

CURRICULUM
B.TECH. COMPUTER SCIENCE & ENGINEERING
CHOICE BASED CREDIT SYSTEM
STUDENTS LEARNING OUTCOMES

The curriculum and syllabi of B.Tech Computer Science and Engineering program (2017-18) conform to Outcome Based Education (OBE) for a flexible and structured Choice Based Credit System (CBCS). In general, **ELEVEN STUDENT OUTCOMES** (a-k) have been identified and the curriculum and syllabi have been chosen in such a way that each of the modules meets one or more of these outcomes. Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Further, each module in the program spells out clear instructional objectives which are mapped to the student outcomes.

The Student Outcomes are:

- (a) Ability to apply knowledge of Mathematics and science in software engineering solutions.
- (b) Ability to understand the engineering concepts and their applications using the acquired broad based knowledge.
- (c) Ability to practice and develop software for interpretation and analysis of data.
- (d) Ability to use the techniques, skills, and modern engineering tools necessary for software and hardware practices.
- (e) Ability to identify and analyze problems in related multiple disciplines including software development, middleware, software testing and computer networks.
- (f) Ability to design, develop and verify a software system to meet desired needs ensuring its reliability and security in addition to satisfying economic, social and ethical constraints.
- (g) Ability to apply Enterprise level application software for design of engineering product/process.
- (h) Ability to function as consultant for the development of sustainable software solutions.
- (i) An understanding of professional and ethical values.
- (j) Ability to communicate effectively in diverse groups and exhibit leadership skills.
- (k) To develop an understanding of global environment and its protection.

B. TECH COMPUTER SCIENCE AND ENGINEERING

SUMMARY OF PROGRAM CURRICULUM

Category		Sub-Category	Total Number of Credits (B.Tech)	Total Number of Credits (B.Tech-LEET)	Min Required Credits (B.Tech)	Min Required Credits (B.Tech-LEET)	Percentage of Total credits
G	General		52	0	48	0	26%
E	Engineering	Program Core (PC)	70	70	70	70	
		Program Elective (PE)	31	31	27	27	
		Generic Elective (GE)	8	8	4	4	
		Project (PD)	20	20	20	20	
Total : Engineering			129	129	121	121	64%
M	Management		7	7	7	7	3%
P	Professional Enrichment	Ability enhancement (AE)	8	8	7	7	
		Skill enhancement (SE)	4	4	4	4	
		Creativity & Innovation (CI)	1	1	0	0	
		Co-Curricular Activity (CA)	1	1	0	0	
Total : Professional Enrichment			14	14	11	11	7%
Overall Total			202	150*	187	140*	100%

Note:

Students are to earn at least 187/140* credits out of 202/150* credits to become eligible for the award of B.Tech degree.

* FOR LATERAL ENTRY

PROGRAM SCHEME

SEMESTER - I

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
ENGL0101	G		ENGLISH	3	0	0	3	25	75	100
MATH0101	G		APPLIED MATHEMATICS – I	3	1	0	3.5	50	100	150
CHEM0101	G		INDUSTRIAL CHEMISTRY	3	0	0	3	25	75	100
CHEM0102	G		CHEMISTRY LAB	0	0	2	1	25	25	50
PHYS0101	G		APPLIED PHYSICS – I	3	1	0	3.5	50	100	150
PHYS0102	G		PHYSICS LAB – I	0	0	2	1	25	25	50
ECEN1101	G		ELECTRICAL TECHNOLOGY	2	0	0	2	25	50	75
ECEN1102	G		ELECTRICAL TECHNOLOGY LAB	0	0	2	1	25	25	50
CSEN1101	G		FUNDAMENTALS OF COMPUTERS AND PROGRAMMING (WITH C)	4	0	0	4	50	100	150
CSEN1102	G		FCPC LAB	0	0	2	1	25	25	50
	G		FOREIGN LANGUAGE PART-I #	2	0	0	2	25	50	75
TOTAL				20	2	8	25	350	650	1000

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

FOREIGN LANGUAGE

One foreign language out of the following

French	LANF0101
German	LANG0102
Spanish	LANS0103

SEMESTER - II

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
PHYS0103	G		APPLIED PHYSICS-II	3	1	0	3.5	50	100	150
PHYS0104	G		APPLIED PHYSICS LAB – II	0	0	2	1	25	25	50
ECEN0104	G		BASICS OF ELECTRONICS	2	0	0	2	25	50	75
ECEN0105	G		BASICS OF ELECTRONICS LAB	0	0	2	1	25	25	50
MECH0102	G		BASICS OF MECHANICAL ENGINEERING	2	0	0	2	25	50	75
MECH0103	G		BASICS OF MECHANICAL ENGINEERING LAB	0	0	2	1	25	25	50
MECH1102	G		WORKSHOP TECHNOLOGY LAB	0	0	2	1	25	25	50
CIVL0101	G		BASICS OF CIVIL ENGINEERING	2	0	0	2	25	50	75
CIVL0102	G		BASICS OF CIVIL ENGINEERING LAB	0	0	2	1	25	25	50
MATH0116	G		APPLIED MATHEMATICS-II	4	1	0	4.5	50	100	150
MATH0117	G		NUMERICAL METHODS	3	0	0	3	25	75	100
VALU1019	G		VALUE EDUCATION	2	0	0	2	25	50	75
CSEN1107	G		PC LAB	0	0	2	1	25	25	50
	G		FOREIGN LANGUAGE PART- II #	2	0	0	2	25	50	75
TOTAL				20	2	12	27	400	675	1075

FOREIGN LANGUAGE

MODULE CODE	MODULE NAME
LANF0104	FRENCH
LANG0105	GERMAN
LANS0106	SPANISH

- L = Lecture**
T = Tutorial
P = Practical
C = Credit Point

SEMESTER – III

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN2101	E	PC	DATA STRUCTURE USING 'C'	3	0	0	3	25	75	100
CSEN2102	E	PC	DATA STRUCTURE USING 'C' LAB	0	0	3	1.5	25	50	75
CSEN2103	E	PC	DISCRETE STRUCTURE	3	1	0	3.5	50	100	150
CSEN2104	E	PC	COMPUTER ARCHITECTURE & ORGANIZATION	3	1	0	3.5	50	100	150
	E	PE	ELECTIVE-I	4	0	0	4	50	100	150
	E	PE	ELECTIVE-II	4	0	0	4	50	100	150
MGMT0101	M		MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3	25	75	100
VALU0119	P	AE	APTITUDE I	2	0	0	2	25	50	75
VALU0123	P	SE	PROFESSIONAL COMMUNICATION-I	2	0	0	2	25	50	75
ENGL0109	P	AE	ACADEMIC WRITING	0	0	2	1	25	25	50
	P	AE	YOGA/ NCC/ NSS	0	0	2	1	50	0	50
TOTAL				24	2	7	28.5	400	725	1125

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

MODULE CODE	MODULE
VALU0118	YOGA
VALU0121	NCC
VALU0122	NSS

ELECTIVE I

MODULE CODE	MODULE
CSEN2205	E- COMMERCE
CSEN2206	DIGITAL ELECTRONICS
CSEN2207	INTERNET AND WEB TECHNOLOGY

ELECTIVE II

MODULE CODE	MODULE
CSEN2208	MODELLING AND SIMULATION
CSEN2209	ENGINEERING ANALYSIS AND DESIGN
CSEN2210	SYSTEM PROGRAMMING AND SYSTEM ADMINISTRATION

SEMESTER - IV

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN2111	E	PC	DATABASE MANAGEMENT SYSTEMS	3	0	0	3	25	75	100
CSEN2112	E	PC	DBMS LAB	0	0	2	1	25	25	50
CSEN2113	E	PC	OBJECT ORIENTED PROGRAMMING USING C++	3	1	0	3.5	50	100	150
CSEN2114	E	PC	OOPS using C++ LAB	0	0	2	1	25	25	50
CSEN2115	E	PC	PRINCIPLES OF OPERATING SYSTEM	3	0	0	3	25	75	100
CSEN2116	E	PC	OPERATING SYSTEM LAB	0	0	2	1	25	25	50
CSEN2117	E	PC	DESIGN AND ANALYSIS OF ALGORITHMS	3	1	0	3.5	50	100	150
CSEN2118	E	PC	ALGORITHM DESIGN LAB	0	0	2	1	25	25	50
CSEN2119	E	PC	MULTIMEDIA TECHNOLOGIES	4	0	0	4	50	100	150
	E	PE	ELECTIVE- III	4	0	0	4	50	100	150
	E	PE	ELECTIVE-IV	4	0	0	4	50	100	150
TOTAL				24	2	8	29	400	750	1150

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

ELECTIVE III

MODULE CODE	MODULE
CSEN2220	NATURAL LANGUAGE PROCESSING
CSEN2221	DIGITAL SIGNAL SPEECH PROCESING
CSEN2222	SOFT COMPUTING

ELECTIVE IV

MODULE CODE	MODULE
CSEN2223	FUZZY LOGIC
CSEN2224	GLOBAL POSITIONING SYSTEM
CSEN2225	SYSTEM PROGRAMMING

Note: Each student has to undergo practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the V semester.

SEMESTER - V

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN3101	E	PC	COMPUTER NETWORKS	3	1	0	3.5	50	100	150
CSEN3102	E	PC	COMPUTER NETWORKS LAB	0	0	2	1	25	25	50
CSEN3103	E	PC	COMPUTER GRAPHICS	3	1	0	3.5	50	100	150
CSEN3104	E	PC	COMPUTER GRAPHICS LAB	0	0	2	1	25	25	50
CSEN3105	E	PC	THEORY OF AUTOMATA & COMPUTATION	3	1	0	3.5	50	100	150
CSEN3106	E	PD	INDUSTRIAL TRAINING I (TRAINING TO BE UNDERGONE AFTER IV SEMESTER)	0	0	2	1	50	0	50
CSEN3107	E	PD	SPECIALIZED MINOR PROJECT (GROUP)	0	0	4	2	50	50	100
	E	PE	ELECTIVE-V	4	0	0	4	50	100	150
	E	PE	ELECTIVE-VI	4	0	0	4	50	100	150
VALU0136	P	AE	APTITUDE II	2	0	0	2	25	50	75
VALU0140	P	SE	PROFESSIONAL COMMUNICATION-II	2	0	0	2	25	50	75
TOTAL				21	3	10	27.5	450	700	1150

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

PROGRAM ELECTIVES

ELECTIVE-V

MODULE CODE	MODULE
CSEN3208	MOBILE APPLICATION DEVELOPMENT
CSEN3209	BIG DATA ANALYSIS
CSEN3210	COGNITIVE NETWORKS

ELECTIVE-VI

MODULE CODE	MODULE
CSEN3211	CRYPTOGRAPHY
CSEN3212	MOBILE COMPUTING
CSEN3213	IMAGE PROCESSING

SEMESTER - VI

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN3114	E	PC	ARTIFICIAL INTELLIGENCE	3	1	0	3.5	50	100	150
CSEN3115	E	PC	ARTIFICIAL INTELLIGENCE LAB	0	0	2	1	25	25	50
CSEN3116	E	PC	JAVA PROGRAMMING	3	0	0	3	25	75	100
CSEN3117	E	PC	JAVA PROGRAMMING LAB	0	0	3	1.5	25	50	75
CSEN3118	E	PC	SOFTWARE ENGINEERING & PROJECT MANAGEMENT	3	1	0	3.5	50	100	150
CSEN3119	E	PD	SPECIALIZED MINOR PROJECT (INDIVIDUAL)	0	0	8	4	100	100	200
	E	PE	ELECTIVE-VII	3	1	0	3.5	50	100	150
	E	GE	ELECTIVE-A	0	0	8	4	50	100	150
CSEN3120	P	CI	CREATIVITY AND INNOVATION	0	0	2	1	0	50	50
TOTAL				16	3	15	25	375	700	1075

PROGRAM ELECTIVES

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

MODULE CODE	MODULE
CSEN3221	WIRELESS SENSOR NETWORKS
CSEN3222	ADVANCED COMPUTER ARCHITECTURE
CSEN3223	CLOUD COMPUTING

GENERIC ELEECTIVE - A^ψ

MODULE CODE	MODULE
SAPA0320	SAP-ABAP
SAPM0321	SAP-MM
SAPS0322	SAP-SD
	ONE/TWO MOOCS MODULES (Consisting 4 credits in total)

^ψAdditional fee, if any, shall be borne by the student.

Note: Each student has to undergo practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the VII semester.

SEMESTER – VII

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN4101	E	PC	COMPILER DESIGN	3	0	0	3	25	75	100
CSEN4102	E	PC	COMPILER DESIGN LAB	0	0	2	1	25	25	50
CSEN4103	E	PC	DATA WAREHOUSING & DATA MINING	4	0	0	4	50	100	150
CSEN4104	E	PC	ADVANCED JAVA	3	0	0	3	25	75	100
CSEN4105	E	PC	ADVANCED JAVA LAB	0	0	3	1.5	25	50	75
CSEN4106	E	PD	SPECIALIZED MAJOR PROJECT (GROUP) ##	0	0	8	4	100	100	200
CSEN4107			INDUSTRIAL TRAINING II (to be undergone after VI semester)	0	0	2	1	50	0	50
	E	PE	ELECTIVE-VIII	3	1	0	3.5	50	100	150
	E	GE	ELECTIVE-B **	4	0	0	4	50	100	150
CLUB0101	P	CA	<i>Co-Curricular Activity</i>	0	0	0	1	25	25	50
TOTAL				17	1	15	26	425	650	1075

ELECTIVE-VIII

- L = Lecture**
T = Tutorial
P = Practical
C = Credit Point

MODULE CODE	MODULE
CSEN4208	NEURAL NETWORK
CSEN4209	ETHICAL HACKING
CSEN4210	WIRELESS COMMUNICATION

** To be chosen from Generic Electives offered by departments other than the parent Department.

Only advisory support shall be provided by the faculty.

SEMESTER – VIII

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total Marks
CSEN4111	E	PD	SPECIALIZED MAJOR PROJECT (INDIVIDUAL)##	0	0	16	8	200	200	400
ENVS0101	P	AE	ENVIRONMENTAL SCIENCES	2	0	0	2	25	50	75
MGMT0103	M		ENTREPRENEURSHIP	4	0	0	4	50	100	150
TOTAL				6	0	16	14	275	350	625

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

Only advisory support shall be provided by the faculty.