Department of Computer Science and Engineering
Revised Curriculum Structure (to be effective from 2018-19 Admission Batch

Curriculum for B.Tech

Under Autonomy (GR A: ECE, EE, EIE, BME; GR B: CSE, IT, ME, CE, FT)

1st Semester

Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	Project-IA	0	0	1	1	**0.5**
9	PROJ	PR 192	Project-IB	0	0	1	1	**0.5**
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

2nd Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Credit Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/ PH 291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME 291/ ME 292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24.0**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.;

Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

3rd Semester								
SL No	Type	Code	THEORY	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	PC	CS301	Digital Electronics and Computer Organization	3	0	0	3	3
4	PC	CS302	Data Structures	3	0	0	3	3
5	ES	CS 303	Circuit Theory and Network	2	0	0	2	2
Total of Theory							15	15
B. PRACTICAL								
6	BS	PH391	Physics-II Lab	0	0	3	3	1.5
7	PC	CS391	Digital Electronics and Computer Organization Lab	0	0	3	3	1.5
8	PC	CS392	Data Structures Lab	0	0	3	3	1.5
9	PC	CS393	Programming with C++	1	0	2	3	1.5
10	PROJ	PR 391	Project-III	0	0	2	2	1
11	PROJ*	PR 392	Innovative activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 381	Behavioural and Interpersonal Skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							33	22.5

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

4th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	ES	M(CSE)401	Numerical Methods and Statistics	3	0	0	3	3
2	HS	HU 402	Economics for Engineers	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS403	Formal Language and Automata Theory	3	0	0	3	3
Total of Theory							**14**	**14**
B. PRACTICAL								
6	ES	M(CSE)491	Numerical Methods and Statistics Lab	0	0	3	3	1.5
7	PC	CS491	Computer Architecture Lab	0	0	3	3	1.5
8	PC	CS492	Algorithms Lab	0	0	3	3	1.5
9	PROJ	PR 491	Project-IV	0	0	2	2	1
10	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
11	MC	MC401	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**28**	**20**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

5th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	PC	CS501	Computer Graphics	3	0	0	3	3
2	PC	CS502	Operating System	3	0	0	3	3
3	PC	CS503	Data Base Management System	3	0	0	3	3
4	OE	CS504	A. Object Oriented Programming using Java B. Multimedia Technology C. Communication Engineering	3	0	0	3	3
5	PE	CS505	A. Operations Research B. Computational Geometry C. Distributed Algorithms	3	0	0	3	3
Total of Theory							15	15
B. PRACTICAL								
6	PC	CS591	Computer Graphics Lab	0	0	3	3	1.5
7	PC	CS592	Operating System Lab	0	0	3	3	1.5
8	PC	CS 593	Data Base Management System Lab	0	0	3	3	1.5
9	OE	CS594	A. Object Oriented Programming Lab B. Multimedia Technology Lab C. Communication Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 591	Project-V	0	0	2	2	1
11	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Environmental Science	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**22.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

6th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessors and Microcontrollers	2	1	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604	A. Compiler Design B. Computer Vision C. Simulation and modelling	3	0	0	3	3
5	OE	CS605	A. Pattern Recognition B. Distributed Operating System C. Distributed Database	3	0	0	3	3
6	OE	CS606	A. Data Warehousing and Data Mining B. Digital Image Processing C. E-commerce and ERP	3	0	0	3	3
	Total of Theory						**18**	**18**
B. PRACTICAL								
7	PC	CS691	Computer Network Lab	0	0	3	3	1.5
8	PC	CS692	Microprocessors and Microcontrollers Lab	0	0	3	3	1.5
9	PC	CS693	Software Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 691	Project-VI	0	0	2	2	1
11	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**24.0**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

7th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	HS	HU701	Values & Ethics in Profession	2	0	0	2	2
2	OE	CS701	A. Artificial Intelligence B. Robotics C. Data Analytics	3	0	0	3	3
3	PE	CS702	A. Soft Computing B. Natural Language Processing C. Web Technology	3	0	0	3	3
4	PE	CS703	A. Cloud Computing B. Sensor Network and IOT C. Cryptography and Network Security	3	0	0	3	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	OE	CS791	A. Artificial Intelligence Lab B. Robotics Lab C. Data Analytics Lab	0	0	3	3	1.5
6	PE	CS792	A. Soft Computing Lab B. Natural Language Processing Lab C. Web Technology Lab	0	0	3	3	1.5
8	PROJ	PR 791	Project-VII	0	0	0	6	3
9	PROJ*	PR 792	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 781	Social Awareness	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**26**	**17.5**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

8th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	HS	HU804	Principles of Management	2	0	0	2	2
2	PE	CS801	A. Mobile Computing B. Bio-informatics C. Cyber Law and Security Policy D. VLSI Design	3	0	0	3	3
3	PE	CS802	A. Parallel Computing B. Machine Learning C. Real Time Embedded System D. Advanced Computer Architecture	3	0	0	3	3
Total of Theory							**8**	**8**
B. PRACTICAL								
4	PC	CS891	Design lab	0	0	2	2	1
5	PROJ	PR 891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**19**	**12**

Mandatory Credit Point=160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8 th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to CoE office prior to 8th Semester Examination.

Credit Distribution Ratio:

Category	Credit Allocation As per Autonomy	Credit Allocation As per AICTE
Humanities, Social Sciences & Management Courses	9	12*
Basic Sciences Courses	25.5	25*
Engineering Sciences Courses including Workshop, Drawing, Basics of Electrical/Mechanical/Computer etc	26	24*
Professional Core Courses	50.5	48*
Professional Elective Courses relevant to chosen specialization/Branch	19.5	18*
Open Elective Courses-Electives from other technical and / or emerging subjects	15	18*
Project work, seminar and internship in industry or elsewhere	14.5	15*
Mandatory Courses [Environmental Science, Induction Training, Indian Constitution, Essence of Indian Knowledge Tradition and other Co & extracurricular activities		Non-credited
Total	160	160

* Minor Variation is allowed as per need of the respective disciplines.

A. Humanities, Social Sciences & Management Courses (HS)							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	HU 101	English	2	0	0	2	2
2	HU 291	Language Lab	0	0	2	2	1
3	HU 403	Economics for Engineers	2	0	0	2	2
4	HU702	Values & Ethics in Profession	2	0	0	2	2
5	HU 804	Principles of Management	2	0	0	2	2
		Total Credit:					**9**
B. Basic Sciences Courses (BS)							
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101	Chemistry	3	0	0	3	3
3	CH 191	Chemistry Lab	0	0	3	3	1.5
4	M 201	Mathematics -II	3	1	0	4	4
5	PH 201	Physics – I	3	0	0	3	3
6	PH 291/	Physics I Lab	0	0	3	3	1.5
7	M(CSE)301	Mathematics-III	3	1	0	4	4
8	PH301	Physics-II	3	0	0	3	3
9	PH391	Physics-II Lab	0	0	3	3	1.5
		Total Credit:					**25.5**
C. Engineering Sciences Courses including Workshop, Drawing, Basics of Electrical/Mechanical/Computer etc (ES)							
1	EE 101	Basic Electrical Engineering	3	0	0	3	3
2	EE 191	Basic Electrical Engineering Lab	0	0	3	3	1.5
3	ME 191	Engineering Graphics & Design	0	0	3	3	1.5
4	EC 201	Basic Electronics Engineering	3	0	0	3	3
5	CS 201	Programming for Problem Solving	3	0	0	3	3
6	ME 201	Engineering Mechanics	3	0	0	3	3
7	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
8	EC 291	Basic Electronics Engineering Lab	0	0	3	3	1.5
9	ME 292	Workshop/Manufacturing Practice	0	0	3	3	1.5
10	EE(CSE) 301	Circuit Theory and Network	2	0	0	2	2
11	M(CSE)401	Numerical Methods and Statistics	3	0	0	3	3
12	M(CSE)491	Numerical Methods and Statistics Lab	0	0	3	3	1.5
		Total Credit:					**26**
D. Professional Core Courses (PC)							
1	CS301	Digital Electronics and Computer Organization	3	0	0	3	3
2	CS302	Data Structures	3	0	0	3	3
3	CS391	Digital Electronics and Computer Organization Lab	0	0	3	3	1.5
4	CS392	Data Structures Lab	0	0	3	3	1.5
5	CS393	Programming with C++	1	0	2	3	1.5
6	CS401	Computer Architecture	3	0	0	3	3
7	CS402	Design and Analysis of Algorithms	3	0	0	3	3
8	CS403	Formal Language And Automata Theory	3	0	0	3	3
9	CS491	Computer Architecture Lab	0	0	3	3	1.5
10	CS492	Algorithms Lab	0	0	3	3	1.5

11	CS501	Computer Graphics	3	0	0	3	3
12	CS502	Operating System	3	0	0	3	3
13	CS503	Data Base Management System	3	0	0	3	3
14	CS591	Computer Graphics Lab	0	0	3	3	1.5
15	CS592	Operating System Lab	0	0	3	3	1.5
16	CS 593	Data Base Management System Lab	0	0	3	3	1.5
17	CS601	Computer Network	3	0	0	3	3
18	CS602	Microprocessors and Microcontrollers	2	1	0	3	3
19	CS603	Software Engineering	3	0	0	3	3
20	CS691	Computer Network Lab	0	0	3	3	1.5
21	CS692	Microprocessors and Microcontrollers Lab	0	0	3	3	1.5
22	CS693	Software Engineering Lab	0	0	3	3	1.5
23	CS891	Design lab	0	0	2	2	1
		Total Credit:					**50.5**
E. Professional Elective Courses relevant to chosen specialization/Branch (PE)							
1	CS505A	Operations Research	3	0	0	3	3
	CS505B	Computational Geometry					
	CS505C	Distributed Algorithms					
2	CS604A	Compiler Design	3	0	0	3	3
	CS604B	Computer Vision					
	CS604C	Simulation and Modelling					
3	CS702A	Soft Computing	3	0	0	3	3
	CS702B	Natural Language Processing					
	CS702C	Web Technology					
4	CS703A	Cloud Computing	3	0	0	3	3
	CS703B	Sensor Network and IOT					
	CS703C	Cryptography and Network Security					
5	CS792A	Soft Computing Lab	0	0	3	3	1.5
	CS792B	Natural Language Processing Lab					
	CS792C	Web Technology Lab					
6	CS801A	Mobile Computing	3	0	0	3	3
	CS801B	Bio-informatics					
	CS801C	Cyber Law and Security Policy					
	CS801D	VLSI Design					
7	CS802A	Parallel Computing	3	0	0	3	3
	CS802B	Machine Learning					
	CS802C	Real Time Embedded System					
	CS802D	Advanced Computer Architecture					
		Total Credit:					**19.5**
F. Open Elective Courses-Electives from other technical and / or emerging subjects (OE):							
1	CS504A	Object Oriented Programming using Java	3	0	0	3	3
	CS504B	Multimedia Technology					
	CS504C	Communication Engineering					
2	CS594A	Object Oriented Programming Lab	0	0	3	3	1.5
	CS594B	Multimedia Technology Lab					
	CS594C	Communication Engineering Lab					
2	CS605A	Pattern Recognition	3	0	0	3	3

	CS605B CS605C	Distributed Operating System Distributed Database					
3	CS606A CS606B CS606C	Data Warehousing and Data Mining Digital Image Processing E-commerce and ERP	3	0	0	3	3
4	CS701A CS701B CS701C	Artificial Intelligence Robotics Data Analytics	3	0	0	3	3
5	CS791A CS791B CS791C	Artificial Intelligence Lab Robotics Lab Data Analytics Lab	0	0	3	3	1.5
		Total Credit:					**15**
G. Project work, seminar and internship in industry or elsewhere (PW)							
1	PR 191	Project-IA	0	0	1	1	0.5
2	PR 192	Project-IB	0	0	1	1	0.5
3	PR 291	Project-II	0	0	1	1	0.5
4	PR 292	Innovative activities-I	0	0	0	0	0.5
5	PR 391	Project-III	0	0	2	2	1
6	PR 392	Innovative activities-II	0	0	0	1	0.5
7	PR 491	Project-IV	0	0	1	1	1
8	PR 492	Innovative activities-III	0	0	0	0	0.5
9	PR 591	Project-V	0	0	2	2	1
10	PR 592	Innovative activities-IV	0	0	0	0	0.5
11	PR 691	Project-VI	0	0	2	2	1
12	PR 692	Innovative activities-V	0	0	0	0	0.5
13	PR 791	Project-VII	0	0	0	6	3
14	PR 792	Innovative activities-VI	0	0	0	0	0.5
15	PR 891	Project-VIII	0	0	0	8	3
		Total Credit:					**14.5**
H. Mandatory Courses [Environmental Science, Induction Training, Indian Constitution, Essence of Indian Knowledge Tradition and other Co & extracurricular activities (MC)							
1	MC181	Induction Program	0	0	6	6	
2	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	3	3	
3	MC 381	Behavioral and Interpersonal Skills	0	0	3	3	
4	MC401	Constitution of India	3	0	0	3	
5	MC 501	Environmental Science	3	0	0	3	
6	MC 681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
7	MC 781	Social Awareness	0	0	3	3	
8	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	

Format for Project Work Evaluation (B.Tech)

College Name: **Department :**

Paper Name : **Paper Code :**

STREAM : **Semester :**

University Roll No.	Name of the Student	Title of the Project	Semester Examination								
			Project Report (10)	Development of Prototype/Model (20)	Power point presentation (15)	Viva-Voce (15)	Usage of Modern Tool Technology (10)	Innovative-ness (10)	Individual contribution (10)	Group activity (10)	Total (100)

(Signature of the Project Supervisor(s)) (Signature of the HoD)

MOOCs Courses
For B.Tech Students for AY 2018-19
(1st Semester to 8th Semester)

Total Credit for MOOCs Subjects will be 20.

List of websites which offers online certification Courses

List of Websites which offers online certification courses:

1. Swayam- https://swayam.gov.in/
2. NPTEL- https://onlinecourses.nptel.ac.in/
3. Mooc- http://mooc.org/
4. Edx - https://www.edx.org/
5. Coursera- https://www.coursera.org/
6. Udacity - https://in.udacity.com/
7. Udemy - https://www.udemy.com/
8. Khan academy - https://www.khanacademy.org/
9. Skill sahre - https://www.skillshare.com/
10. Harvard University - https://online-learning.harvard.edu/
11. Ted - https://ed.ted.com/
12. Alison - https://alison.com/
13. Future learn - https://www.futurelearn.com/
14. Web Development - https://digitaldefynd.com/best-free-web-development-courses-tutorials- certification/
15. Digital Marketing - https://digitaldefynd.com/best-free-digital-marketing-certifications/
16. ios app development - https://digitaldefynd.com/best-ios-app-development-course-tutorial/
17. Open Learn - http://www.open.edu/openlearn/
18. Future Learn - https://www.futurelearn.com/
19. Tuts Plus - https://tutsplus.com/
20. Open Culture - http://www.openculture.com/

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization, should be submitted to CoE office prior to 8th Semester Examination.

The distribution of the credit with respect to weeks are as follows:
4 to 7 weeks: 2 Credit
8 to 11 weeks: 3 Credits
12 to 15 weeks: 4 Credits
16 or more than that: 6 Credits

20 credit for Honors, should be earned by the students from the MOOC Basket and any other subjects related to the specific program of the respective departments.

MOOCs Basket for Computer Science & Engineering

Sl No	MOOCs Equivalent (Theory)
1	Analog Electronic Circuits
2	Digital Electronics
3	Programming Data Structures and Algorithms Using Python
4	Data Structure
5	Numerical Methods
6	Automata Theory
7	Computer Organization and Architecture: A Pedagogical Aspect
8	Computer Architecture
9	Design and Analysis of Algorithms
10	Microprocessors & Microcontrollers
11	Discrete Mathematics
12	Circuits and Systems
13	Data Communication and Network Services
14	Digital Signal Processing
15	Robotics
16	Object Oriented Programming in Java
17	Computer Networks and Internet Protocol
18	Computer Networks
19	Database Management System
20	Introduction to Operating Systems
21	Information Theory
22	Information Theory Coding and Cryptography
23	Computer Graphics
24	Introduction to Operations Research
25	Introduction to Multimedia System and Processing
26	Software Engineering
27	Compiler Design
28	Pattern Recognition
29	Soft Computing
30	Artificial Intelligence
31	Artificial Intelligence: Search Methods for Problem Solving
32	Fundamentals of Digital Image and Video Processing
33	Digital Image Processing
34	Cloud Computing
35	Data Mining
36	Data Mining Specialization
37	Wireless Adhoc and Sensor Networks
38	Mobile Computing
39	Internet Technology
40	VLSI Physical Design
41	Control System
42	Computer Architecture
43	Natural Language Processing
44	Cryptography and Network Security
45	Business Analytics & Data Mining Modeling Using R
46	Low Power VLSI Circuits and Systems

Appendix B

Mandatory Additional Requirement (MAR) :

List of Activity Heads and Sub-Activity Heads along with their capping of the Activity Points that can be earned by the students during the entire B.Tech duration.

Sl. No.	Name of the Activity	Points	Maximum Points Allowed
1.	MOOCS (SWAYAM/NPTEL/Spoken Tutorial) (per course)	20	40
2.	Tech Fest/Teachers Day/Freshers Welcome		
	Organizer	5	10
	Participants	3	6
5.	Rural Reporting	5	10
6.	Tree Plantation (per tree)	1	10
7.	Participation in Relief Camps	20	40
8.	Participation in Debate/Group Discussion/ Tech quiz	10	20
9.	Publication of Wall magazine in institutional level (magazine/article/internet)	10	20
10.	Publication in News Paper, Magazine & Blogs	10	20
11.	Research Publication (per publication)	15	30
12.	Innovative Projects (other than course curriculum)	30	60
13.	Blood donation	8	16
	Blood donation camp Organization	10	20
15.	Participation in Sports/Games		
	College level	5	10
	University Level	10	20
	District Level	12	24
	State Level	15	30
	National/International Level	20	20
21.	Cultural Programme (Dance, Drama, Elocution, Music etc.)	10	20
22.	Member of Professional Society	10	20
23.	Student Chapter	10	20
24.	Relevant Industry Visit & Report	10	20
25.	Photography activities in different Club (Photography club, Cine Club, Gitisansad)	5	10
26.	Participation in Yoga Camp (Certificate to be submitted)	5	10
27.	Self-Entrepreneurship Programme	20	20
28.	Adventure Sports with Certification	10	20
29.	Training to under privileged/Physically challenged	15	30
30.	Community Service & Allied Activities	10	20

Department: Computer Science & Engineering
LIST OF MOOCS COURSES FOR MAR

MOOCs Equivalent (Theory)	Minimum Duration	Suggested MAR Point
Ethics in Engineering Practice	8weeks	16
Environmental Studies: A Global Perspective	6weeks	12
Introduction To Biology: The Secret of Life	12weeks	20
Engineering Econometrics	12weeks	20
Management in Engineering	8weeks	16
Human Resource Development	12 weeks	20
Organizational Behavior	7 weeks	16
Project Management for Managers	12weeks	20
International Cyber Conflicts	5weeks	10
Fundamentals of Digital Marketing, Social Media, and E-Commerce	6weeks	12
Developing Soft Skills and Personality	8 weeks	16
History of English Language and Literature	12 weeks	20
Interpersonal Skills	8 weeks	16
Soft skills	12 weeks	20
Technical English for engineers	8 weeks	16

Better Spoken English	12 weeks	20
Business English Communication	4 weeks	8
Calculus of One Real Variable	8 weeks	16
Educational leadership	8 weeks	16
Economics of IPR	4 weeks	8
Enhancing Soft Skills and Personality	8 weeks	16
Human Resource Development	12 weeks	20
Indian Philosophy	12 weeks	20
Intellectual Property	12 weeks	20
Introduction on Intellectual Property to Engineers and Technologists	8 weeks	16
Literature, Culture and Media	12 weeks	20
Science, Technology and Society	12 weeks	20
Soft Skill Development	8 weeks	16
Speaking Effectively	8 weeks	16
Strategic Performance Management	8 weeks	16
Water, Society and Sustainability	4 weeks	8
Calculus of Several Real Variables	8 weeks	16

Higher Engineering Mathematics	12 weeks	20
Introduction to Abstract and Linear Algebra	8 weeks	16

Note: This is a basic guideline for MAR point. More courses can be taken in consultation with the Department.

Record of Activities for Mandatory Additional Requirement

College Name (College Code):				Department:								
Student Name:		University Roll No:		Registration No:								
Sl No	Activity	Points		Points Earned								
				Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
1	*MOOCS (SWAYAM/NPTEL/Spoken Tutorial) per course*											
	For 12 weeks duration	20	40									
	For 8 weeks duration	16										
2	*Tech Fest/Teachers Day/Freshers Welcome*											
	Organizer	5	10									
	Participants	3	6									
3	Rural Reporting	5	10									
4	Tree Plantation and up keeping (per tree)	1	10									
5	Participation in Relief Camps	20	40									
6	Participation in Debate/Group Discussion/ Tech quiz	10	20									
7	*Publication of Wall magazine in institutional level (magazine/article /internet)*											
	Editor	10	20									
	Writer	6	12									
8	Publication in News Paper, Magazine & Blogs	10	20									
9	Research Publication (per publication)	15	30									
10	Innovative Projects (other than course curriculum)	30	60									
11	Blood donation	8	16									
	Blood donation camp Organization	10	20									

Record of Activities for Mandatory Additional Requirement (Contd.)

Sl No	Activity	Points	Max. Points Allowed	Points Earned								
				Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
12	*Participation in Sports/Games*											
	College level University	5	10									
	Level District Level State	10	20									
	Level National/International	12	24									
	Level	15	30									
		20	20									
13	Cultural Programme (Dance, Drama, Elocution, Music etc.)	10	20									
14	Member of Professional Society	10	20									
15	Student Chapter	10	20									
16	Relevant Industry Visit & Report	10	20									
17	Photography activities in different Club(Photography club, Cine Club, Gitisansad)	5	10									
18	Participation in Yoga Camp (Certificate to be submitted)	5	10									
19	Self-Entrepreneurship Programme	20	20									
20	Adventure Sports with Certification	10	20									
21	Training to under privileged / Differently abled	15	30									
22	Community Service & Allied Activities	10	20									
Total Points												
Signature of Mentor												
Signature of HoD												