

## CURRICULUM TEMPLATE FROM SEMESTERS I TO VIII

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	66
5	Program Elective Courses	PEC	19
6	Open Elective Courses	OEC	9
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
	<b>Total Mandatory Credits</b>		<b>162</b>
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				---
MSA	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, Introduction to --- Engineering, Design Engineering, Materials Engineering etc.

**Humanities and Social Sciences including Management courses:** English, Humanities, Professional Ethics, Management-I, (Organizational Behaviour)/ Finance & Accounting, Economics etc

**Mandatory non-credit courses:** Environmental Science, 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.

<b>Code</b>	<b>Description</b>
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

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. Programme 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**

<b>SLOT</b>	<b>COURSE NO.</b>	<b>COURSES</b>	<b>L-T-P</b>	<b>HOURS</b>	<b>CREDI T</b>
A	BSC	ENGINEERING MATHS (CALCULUS AND MULTI VARIABLE CALCULUS)	3-1-0	4	4
B 1/2	BSC	ENGINEERING PHYSICS	3-1-0	4	4
	BSC	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	LIFE SKILLS	2-0-2	4	--
S 1/2	BSC	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
<b>TOTAL</b>				<b>23/24 *</b>	<b>17</b>

\*Minimum hours per week

**SEMESTER II**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	BSC	ENGINEERING MATHS (DIFFERENTIAL EQUATION AND LINEAR ALGEBRA)	3-1-0	4	4
B 1/2	BSC	ENGINEERING PHYSICS	3-1-0	4	4
	BSC	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	ESC	PROGRAMMING IN C	2-1-2	5	4
S 1/2	BSC	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
<b>TOTAL</b>				<b>28/29</b>	<b>21</b>

**NOTE:**

1. Engineering Physics 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.

2. Physics to be made separate for programs according to their requirements like  
 Physics (Mechanics & Mechanics of Solids and Introduction to Quantum Mechanics): for AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY  
 Physics (Waves and Optics, Electromagnetic and Solid State Mechanics): for AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA  
 Physics Lab: Same syllabus for all courses
3. 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.
4. 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, 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.
5. LIFE SKILLS  
 Objective is to develop in the under-graduate students of engineering a level of communication competence. Coverage: Communication Skill, Critical Thinking & Problem Solving, Teamwork, Moral & Professional Values, Leadership Skills, Language Lab.
6. 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	BSC	ENGINEERING MATHS	3-1-0	4	4
B	PCC/ESC	CORE/OTHER STREAM COURSE	3-1-0	4	4
C	PCC	CORE	3-1-0	4	4
D	PCC	CORE	3-1-0	4	4
E 1/2	ESC	DESIGN & ENGINEERING	2-0-0	2	2
	HMC	PROFESSIONAL ETHICS	2-0-0	2	2
F	MNC	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	PCC	CORE LAB	0-0-3	3	2
T	PCC	CORE LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4 *	4
<b>TOTAL</b>				<b>30</b>	<b>22/26</b>

**NOTE:**

- 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. Professional ethics should include academic ethics, IPR etc.
- \*All Institutions shall 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	BSC	ENGINEERING MATHS	3-1-0	4	4
B	PCC/ESC	CORE/OTHER STREAM COURSE	3-1-0	4	4
C	PCC	CORE	3-1-0	4	4
D	PCC	CORE	3-1-0	4	4
E 1/2	ESC	DESIGN & ENGINEERING	2-0-0	2	2
	HMC	PROFESSIONAL ETHICS	2-0-0	2	2
F	MNC	CONSTITUTION OF INDIA	2-0-0	2	--
S	PCC	CORE LAB	0-0-3	3	2
T	PCC	CORE LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>30</b>	<b>22/26</b>

**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.
3. Professional ethics shall include academic ethics, IPR etc.

**SEMESTER V**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PCC	CORE	3-1-0	4	4
B	PCC	CORE	3-1-0	4	4
C	PCC	CORE	3-1-0	4	4
D	PEC	PROGRAM ELECTIVE I	3-1-0	4	4
E 1/2	HMC	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HMC	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MNC	DISASTER MANAGEMENT	2-0-0	2	--
S	PCC	CORE LAB	0-0-3	3	2
T	PCC	CORE LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>31</b>	<b>23/27</b>

**NOTE:**

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
2. \*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.

**PROGRAM ELECTIVE I**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	PEC	i	3-1-0	4	4
	PEC	ii	3-1-0		
	PEC	iii	3-1-0		
	PEC	iv	3-1-0		
	PEC	v	3-1-0		
	PEC	vi	3-1-0		



**SEMESTER VI**

<b>SLOT</b>	<b>COURSE NO.</b>	<b>COURSES</b>	<b>L-T-P</b>	<b>HOURS</b>	<b>CREDIT</b>
A	PCC	CORE	3-1-0	4	4
B	PCC	CORE	3-1-0	4	4
C	PCC	CORE	3-1-0	4	4
D	OEC	OPEN ELECTIVE I	2-1-0	3	3
E 1/2	HMC	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HMC	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	PCC	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	PCC	CORE LAB	0-0-3	3	2
T	PWS	MINIPROJECT	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>29</b>	<b>23/27</b>

**NOTE:**

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
2. \*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.
3. **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 online 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 practising questions based on the core courses listed in the curriculum.
4. **Miniproject:** To 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. Carry out 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 final evaluation will be made based on the product, the report and a viva- voce examination, conducted internally by a 3 member committee appointed by Head of the Department.

Total marks: 100, only CIE, minimum required to pass 50

Attendance	: 10
Work knowledge and Involvement	: 20
Level of completion and demonstration of functionality/specifications	: 25
Guide	: 10
Project Report	: 15
Final Presentation & oral examination	: 20

**SEMESTER VII**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PEC	PROGRAM ELECTIVE II	2-1-0	3	3
B	PEC	PROGRAM ELECTIVE III	2-1-0	3	3
C	OEC	OPEN ELECTIVE II	2-1-0	3	3
D	MNC	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	PCC	CORE LAB	0-0-3	3	2
T	PWS	SEMINAR	0-0-3	3	2
U	PWS	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>28</b>	<b>15/19</b>

**PROGRAM ELECTIVE II**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	PEC	i	3-1-0	4	4
	PEC	ii	3-1-0		
	PEC	iii	3-1-0		
	PEC	iv	3-1-0		
	PEC	v	3-1-0		
	PEC	vi	3-1-0		

**PROGRAM ELECTIVE III**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PEC	i	2-1-0	3	3
	PEC	ii	2-1-0		
	PEC	iii	2-1-0		
	PEC	iv	2-1-0		
	PEC	v	2-1-0		
	PEC	vi	2-1-0		

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
Technical Content 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 a departmental committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	: 30
Interim evaluation, 2 times in the semester by a committee	: 50
The report evaluated by the above committee	: 20

**SEMESTER VIII**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PEC	PROGRAM ELECTIVE IV	2-1-0	3	3
B	PEC	PROGRAM ELECTIVE V	2-1-0	3	3
C	PEC	PROGRAM ELECTIVE VI	2-1-0	3	3
D	OEC	OPEN ELCTIVE III	2-1-0	3	3
E	PCC	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	PWS	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>28</b>	<b>17/21</b>

**PROGRAM ELECTIVE IV**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	PEC	i	2-1-0	3	3
	PEC	ii	2-1-0		
	PEC	iii	2-1-0		
	PEC	iv	2-1-0		
	PEC	v	2-1-0		
	PEC	vi	2-1-0		

**PROGRAM ELECTIVE V**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PEC	i	2-1-0	3	3
	PEC	ii	2-1-0		
	PEC	iii	2-1-0		
	PEC	iv	2-1-0		
	PEC	v	2-1-0		
	PEC	vi	2-1-0		

## PROGRAM ELECTIVE VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	PEC	i	2-1-0	3	3
	PEC	ii	2-1-0		
	PEC	iii	2-1-0		
	PEC	iv	2-1-0		
	PEC	v	2-1-0		
	PEC	vi	2-1-0		

### 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 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. **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 syllabus mentioned for comprehensive course work in the sixth 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 semester. 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.
3. **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 I;
  - Review and finalization of the Approach to the Problem relating to the assigned topic;
  - 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 Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	: 30
Interim evaluation, 2 times in the semester by a committee	: 50
Quality of the report evaluated by the above committee	: 30
Final evaluation by a three member committee	: 40

## OPEN ELECTIVE (OE)

The courses listed below are offered by the Department of ECE for students of following departments: AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY.

### Course Title

- A.1 Fuzzy systems and Applications
- A.2 Analog Communication
- A.3 Digital Image Processing
- B.1 MEMS
- B.2 Electronic Packaging
- B.3 Electronic Materials
- C.1 Electronic Instrumentation
- C.2 Embedded Systems
- C.3 Biomedical Engineering

## Minor

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a 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 basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/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 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. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of studies and approved by the Academic Council. 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.

For example: Students who have registered for **B.Tech Minor in Electronics & Communication Engineering** can opt to study the courses listed below:



- 3.1 Semiconductor Physics and Devices
- 3.2 Digital Circuits and Systems
- 3.3 Signals and Systems
- 3.4 Analog Communication
- 4.1 Electronic Circuits
- 4.2 Computer Organization
- 4.3 Digital Signal Processing
- 4.4 Digital Communication
- 5.1 Analog Integrated Circuits
- 5.2 Microprocessors and Micro Controllers
- 5.3 Digital Signal Processors and Applications
- 5.4 Antennas and Propagation
- 6.1 Digital Integrated Circuits
- 6.2 Embedded Systems
- 6.3 Statistical Signal Processing
- 6.4 Fiber Optic Communication
- 7/8.X Mini Project based on the chosen area

In third semester, a student can choose any one course grouped under 3.X. If S/he chooses 3.1 in S3, s/he should choose 4.1 in S4, 5.1 in S5 and 6.1 in S6. Similarly, if the student chooses 3.2 in S3, s/he should choose 4.2 in S4, 5.2 in S5 and 6.2 in S6 and so on. There is option to skip any two courses listed here and to opt for equivalent MOOC courses approved by the Academic Council. Shifting of courses between semesters not permitted. In any case, they should carry out a mini project based on the chosen area in S7 or S8.

## **Honours**

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. 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 courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 5 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group 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 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. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of studies and approved by the Academic Council. 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 without any history of 'F' Grade.

For example: Students who have registered for **B.Tech Honours in Electronics & Communication Engineering** can opt to study the courses listed below:

- 4.1 Advanced Digital Signal Processing
- 4.2 Digital System Design
- 4.3 Analog IC Design
- 4.4 Detection and Estimation
- 5.1 Digital Signal Processing For Medical Imaging
- 5.2 Asynchronous System Design
- 5.3 Mixed - Signal Circuit Design
- 5.4 Spectral Analysis of Signals
- 6.1 Wavelet Signal Processing
- 6.2 Low Power VLSI Circuits
- 6.3 Electronic Design Automation Tools

- 6.4
- 7.1VLSI Digital Signal Processing Systems
- 7.2 Design of ASICs
- 7.3 RF Circuits
- 7.4
- 8.X Mini project based on chosen area

In fourth semester, a student can choose any one course grouped under 4.X. If S/he chooses 4.1 in S4, s/he should choose 5.1 in S5, 6.1 in S6 and 7.1 in S7. Similarly, if the student chooses 4.2 in S4, s/he should choose 5.2 in S5, 6.2 in S6 and 7.2 in S7 and so on. There is option to skip any two courses listed here and to opt for equivalent MOOC courses approved by the Academic Council. Shifting of courses between semesters not permitted. In any case, they should carry out a mini project based on the chosen area in S8.

## **CLASSIFICATION**

After successful completion of the programme, degree will be awarded as per the following classifications based on the CGPA.

- a) Students who complete all the courses in the first attempt in four years and complete the requirements (additional 20 credits, each course having a grade of 'C' or better) with CGPA of 8.5 and above shall be awarded B.Tech (Honours) degree.
- b) Students who complete the programme within ten consecutive semesters getting a CGPA of 8.5 and above will be declared to have passed in first class with distinction.
- c) Students who complete all the courses in the first attempt and in four years and complete the requirements (additional 20 credits) shall be awarded Minor.
- d) Students who get a CGPA of 6.5 and above, but below 8.5 and who complete the course within 12 semesters will be declared to have passed in first class.

## **ONLINE EXAMINATION**

Online examination can be conducted for comprehensive exam, Life skills, SUSTAINABLE ENGINEERING, CONSTITUTION OF INDIA, DISASTER MANAGEMENT, INDUSTRIAL SAFETY ENGINEERING.

## INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique three-week immersion Foundation Programme designed especially for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social work 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 batchmates 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.