MCKV INSTITUTE OF ENGINEERING
NAAC Accredited "A" Grade Autonomous Institute under UGC Act 1956
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Curriculum for Undergraduate Degree (B.Tech.) in Computer Science and Engineering (Data Science) (w.e.f. AY: 2020-21)

Part I: Introduction, Theme & Category wise Credit Distribution

A. Definition of Credit:

Sl. No.	Description	Credit
1	1 Hr. Lecture (L) Per Week	1.0
2	1 Hr. Tutorial (T) Per Week	1.0
3	1 Hr. Practical/ Lab (P) Per Week	0.5
4	2 Hrs. Practical/ Lab (P) Per Week	1.0

B. Range of Credits:

As per AICTE, a student covering 160 credits during 4 years of studies as per curriculum of the Institute will be eligible to get Under Graduate B.Tech. degree. A student will be eligible to get B.Tech. degree with Honours, if he/ she completes an additional 20 credits. These could be acquired through MOOCs prescribed by the Institute. Every student admitted to the 4 years B.Tech programme is required to earn a minimum of 100 Activity Points under Mandatory Additional Requirement (MAR), in addition to the required academic grades, for getting B.Tech./ B.Tech. (Honours) degree.

C. Category wise Credit Distribution:

Sl. No.	Category	Credit Allotted	Credit as per AICTE
1	Humanities and Social Sciences including Management Courses	11	12
2	Basic Science Courses	27	25
3	Engineering Science Courses including Workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.	23.5	24
4	Professional Core Courses	53.5	48
5	Professional Elective Courses relevant to chosen specialization/ branch	18	18
6	Open Elective Courses from other technical and / or emerging subjects	12	18
7	Project Work, Seminar and Internship in Industry or elsewhere	15	15
8	Mandatory Courses [Environmental Sciences, Induction Training, Indian Constitution, Essence of Indian Traditional Knowledge, Aptitude Skill]	0	Non-Credit
Total		160	160

D. Course Code and Definition:

Sl. No.	Course Code	Definitions
1	L	Lecture
2	T	Tutorial
3	P	Practical
4	BS	Basic Science Courses
5	ES	Engineering Science Courses
6	HM	Humanities and Social Sciences including Management Courses
7	PC	Professional Core Courses
8	PE	Professional Elective Courses
9	OE	Open Elective Courses
10	MC	Mandatory Courses
11	PW	Project/ Internships/ Sessional

E. Courses in different Category:

Humanities and Social Sciences including Management Courses							
Sl No.	**Semester**	**Course Code**	**Course Name**	**Contact Hours**			**Credits**
				L	**T**	**P**	
Theory							
1	II	HM-HU201	English	2	0	0	2
2	III	HM-HU301	Introduction to Industrial Management	2	0	0	2
3	IV	HM-HU501	Economics for Engineers	3	0	0	3
4	VIII	HM-HU802	Professional Ethics and Project Management	2	0	0	2
Total Theory				**9**	**0**	**0**	**9**
Practical/ Sessional							
1	I	HM-HU191	Language Laboratory	0	0	2	1
2	V	HM-HU591	Soft Skill Development Lab	0	0	2	1
Total Practical/ Sessional				**0**	**0**	**4**	**2**
Total				**9**	**0**	**4**	**11**

Basic Science Courses							
Sl No.	**Semester**	**Course Code**	**Course Name**	**Contact Hours**			**Credits**
				L	**T**	**P**	
Theory							
1	I	BS-CH101	Chemistry	3	1	0	4
2	I	BS-M101	Mathematics-I	3	1	0	4
3	II	BS-PH201	Physics	3	1	0	4
4	II	BS-M201	Mathematics-II	3	1	0	4
5	III	BS-M301	Mathematics-III	3	0	0	3
6	III	BS-BIO301	Biology	2	0	0	2
7	IV	BS-M404	Numerical Methods	2	0	0	2
Total Theory				**19**	**4**	**0**	**23**
Practical/ Sessional							
1	I	BS-CH191	Chemistry Laboratory	0	0	3	1.5
2	II	BS-PH291	Physics Laboratory	0	0	3	1.5
3	IV	BS-M494	Numerical Methods Lab	0	0	2	1
Total Practical/ Sessional				**0**	**0**	**8**	**4**
Total				**19**	**4**	**8**	**27**

Engineering Science Courses including Workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.							
Sl No.	**Semester**	**Course Code**	**Course Name**	**Contact Hours**			**Credits**
				L	**T**	**P**	
Theory							
1	I	ES-CS101	Programming for Problem Solving	3	0	0	3
2	II	ES-EE201	Basic Electrical and Electronics Engineering			0	4
3	III	ES-EC(D)301	Communication Engineering	2	0	0	2
4	III	ES-EC302	Digital Electronics	3	0	0	3
Total Theory				**11**	**1**	**0**	**12**
Practical/ Sessional							
1	I	ES-CS191	Programming for Problem Solving Laboratory	0	0	4	2
2	I	ES-ME192	Workshop/Manufacturing Practices	1	0	4	3
3	II	ES-EE291	Basic Electrical and Electronics Engineering Laboratory	0	0	4	2
4	II	ES-ME291	Engineering Graphics & Design	1	0	4	3
5	III	ES-EC392	Digital Electronics Lab	0	0	3	1.5
Total Practical/ Sessional				**2**	**0**	**19**	**11.5**
Total				**14**	**0**	**19**	**23.5**

Professional Core Courses							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	III	PC-CS301	Data Structures and Algorithms	3	0	0	3
2	IV	PC-CS(D)401	Computer Organization and Architecture	3	0	0	3
3	IV	PC-CS402	Operating System	3	0	0	3
4	IV	PC-CS403	Design and Analysis of Algorithm	3	0	0	3
5	IV	PC-CS402	Discrete Mathematics	3	0	0	3
6	V	PC-CS(D)501	Machine Learning	3	0	0	3
7	V	PC-CS502	Object-Oriented Programming	3	0	0	3
8	V	PC-CS503	Formal Language and Automata Theory	3	0	0	3
9	V	PC-CS(D)504	Introduction to Data Science	2	0	0	2
10	VI	PC-CS601	Compiler Design	3	0	0	3
11	VI	PC-CS602	Database Management System	3	0	0	3
12	VI	PC-CS603	Computer Networks	3	0	0	3
13	VI	PC-CS(D)604	High-Performance Computing	3	0	0	3
Total Theory				**38**	**0**	**0**	**38**
Practical/ Sessional							
1	III	PC-CS391	Data Structures and Algorithms Lab	0	0	3	1.5
2	III	PC-CS392	IT Workshop (Using Python) Lab	0	0	3	1.5
3	IV	PC-CS(D)491	Computer Organization and Architecture Lab	0	0	3	1.5
4	IV	PC-CS492	Operating System Lab	0	0	3	1.5
5	IV	PC-CS493	Design and Analysis of Algorithm Lab	0	0	3	1.5
6	V	PC-CS(D)591	Machine Learning Lab	0	0	3	1.5
7	V	PC-CS592	Object-Oriented Programming Lab	0	0	3	1.5
8	V	PC-CS593	Introduction to R Programming Lab	0	0	2	1
9	VI	PC-CS692	Database Management System Lab	0	0	3	1.5
10	VI	PC-CS693	Computer Networks Lab	0	0	3	1.5
11	VI	PC-CS694	Software Development and IT Operations Lab	0	0	2	1
Total Practical/ Sessional				**0**	**0**	**31**	**15.5**
Total				**38**	**0**	**31**	**53.5**

Professional Elective Courses relevant to chosen specialization/ branch							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	V	PE-CS501	Professional Elective-I	3	0	0	3
2	VI	PE-CS601	Professional Elective-II	3	0	0	3
3	VI	PE-CS602	Professional Elective-III	3	0	0	3
4	VII	PE-CS701	Professional Elective-IV	3	0	0	3
5	VII	PE-CS702	Professional Elective-V	3	0	0	3
6	VIII	PE-CS801	Professional Elective-VI	3	0	0	3
Total Theory				**18**	**0**	**0**	**18**
Practical/ Sessional							
Total Practical/ Sessional				**0**	**0**	**0**	**0**
Total				**18**	**0**	**0**	**18**

Open Elective Courses from other technical and/ or emerging subjects							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	VII	OE-701	Open Elective-I	3	0	0	3
2	VII	OE-701	Open Elective-II	3	0	0	3
3	VIII	OE-801	Open Elective-III	3	0	0	3
4	VIII	OE-801	Open Elective-IV	3	0	0	3
Total Theory				**12**	**0**	**0**	**12**
Practical/ Sessional							
Total Practical/ Sessional				**0**	**0**	**0**	**0**
Total				**12**	**0**	**0**	**12**

Project Work, Seminar and Internship in Industry or elsewhere							
Sl No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
Total Theory				**0**	**0**	**0**	**0**
Practical/ Sessional							
1	VI	PW-CS681	Project-I	0	0	6	3
2	VII	PW-CS781	Project-II	0	0	8	4
3	VII	PW-CS782	Summer Internship	0	0	4	2
4	VIII	PW-CS881	Project-III	0	0	12	6
Total Practical/ Sessional				**0**	**0**	**30**	**15**
Total				**0**	**0**	**30**	**15**

Mandatory Courses [Environmental Sciences, Induction Training, Indian Constitution, Essence of Indian Traditional Knowledge, Aptitude Skill]							
Sl No.	**Semester**	**Course Code**	**Course Name**	**Contact Hours**			**Credits**
				L	**T**	**P**	
Theory							
Total Theory				**0**	**0**	**0**	**0**
Practical/ Sessional							
1	III	MC371	Environmental Sciences	2	0	0	0
2	IV	MC472	Constitution of India	2	0	0	0
3	V	MC571	Aptitude Skill Development-I	2	0	0	0
4	VI	MC671	Aptitude Skill Development-II	2	0	0	0
Total Practical/ Sessional				**8**	**0**	**0**	**0**
Total				**8**	**0**	**0**	**0**