

UNIVERSITY OF KERALA

B.TECH. DEGREE COURSE (2020 SCHEME)



CURRICULUM

INFORMATION TECHNOLOGY

CURRICULUM I TO VIII B.Tech INFORMATION TECHNOLOGY

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in table below.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
Total Mandatory Credits		162	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

Sem	1	2	3	4	5	6	7	8	Total
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				
Credits for Activity	2								2
G.Total									162

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Ethics, Management, Finance & Accounting, Life skills, Professional communication, Economics etc

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like E C L 2 0 1. The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the following table.

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Program of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi

SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDI T
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUT 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				23/24 *	17

*Minimum hours per week

NOTE:

To make up for the hours lost due to induction program, one extra hour may be allotted to each course.

SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUT 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				28/29	21

NOTE:

- Engineering Physics A and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics in S1 and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.
- Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Mechanics in S1 and Engineering Graphics in S2 & vice versa.
- Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for

Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, and POLY can choose this course in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

4. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self-expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

SEMESTER III

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
A	MAT203	DISCRETE MATHEMATICAL STRUCTURES	3-1-0	4	4
B	ITT201	DATA STRUCTURES	3-1-0	4	4
C	ITT203	DIGITALSYSTEM DESIGN	3-1-0	4	4
D	ITT205	PROBLEM SOLVING USING PYTHON	3-1-0	4	4
E	EST200	DESIGN & ENGINEERING	2-0-0	2	2
1\2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	-
S	ITL201	DATA STRUCTURES LAB	0-0-3	3	2
T	ITL203	PROGRAMMING AND SYSTEM UTILITIES LAB	0-0-3	3	2
R\M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4*	4
		TOTAL		30	22/26

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER IV

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
A	MAT208	PROBABILITY, STATISTICS AND ADVANCED GRAPH THEORY	3-1-0	4	4
B	ITT202	PRINCIPLES OF OBJECT ORIENTED TECHNIQUES	3-1-0	4	4
C	ITT204	COMPUTER ORGANIZATION	3-1-0	4	4
D	ITT206	DATABASE MANAGEMENT SYSTEMS	3-1-0	4	4
E	EST200	DESIGN & ENGINEERING	2-0-0	2	2
1\2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	-
S	ITL202	OBJECT ORIENTED TECHNIQUES LAB	0-0-3	3	2
T	ITL204	DATABASE MANAGEMENT SYSTEMS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				30	22/26

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER V

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
A	ITT301	WEB APPLICATION DEVELOPMENT	3-1-0	4	4
B	ITT303	OPERATING SYSTEM CONCEPTS	3-1-0	4	4
C	ITT305	DATA COMMUNICATION AND NETWORKING	3-1-0	4	4
D	ITT307	FORMAL LANGUAGES AND AUTOMATA THEORY	3-1-0	4	4
E	ITT309	MANAGEMENT FOR SOFTWARE ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	-
S	ITL331	OPERATING SYSTEM AND NETWORK PROGRAMMING LAB	0-0-3	3	2
T	ITL333	WEB APPLICATION DEVELOPMENT LAB	0-0-3	3	2
R\M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
	TOTAL			31	23/27

NOTE:

- *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

SEMESTER VI

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
A	ITT302	INTERNETWORKING WITH TCP/IP	3-1-0	4	4
B	ITT304	ALGORITHM ANALYSIS AND DESIGN	3-1-0	4	4
C	ITT306	DATA SCIENCE	3-1-0	4	4
D	ITXXX	PROGRAM ELECTIVE – I	2-1-0	3	3
E	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
F	ITT308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	ITL332	COMPUTER NETWORKS LAB	0-0-3	3	2
T	ITD334	MINIPROJECT	0-0-3	3	2
R\M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				29	23/27

PROGRAM ELECTIVE I

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
D	ITT312	USER INTERFACE AND USER EXPERIENCE DESIGN	2-1-0	3	3
	ITT322	COMPILER DESIGN	2-1-0		
	ITT332	SOFT COMPUTING	2-1-0		
	ITT342	MICROPROCESSORS	2-1-0		
	ITT352	DISTRIBUTED SYSTEMS	2-1-0		
	ITT362	DIGITAL IMAGE PROCESSING	2-1-0		
	ITT372	SEMANTIC WEB	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
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 and will be conducted by the University. 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 practicing questions based on the core courses listed in the curriculum.
3. **Mini project:** It is introduced in sixth semester with a specific objective to strengthen the understanding of student's fundamentals through application of theoretical concepts. Mini project can help to boost their skills and widen the horizon of their thinking. The ultimate aim of an engineering student is to resolve a problem by applying theoretical knowledge. Doing more projects increases problem-solving skills. Students should identify a topic of interest in consultation with Faculty/Advisor. Review the literature and gather information pertaining to the chosen topic. State the objectives and develop a methodology to achieve the objectives. Carryout the design/fabrication or develop codes/programs to achieve the objectives. Demonstrate the novelty of the project through the results and outputs. The progress of the mini project is evaluated based on a minimum of two reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The product has to be demonstrated for its full design specifications. Innovative design concepts, reliability considerations, aesthetics/ergonomic aspects taken care of in the project shall be given due weight. The internal evaluation will be made based on the product, the report and a viva- voce examination, conducted by a 3 member committee appointed by Head of the Department comprising HOD or a senior faculty member, Academic coordinator for that program, project guide/coordinator.

Total marks: 150, CIE 75 marks and ESE 75 marks

Split up for CIE

Attendance : 10

Guide : 15

Project Report : 10

Evaluation by the Committee (will be evaluating the level of completion and demonstration of functionality/specifications, presentation, oral examination, work knowledge and involvement):40

SEMESTER VII

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
A	ITT401	DATA ANALYTICS	2-1-0	3	3
B	ITTXXX	PROGRAM ELECTIVE – II	2-1-0	3	3
C	ITTXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	-
S	ITL411	DATA ANALYTICS LAB	0-0-3	3	2
T	ITQ413	SEMINAR	0-0-3	3	2
U	ITD415	PROJECT PHASE I	0-0-6	6	2
R\M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
	TOTAL			28	15/19

PROGRAM ELECTIVE II

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
B	ITT413	MOBILE COMPUTING	2-1-0	3	3
	ITT423	ARTIFICIAL INTELLIGENCE	2-1-0		
	ITT433	OBJECT ORIENTED MODELING AND DESIGN	2-1-0		
	ITT443	ADVANCED DATABASE MANAGEMENT SYSTEMS	2-1-0		
	ITT453	MACHINE LEARNING	2-1-0		
	ITT463	OPTIMIZATION AND METAHEURISTICS	2-1-0		
	ITT473	PROBABILISTIC AND STOCHASTIC MODELLING	2-1-0		

OPEN ELECTIVE (OE)

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by the Department of INFORMATION TECHNOLOGY for students of other undergraduate branches under University of Kerala.

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
C	ITT415	WEB DESIGNING	2-1-0	3	3
	ITT425	MULTIMEDIA TECHNIQUES	2-1-0	3	3
	ITT435	FREE AND OPEN SOURCE SOFTWARE	2-1-0	3	3
	ITT445	MOBILE APPLICATION DEVELOPMENT	2-1-0	3	3

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. 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 internal members comprising three senior faculty members 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
 Quality of the Report : 30
 Presentation : 40

3. 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 Electronics & Communication 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	ITT402	CRYPTOGRAPHY AND NETWORK SECURITY	2-1-0	3	3
B	ITTTXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	ITTTXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	ITTTXX	PROGRAM ELECTIVE V	2-1-0	3	3
E	ITT404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	ITD416	PROJECT PHASE II	0-0-12	12	4
R\M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				29	17/21

PROGRAM ELECTIVE III

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
B	ITT414	COMPUTER VISION	2-1-0	3	3
	ITT424	CYBER AND NETWORK FORENSICS	2-1-0		
	ITT434	CLOUD COMPUTING	2-1-0		
	ITT444	DATA MINING AND WAREHOUSING	2-1-0		
	ITT454	SEARCH ENGINE OPTIMISATION	2-1-0		
	ITT464	COMPUTER GRAPHICS	2-1-0		
	ITT474	BLOCK CHAIN TECHNOLOGY	2-1-0		

PROGRAM ELECTIVE IV

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
C	ITT416	SOCIAL NETWORKS ANALYSIS	2-1-0	3	3
	ITT426	INTERNET OF THINGS	2-1-0		
	ITT436	HIGH SPEED NETWORKS	2-1-0		
	ITT446	ADHOC AND WIRELESS SENSOR NETWORKS	2-1-0		
	ITT456	HUMAN COMPUTER INTERFACING	2-1-0		
	ITT466	PIPELINING AND PARALLEL PROCESSING	2-1-0		
	ITT476	NETWORK SCIENCE	2-1-0		

PROGRAM ELECTIVE V

SLOT	Course No.	COURSES	L-T-P	Hours	Credit
D	ITT418	INFORMATION STORAGE MANAGEMENT	2-1-0	3	3
	ITT428	SOFTWARE QUALITY ASSURANCE	2-1-0		
	ITT438	SOFTWARE ARCHITECTURE	2-1-0		
	ITT448	NETWORK ON CHIPS	2-1-0		
	ITT458	NATURAL LANGUAGE PROCESSING	2-1-0		
	ITT468	BIOINFORMATICS	2-1-0		
	ITT478	DEEP LEARNING	2-1-0		

NOTE

- *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- Comprehensive Viva Voce:** The comprehensive viva voce 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 semesters. 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.
- 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 1;
 - Review and finalization of the Approach to the Problem relating to the assigned topic;
 - Preparing an Action Plan for conducting the investigation, including team work;
 - 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 Seminar 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
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).

MINOR

Minor is an additional credential a student may earn if she/he does 20 credits worth of additional learning in discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist bucket of 3-6 courses is identified for each Minor. Each bucket may rest on one or more foundation courses. A bucket may have sequences within it, i.e., advanced courses may rest on basic courses in the bucket. She/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as “Bachelor of Technology in xxx with Minor in yyy”. The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

- (i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses**.
- ii) Registration is permitted for Minor at the beginning of third semester. Total credits required to award B.tech with Minor is 182 (162 + 20 credits from value added courses)
- iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses, of which one course shall be a mini project based on the chosen area. They can do mini project either in S7 or in S8. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of Studies and approved by the Academic Council or 2 courses from the minor buckets listed here. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.
- iv) There won't be any supplementary examination for the courses chosen for Minor.
- v) On completion of the program, “Bachelor of Technology in xxx with Minor in yyy” will be awarded if the registrant earn 20 credits from the minor courses.
- vi) The registration for minor program will commence from semester 3 and the all academic unit offering

minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8.

Students who have registered for **B.Tech Minor in INFORMATION TECHNOLOGY Branch** can opt to study the courses listed below:

MINOR BUCKETS

Semester	BASKET I WEB AND ANDROID DEVELOPMENT				BASKET II COMPUTER COMMUNICATIONS				BASKET III SOFTWARE ENGINEERING			
	Course No.	Course Name	HOURS	CREDITS	Course No.	Course Name	HOURS	CREDITS	Course No.	Course Name	HOURS	CREDITS
S3	ITT281	JAVA PROGRAMMING	4	4	ITT283	DATA COMMUNICATION	4	4	ITT285	SOFTWARE ENGINEERING	4	4
S4	ITT282	DATABASE MANAGEMENT	4	4	ITT284	COMPUTER NETWORKS	4	4	ITT286	SOFTWARE PROJECT MANAGEMENT TECHNIQUES	4	4
S5	ITT381	WEBAPPLICATION DEVELOPMENT	4	4	ITT383	INTERNET TECHNOLOGY	4	4	ITT 385	SOFTWARE ARCHITECTURE CONCEPTS	4	4
S6	ITT382	ANDROID PROGRAMMING	4	4	ITT384	INTERNETWORKING	4	4	ITT386	PRINCIPLES OF SOFTWARE QUALITY ASSURANCE	4	4
S7	ITD481	MINIPROJECT	4	4	ITD481	MINIPROJECT	4	4	ITD481	MINIPROJECT	4	4
S8	ITD482	MINIPROJECT	4	4	ITD482	MINIPROJECT	4	4	ITD482	MINIPROJECT	4	4

HONOURS

Honours is an additional credential a student may earn if she/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of a class. The University is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/get specialized in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the concerned branch of engineering. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as “Bachelor of Technology in xxx, with Honours.” The fact will also be reflected in the consolidated grade card, along with the list of course

taken. If a student is not earning credits for any one of the specified course for getting Honours, she/he is not entitled to get Honours. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same bucket in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

- i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The Honours courses shall be identified by H slot courses.
- ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20).
- iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of studies and approved by the Academic Council or 2 courses from the same bucket as the above 3 courses. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under Honours.
- iv) There won't be any supplementary examination for the courses chosen for Honours.
- v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for Honours and there is no history of 'F' Grade in the entire span of the B.Tech Course.
- vi) The registration for Honours program will commence from semester 4 and the all-academic units offering Honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 5 buckets, each bucket representing a particular specialization in the branch. The students shall select only the courses from same bucket in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. There is option to skip any two courses listed here if required, and to opt for equivalent MOOC courses approved by the Academic Council. In any case, they should carry out a mini project based on the chosen area in S8. For example: Students who have registered for **B.Tech Honours in INFORMATION**

TECHNOLOGY can opt to study the courses listed in one of the buckets shown below:

S e m e s t e r	GROUP I				GROUP II				GROUP III			
	Course No	Course Name	H O U R S	C R E D I T	Course No	Course Name	H O U R S	C R E D I T	Course No	Course Name	H O U R S	C R E D I T
S4	ITT292	MATHEMATICAL FOUNDATION FOR NETWORKING	4	4	ITT294	NUMBER THEORY	4	4	ITT296	MICROPROCESSOR AND MICROCONTROLLER PROGRAMMING	4	4
S5	ITT393	WIRELESS COMMUNICATION	4	4	ITT395	SECURITY IN COMPUTING	4	4	ITT397	ADVANCED COMPUTER ARCHITECTURE	4	4
S6	ITT394	DESIGN AND ANALYSIS OF NETWORKS	4	4	ITT396	APPLIED COMPUTER SECURITY	4	4	ITT398	EMBEDDED SYSTEM	4	4
S7	ITT495	ENTERPRISE NETWORKS	4	4	ITT497	WEB SECURITY	4	4	ITT499	ROBOTICS AND AUTOMATION	4	4
S8	ITD496	MINIPROJECT	4	4	ITD496	MINIPROJECT	4		ITD496	MINIPROJECT	4	4

INDUCTION PROGRAM

There will be three-week induction program for first semester students. It is a unique three-week immersion Foundation Programme designed specifically for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social works and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's to interact with their batch mates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives:

- **Values and Ethics:** Focus on fostering a strong sense of ethical judgment and moral fortitude
- **Creativity:** Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative activities.
- **Leadership, Communication and Teamwork:** Develop a culture of teamwork and group

communication.

- **Social Awareness:** Nurture a deeper understanding of the local and global world and our place in it as concerned citizens of the world.
- **Physical Activities & Sports:** Engage students in sports and physical activity to ensure healthy physical and mental growth.