specialisation Electives		2	0	2	0	2	0
7	CSE438	Linux for Devices	Specialisation Electives		3	0	2	0	0	0
8	CSE443	Fundamental of Big Data Analytics	Specialisation Electives		3	0	2	0	0	0
9	IT404	Advanced Java Programming	Specialisation Electives		3	0	2	0	0	0
10	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
11	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
12	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	26						

Semester 7

S. No .	Course Code	Course Name	Course Type	Total Credits	L	T	P	F W	S W	Arch/De s Studio
1	CSE436	Cyber Security	Employability & Skill Enhancement Courses	4	3	0	0	0	2	0
2	LAW140	International Law for Engineers	Human Social Sciences & Management Courses	3	2	0	0	0	2	0
3	SOC104	Sociology for Engineers	Human Social Sciences & Management Courses	3	2	0	0	0	2	0
4	CSE411	Parallel Computing	Specialisation Electives	10	3	0	0	0	0	0
5	CSE415	Simulation and Modelling	Specialisation Electives		3	1	0	0	0	0
6	CSE423	Pattern Recognition	Specialisation Electives		3	1	0	0	0	0
7	CSE431	Object Orientated System Design	Specialisation Electives		3	0	0	0	0	0
8	CSE432	Software Project Management	Specialisation Electives		3	0	2	0	2	0
9	CSE440	Data Center Visualizatio n	Specialisation Electives		3	0	2	0	0	0
10	CSE445	Advanced Neural Networks	Specialisation Electives		3	0	2	0	2	0
11	CSE447	Introduction to Natural Language Processing	Specialisation Electives		3	0	0	0	2	0
12	IT303	Information Assurance and Security	Specialisation Electives		3	0	0	0	0	0
13	IT402	Data Mining and Business Intelligence	Specialisation Electives		3	1	0	0	0	0

14	IT431	Advanced Network Solution	Specialisation Electives		3	0	2	0	0	0
15	ETMN100	Minor Project	Mandatory Courses	4	0	0	0	0	0	0
16	ARAB116	Introduction to Arabic Culture & Language	Foreign Business Language	2	2	0	0	0	0	0
17	GRMN136	Introduction to German Culture & Language			2	0	0	0	0	0
18	SPAN144	Introduction to Hispanic Culture & Language			2	0	0	0	0	0
			Total	26						

Semester 8

S. No.	Course Code	Course Name	Course Type	Total Credits	L	T	P	F W	SW	Arch/D es Studio
1	ETMJ100	Major Project	Non Teaching Credit Course	10	0	0	0	0	0	0
			Total	10						

4. Education Outcome Assessment Plan:(as per the University format)

Type	Assessment/PLO
Direct	Comprehensive examinations
	End Semester Examinations
	Viva Voce
Indirect	Exit interviews
	External Reviewers

5. Programme Learning Outcomes(PLOs)

- i. To apply the knowledge of mathematics, science, computer science fundamentals, computational techniques, and computer science applications specialization to solve the problems.
- ii. To choose self-directed and active learning through strong intellectual engagement in independent work relevant to computer science & Technology stream maximizing their potential by utilizing abilities and academic excellence. -To think independently, analytically and creatively through self-directed learning
- iii. To use research-based knowledge and methods including design of experiments, analysis and interpretation of data, and synthesis of the information to arrive at valid conclusions. -To exercise critical judgment and thinking to create new systems / products / services etc.
- iv. To create, select, and apply modern computer science and applications techniques, resources, and IT tools for modelling and simulation of computer science and IT problems. -To develop self-paced learning through various tools and techniques of ICT
- v. To apply critical, creative and evidence-based thinking for creating solutions of computer science problems and to design system components or processes that meet the specified needs with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations
- vi. To communicate effectively on engineering activities with the engineering professionals and society at large, such as, being able to comprehend and write effective reports, make effective presentations, give & receive clear instructions by utilizing various Information Technology tools and skills.
- vii. To demonstrate scientific creativity and reflective thinking to critically
- viii. To demonstrate analytical and decision-making skills to identify, formulate, and analyse complex computer science applications problems reaching substantiated conclusions using concepts of mathematics, science & information technology.
- ix. To function effectively as an individual, and as a member or leader in diverse teams, VUCA world and multidisciplinary settings for making the organization resourceful and achieving organisation goals.
- x. To apply contextual knowledge to assess societal, health, safety, legal, cultural issues and the consequent responsibilities relevant to the professional engineering practice -To appreciate diversity (caste, ethnicity, gender and marginalization), values and beliefs of multiple cultures in a global perspective.