IIT Mandi B. Tech Curriculum

IIT Mandi

July 26, 2024

The Curriculums are wef B. Tech 2022 and 2023 Batches. Old curriculum, which is till B. Tech 2021 batches are at the end.

Bachelor of Science - Chemical Sciences

Table 1: BS-CS Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	31
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	59
	Discipline Electives	23
Free Electives	Free Electives	15
Research Projects	Research Projects	14
	Total	163

Table 2: BS Chemical Sciences Core Courses

Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Physical Chemistry		3
2		Basic Organic Chemistry		3
3		Principles of Inorganic Chemistry		3
4		Physical Chemistry Lab		2
5		Physical Chemistry (Quantum and Spec.)		3
6		Analytical Chemistry		3
7		Organic Chemistry Lab		2
8		Inorganic Chemistry Lab		2
9		Organic Reactions and Mechanisms		3

10		Chemistry of Main Group Elements		3
11		Advanced Quantum Chemistry		3
12		Physical Chemistry Laboratory		3
13		Inorganic Chemistry Laboratory		3
14		Photochemistry and Pericyclic Reactions		3
15		Chemistry of Transition Elements		3
16		Symmetry and Group Theory		3
17		Organic Chemistry Laboratory		3
18		Chemical and Statistical Thermodynamics		3
19		Introduction Organometallic Chemistry		3
20		Reaction Dynamics, Kinetics and Catalysis		3
21		Heterocyclic Chemistry		2
		Total		59

Table 3: BS-CS First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1(Chemistry Compulsion)	3	3
6		HSS Course	3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 4: BS-CS Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8		IC II Basket-2	3	
		Total		22

Table 5: BS-CS Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 136	Undersanding Biotechnology and its Applications (IC-1)	3-0-0-3	3
2		Physical Chemistry		3
3		Basic Organic Chemistry		3
4		Principles of Inorganic Chemistry		3
5		Discipline Elective-1		3
6		Physical Chemistry Lab		2
		HSS Course		3
		Total		20

Table 6: BS-CS Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Discipline Elective-2		2
2		Physical Chemistry (Quantum and Spec.)		3
3		Analytical Chemistry		3
4		Discipline Elective-3		3
5		Organic Chemistry Lab		2
6		Inorganic Chemistry Lab		2
7		HSS Course		3
8		Free Elective - 1		3
		Total		21

Table 7: BS-CS Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Organic Reactions and Mechanisms		3
2		Chemistry of Main Group Elements		3
3		Advanced Quantum Chemistry		3
4		Discipline Elective - 4		3
5		Physical Chemistry Laboratory		3
6		Inorganic Chemistry Laboratory		3
7		Research Literature Presentation - 1(Pass/Fail)		1
		Total		19

Table 8: BS-CS Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Photochemistry and Pericyclic Reactions		3
2		Chemistry of Transition Elements		3
3		Symmetry and Group Theory		3
4		Discipline Elective - 5		3
5		Discipline Elective - 6		3
6		Organic Chemistry Laboratory		3
7		Research Literature Presentation - 2(Pass/Fail)		1
		Total		19

Table 9: BS-CS Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Discipline Elective - 7		3
2		Chemical and Statistical Thermodynamics		3
3		Introduction Organometallic Chemistry		3
4		Free Elective - 2		3
5		Free Elective - 3		3
6		Undergraduate Research Project - 1		6
		Total		21

Table 10: BS-CS Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Reaction Dynamics, Kinetics and Catalysis		3
2		Heterocyclic Chemistry		2
3		Discipline Elective - 8		3
4		Free Elective - 4		3
5		Free Elective - 5		3
6		Undergraduate Research Project - 2		6
		Total		20

BS-CS Discipline Elective Courses

Table 11: BS CS Discipline Elective Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**
1	CY241	Nanoscale Science and Technology	
2	CY342	Nanoscience: Understanding Small Systems	
3	CY344	Food Chemistry Processing: Preservation and Storage	
4	CY515	Advanced Inorganic Spectroscopy	
5	CY522	Computational Chemistry	
6	CY540	Bioinspired Materials	
7	CY541	Fundamentals of Organic Chemistry	
8	CY547	Chemical Crystallography	
9	CY552	Hydrogen Generation and Storage	
10	CY554	Science and Technology of Nanomaterials	
11	CY555	Introduction to Polymer Science & Technology	
12	CY556	Organic Spectroscopy	
13	CY641	Polymer Synthesis	
14	CY642	Molecular and Bio-electronics	
15	CY643	Advanced Analytical Techniques	
16	CY644	Bioinorganic Chemistry	
17	CY645	Reagents in Organic Synthesis	
18	CY670	Fluorescence Spectroscopy, Microscopy and Applications	

Table 11 continued from previous page

19	CYXXX	Numerical Methods, Basic Computer Programming and Data Analysis in Chemistry	
20	CYXXX	Applied Polymer and Materials Chemistry	

Bachelor of Technology - Bio Engineering

Table 12: B. Tech Bio Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	42
	Discipline Electives	24
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 13: Bio Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BE308	Introduction to Biomanufacturing	3-0-2-4	4
2	BE201	Cell Biology	3-0-2-4	4
3	BE202	Biochemistry and Molecular Biology	3-0-2-4	4
4	BE309	Biosensing & Bioinstrumentation	3-0-2-4	4
5	BE301	Biomechanics	3-0-2-4	4
6	BE203	Enzymology and Bioprocessing	3-0-2-4	4
7	BE304	Bioinformatics	3-0-2-4	4
8	BE306	Genetic Engineering: Principles and Applications	3-1-0-4	4
9	BE310	Biomaterials	3-0-2-4	4
10	BE303	Applied Biostatistics	3-0-2-4	4
11	BE305	Bioethics & Regulatory Affairs	2-0-0-1	1
12	BE101P	Reverse Engineering for Bioengineers	0-0-2-1	1
		Total		42

Table 14: B. Tech Bio Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics for Design	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5	IC 136	Understanding Biotechnology and its Applications (IC Basket – 1)	3-0-0-3	3
6	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		18

Table 15: B. Tech Bio Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronic	s 3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8	IC 241	Materials Science for Engineers (IC Basket-2)	1.5-1.5-0-3	3
		Total		22

Table 16: B. Tech Bio Engineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BE308	Introduction to Biomanufacturing	3-0-2-4	4
2	IC272	Machine Learning	2-0-2-3	3
3	BE201	Cell Biology	3-0-2-4	4
4	BE202	Biochemistry and Molecular Biology	3-0-2-4	4
5	BE309	Biosensing & Bioinstrumentation	3-0-2-4	4
6	HSXXX	HSS Course	3-0-0-3	3
		Total		22

Table 17: B. Tech Bio Engineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	BE301	Biomechanics	3-0-2-4	4
3	BE203	Enzymology and Bioprocessing	3-0-2-4	4
4	BE304	Bioinformatics	3-0-2-4	4
5	HSXXX	HSS Course	3-0-0-3	3
6	FE-1	Free Elective	3-0-0-3	3
		Total		21

Table 18: B. Tech Bio Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BE306	Genetic Engineering: Principles and Applications	3-1-0-4	4
2	BE310	Biomaterials	3-0-2-4	4
3	BE303	Applied Biostatistics	3-0-2-4	4
4	BE305	Bioethics & Regulatory Affairs	2-0-0-1	1
5	DE-1	Discipline Elective	3-0-0-3	3
6	HSXXX	HSS Course	3-0-0-3	3
		Total		19

Table 19: B. Tech Bio Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BE101P	Reverse Engineering for Bioengineers	0-0-2-1	1
2	DE-2	Discipline Elective	3-0-0-3	3
3	DE-3	Discipline Elective	3-0-0-3	3
4	DE-4	Discipline Elective	3-0-0-3	3
5	DE-5	Discipline Elective	3-0-0-3	3
6	FE-2	Free Elective	3-0-0-3	3
7	DP301P	ISTP	0-0-6-4	4
		Total		20

Table 20: B. Tech Bio Engineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE-6	Discipline Elective	3-0-0-3	3
2	DE-7	Discipline Elective	3-0-0-3	3
3	FE-3	Free Elective	3-0-0-3	3
4	FE-4	Free Elective	3-0-0-3	3
5	FE-5	Free Elective	1-0-0-1	1
6	MTP-1	MTP-1	0-0-4.5-3	3
		Total		16

Table 21: B. Tech Bio Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE-8	Discipline Elective	3-0-0-3	3
2	FE-6	Free Elective	3-0-0-3	3
3	FE-7	Free Elective	3-0-0-3	3
4	FE-8	Free Elective	3-0-0-3	3
5	HSXXX	HSS Course	3-0-0-3	3
6	MTP-2	MTP-2	0-0-7.5-5	5
	IC010	Internship		2
		Total		22

Bachelor of Technology - Civil Engineering

Table 22: B. Tech Civil Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	49
	Discipline Electives	17
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 23: Civil Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CE201	Surveying Traditional and Digital	2-0-4-4	
2	CE251#	Hydraulics Engineering	3-0-0-3	
3	CE252	Geology and Geomorphology	2-0-2-3	
4	CE202*	Introduction to Civil Engineering Profession	1-0-0-1	
5	CE203*	Construction Materials	3-0-0-3	
6	CE203P*	Building Materials Lab	0-0-2-1	
7	CE301#	Strength of Materials and Structures	3-0-0-3	
8	CE301P#	Strength of Materials and Structures Lab	0-0-2-1	
9	CE302#	Geotechnical Engineering I	3-0-0-3	
10	CE302P#	Geotechnical Engineering Lab	0-0-2-1	
11	CE303#	Water Resources Engineering	3-0-0-3	
12	CE304P	Hydraulics Engineering Lab	0-0-2-1	
13	CE305P#	Environmental Engineering Lab	0-0-2-1	
14	CE351	Design of Reinforced Concrete Structures	2-1-0-3	
15	CE352	Transportation Engineering	3-0-0-3	
16	CE352P*	Transporting Engineering Lab	0-0-2-1	
17	CE353P	Civil Engineering Drawing	0-0-2-1	
18	CE403#	Water and Wastewater Engineering	3-0-0-3	
19	CE401	Design of Steel Structures	2-1-0-3	
20	CE402	Geotechnical Engineering II	3-0-0-3	
21	CE404	Analysis of Structures	3-0-0-3	

22	CEXXX	Reverse Engineering	0-0-2-1	
		Total		49

Table 24: B. Tech Bio Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics for Design	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5	IC 230	Enviromental Science (IC Core Basket-1)	3-0-0-3	3
6		HSS Course	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 25: B. Tech Civil Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8	IC 240	Rigid Body Mechanics (IC II Basket-2)	1.5-1.5-0-3	3
		Total		22

Table 26: B. Tech Civil Engineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	2-0-2-3	3
2	IC202P	Design Practicum	0-0-6-3	3
3	CE202	Introduction to Civil Engineering	1-0-0-1	1
4	CE252	Geology and Geomorphology	2-0-2-3	3
5	CE203	Construction Materials	3-0-0-3	3
6	CE203P	Building Materials Lab	0-0-2-1	1
7	CE301	Strength of Materials and Structures	2-1-0-3	3
8	CE301P	Strength of Materials and Structures Lab	0-0-2-1	1
9		HSS Course		3
		Total		21

Table 27: B. Tech Civil Engineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CE201	Surveying Traditional and Digital	2-0-3-4	4
2	CE251	Hydraulics Engineering	3-0-0-3	3
3	CE302	Geotechnical Engineering I	3-0-0-3	3
4	CE302P	Geotechnical Engineering Lab	0-0-2-1	1
5	CE304P	Hydraulics Engineering Lab	0-0-2-1	1
6	CE404	Analysis of Structures	3-0-0-3	3
7	FE-1	Free Elective	3	3
8	HSXXX	HSS Course	3-0-0-3	3
		Total		21

Table 28: B. Tech Civil Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CE303	Water Resources Engineering	3-0-0-3	3
2	CE 351	Design of Reinforced Concrete Structures	2-1-0-3	3
3	CE352	Transportation Engineering	3-0-0-3	3
4	CE352P	Transporting Engineering Lab	0-0-2-1	1
5	CE353P	Civil Engineering Drawing	0-0-2-1	1
6	CE402	Geotechnical Engineering II	3-0-0-3	3
7	FE-2	Free Elective	3	
8	HSXXX	HSS Course	3-0-0-3	3
		Total		20

Table 29: B. Tech Civil Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CE305P	Environmental Engineering Lab	0-0-2-1	1
2	CE401	Design of Steel Structures	2-1-0-3	3
3	CE403	Water and Wastewater Engineering	3-0-0-3	3
4	CEXXX	Reverse Engineering	1	1
5	DE-1	Discipline Elective		3
6	DE-2	Discipline Elective		3
7	FE-3	Free Elective		3
8	FE-4	Free Elective		3
		Total		20

Table 30: B. Tech Civil Engineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	Discipline Elective	3	3	
2	Discipline Elective	3	3	
3	Free Elective	3	3	
4	Free Elective	3	3	
5	DP 401	Major Technical Project	0-0-4.5-3	3
6	DP 301	ISTP	0-0-6-4	4
		Total		19

Table 31: B. Tech Civil Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Discipline Elective	3	3
2		Discipline Elective	2	2
3		Free Elective	3	3
4		Free Elective	1	1
5		Major Technical Project	0-0-7.5-2	5
6	IC 010	Inetrnship		2
		Total		19

Bachelor of Technology - Computer Science and Engineering

Table 32: B. Tech Computer Science and Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	38
	Discipline Electives	28
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 33: Computer Science and Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CS 213	Reverse Engineering	0-0-2-1 1	
2	CS 208	Mathematical Foundation of Computer Sciences	3-1-0-4	4
3	CS 212	Design of Algorithms	3-0-2-4	4
4	CS 214	Computer Organization	3-0-2-4	4
5	CS 304	Formal Languages and Automata Theory	3-0-0-3	3
6	CS 309	Information Systems and Databases	3-0-2-4	4
7	CSXXX	Software Engineering	3-0-2-4	4
8	CS 312	Operating Systems	3-0-2-4	4
9	CS 313	Computer Networks	3-0-2-4	4
10	CSXXX	Artificial Intellegence	3-0-0-3	3
11	CS 302	Paradigms of Programming	3-0-2-4	4

Table 34: B. Tech Computer Science and Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2 2	
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1		3
6		HSS Course		3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 35: B. Tech Computer Science and Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8	IC XXX	Programming and Data Structures (IC Core Basket-II)	2.5-0.5-0-3	3
		Total		22

Table 36: B. Tech Computer Science and Engineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	2-0-2-3	3
2	CS 213	Reverse Engineering	0-0-2-1	1
3	CS 208	Mathematical Foundation of Computer Sciences	3-1-0-4	4
4	CS 212	Design of Algorithms	3-0-2-4	4
5	CS 214	Computer Organization	3-0-2-4	4
6	HSS Course	3-0-0-3	3	
		Total		19

Table 37: B. Tech Computer Science and Engineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	CS 304	Formal Languages and Automata Theory	3-0-0-3	3
3	CS 309	Information Systems and Databases	3-0-2-4	4
4	CSXXX	Software Engineering	3-0-2-4	4
5		Discipline Elective	3-0-0-3	3
		Total		17

Table 38: B. Tech Computer Science and Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CS 312	Operating Systems	3-0-2-4	4
2	CS 313	Computer Networks	3-0-2-4	4
3	CSXXX	Artificial Intellegence	3-0-0-3	3
4	DE-2	Discipline Elective - 2	x-x-x-4	4
5		Free Elective - 1	x-x-x-4	4
		Total		19

Table 39: B. Tech Computer Science and Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CS 302	Paradigms of Programming	3-0-2-4	4
2	DE - 3	Discipline Elective - 3	x-x-x-4	4
3	DE - 4	Discipline Elective - 4	x-x-x-4	4
4	FE - 2	Free Elective - 2	x-x-x-4	4
5	FE - 3	Free Elective - 3	x-x-x-4	4
6	ISTP	ISTP	0-0-6-4	4
		Total		24

Table 40: B. Tech Computer Science and Engineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE - 5	Discipline Elective - 5	x-x-x-4	4
2	DE - 6	Discipline Elective - 6	x-x-x-4	4
3	FE - 4	Free Elective - 4	x-x-x-4	4
4	FE - 5	Free Elective - 5	x-x-x-4	4
5	MTP-1	MTP-1	0-0-4.5-3	3
		Total		19

Table 41: B. Tech Computer Science and Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE - 7	Discipline Elective - 7	x-x-x-4	4
2	DE - 8	Discipline Elective - 8	x-x-x-4	4
3	FE - 4	Free Elective - 4	x-x-x-4	4
4	MTP-2	MTP-2	0-0-7.5-5	5
5	IC 010	Internship	2	2
		Total		19

Discipline Elective Courses

Table 42: Computer Science and Engineering Discipline Elective Courses

Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CS 303	Software Engineering	2-0-2-3	3
2	CS 451	Computer Graphics and Game Design	2-0-2-3	3
3	CS 456	Distributed Databases	3-0-0-3	3
4	CS 507	Computer Architecture	3-0-2-4	4
5	CS 508	Introduction to Heterogeneous Computing	2-0-0-2	2
6	CS 514	Data Structures and Algorithms-II	3-0-2-4	4
7	CS 522	Distributed Algorithms	3-0-0-3	3
8	CS 523	Verification of Reactive Systems	3-0-0-3	3
9	CS 541P	IoT Systems and the Cloud	3-0-2-4	4
10	CS 542	Design Patterns for Scalable Systems		
11	CS 544	Formal Concept Analysis: Theory and Practice	2-0-0-2	2
12	CS 545	Software Design pattern	3-0-0-3	3
13	CS 546	Design of Concurrent Software	3-0-0-3	3
14	CS 549	Performance Analysis of Computer Networks	3-0-0-3	3
15	CS 550	Computer Graphics and Geometric Design	3-0-0-3	3
16	CS 561	Map Reduce and Big Data	3-0-0-3	3
17	CS 563	Scalable Data Science	3-1-0-4	4
18	CS 606	Computational Modeling of Social Systems	3-0-0-3	3
19	CS 609	Speech Processing	3-0-2-4	4
20	CS 611	Program Analysis	3-1-0-4	4
21	CS 660	Data Mining for Decision Making	3-0-0-3	3

22	CS 662	Mobile Virtual Reality and Artificial Intellegence	3-0-0-3	3
23	CS 669	Pattern Recognition	3-1-0-4	4
24	CS 670	Kernel Methods forPattern Recognition	4-0-0-4	4
25	CS 671	Deep Learning and Applications	3-0-1-4	4
26	DS 201	Data Handling and Visualization	2-0-2-3	3
27	DS 301	Mathematical Foundationso f Data Science	3-1-0-4	4
28	DS 303	Statistical Foundations of Data Science	3-0-0-3	3
29	DS 401	Optimization for Data Science	3-0-0-3	3
30	DS 403	Introduction Statistical Learning	3-0-2-4	4

Bachelor of Technology - Data Science and Engineering

Table 43: B. Tech Data Science and Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	39
	Discipline Electives	27
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 44: Data Science and Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ICxxx	Data Structures and Algorithms	0-0-2-1	1
2	DS301	Mathematical Foundations of Data Science	3-1-0-4	4
3	DS201	Data handling and visualization	2-0-2-3	3
4	CS214	Computer Organization	3-0-2-4	4
5	DS411	Optimization for Data Science	3-1-0-4	4
6	DS313	Statistical Foundations of Data Science	3-0-2-4	4
7	DS412	Matrix Computations for Data Science	3-0-2-4	4
8	DS413	Introduction to Statistical Learning	3-0-2-4	4
9	CSXXX	Artificial Intelligence	3-0-0-3	3
10	DS404	Information Security and Privacy	3-0-0-3	3
11	DS302	Computing Systems for Data Processing	3-0-2-4	4
		Total		38

Table 45: B. Tech Data Science and Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1		3
6		HSS Course		3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 46: B. Tech Data Science and Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8	IC XXX	Data Structures and Algorithms	2.5-0.5-0-3	3
		Total		22

Table 47: B. Tech Data Science and Engineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC272	Machine Learning	3-0-0-3	3
2	ICxxx	Data Structures and Algorithms	0-0-2-1	1
3	DS301	Mathematical Foundations of Data Science	3-1-0-4	4
4	DS201	Data handling and visualization	2-0-2-3	3
5	CS214	Computer Organization	3-0-2-4	4
6	HSXXX	HSS Course x-x-x-3	3	
		Total		18

Table 48: B. Tech Data Science and Engineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	DS411	Optimization for Data Science	3-1-0-4	4
3	DS313	Statistical Foundations of Data Science	3-0-2-4	4
4	DS412	Matrix Computations for Data Science	3-0-2-4	4
5	DE-1	Discipline Elective-1	3-0-0-3	3
		Total		18

Table 49: B. Tech Data Science and Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DS413	Introduction to Statistical Learning	3-0-2-4	4
2	CSXXX	Artificial Intelligence	3-0-0-3	3
3	DE-2	Discipline Elective-2	x-x-x-4	4
4	DE-4	Discipline Elective-4	x-x-x-4	4
5	FE-1	Free Elective-1	x-x-x-4	4
		Total		19

Table 50: B. Tech Data Science and Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DS404	Information Security and Privacy	3-0-0-3	3
2	DS302	Computing Systems for Data Processing	3-0-2-4	4
3	DE-3	Discipline Elective-3	x-x-x-4	4
4	DE-4	Discipline Elective-4	x-x-x-4	4
5	FE-2	Free Elective-2	x-x-x-3	3
6	FE-3	Free Elective-3	x-x-x-3	3
7	ISTP	ISTP/Free elective	x-x-x-4	4
		Total		25

Table 51: B. Tech Data Science and Engineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE-5	Discipline Elective-5	x-x-x-4	4
2	DE-6	Discipline Elective-6	x-x-x-4	4
3	FE-4	Free Elective-4	x-x-x-4	4
4	FE-5	Free Elective-5	x-x-x-4	4
5	MTP-1	MTP-1	0-0-4.5-3	3
		Total		19

Table 52: B. Tech Data Science and Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE-7	Discipline Elective-7	x-x-x-4	4
2	DE-8	Discipline Elective-8	x-x-x-4	4
3	FE-6	Free Elective-6	x-x-x-4	4
4	MTP-2	MTP-2	0-0-7.5-5	5
5	IC 010	Internship	2	2
		Total		19

Bachelor of Technology - Electrical Engineering

Table 53: B. Tech Electrical Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	54
	Discipline Electives	12
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 54: Electrical Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EEXXX	Signals and Systems	2.5-0.5-0-3	3
2	EEXXX/P	Electrical Systems Around Us	3-0-3-5	5
3	EE203	Network Theory	2.5-0.5-0-3	3
4	EEXXX	Device Electronics	3-0-0-3	3
5	EE210/P	Digital System Design	3-0-2-4	4
6	EEXXX	Electromagnetics Theory	3-0-0-3	3
7	EE201/P	Electro-Mechanics	2.5-0.5-2-4	4
8	EE211	Analog Circuit Design	3-0-3-4	4
9	EEXXX	Communication Systems	3-0-2-4	4
10	EEXXXP	Reverse Engineering	0-0-2-1	1
11	EE301/P	Control Systems	3-0-2-4	4
12	EEXXX/P	Power Electronics and Systems	3-0-2-4	4
13	EEXXX	Digital Signal Processing	3-0-0-3	3
14	EEXXX	Computer Organization & Processor Architecture Design	3-0-2-4	4
15	EEXXX	Measurement and Instrumentation	2-0-2-3	3
		Total		52

Table 55: B. Tech ElectricalEngineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5	IC 131	IC Core Basket-1	3	
6		HSS Course	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 56: B. Tech Electrical Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6		IC Core Basket-2	3-0-0-3	3
7	IC 102P	Foundations of Design Practicum	3-0-2-4	4
8	IC 222P	Physics Practicum	0-0-3-2	2
		Total		22

Table 57: B. Tech Electrica lEngineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	3-0-0-3	3
2	EEXXX	Signals and Systems	2.5-0.5-0-3	3
3	EEXXX/P	Electrical Systems Around Us	3-0-3-5	5
4	EE203	Network Theory	2.5-0.5-0-3	3
5	EEXXX	Device Electronics	3-0-0-3	3
6	EE210/P	Digital System Design	3-0-2-4	4
		Total		21

Table 58: B. Tech ElectricalEngineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 201P	Design Practicum	0-0-6-3	3
2	EEXXX	Electromagnetics Theory	3-0-0-3	3
3	EE201/P	Electro-Mechanics	2.5-0.5-2-4	4
4	EE211	Analog Circuit Design	3-0-3-4	4
5	EEXXX	Communication Systems	3-0-2-4	4
6	HSXXX	HSS Course	x-x-x-3	3
7	EEXXXP	Reverse Engineering	0-0-2-1	1
		Total		22

Table 59: B. Tech Electrical Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EE301/P	Control Systems	3-0-2-4 4	
2	EEXXX / P	Power Electronics and Systems	3-0-2-4	4
3	EEXXX	Digital Signal Processing	3-0-0-3	3
4	EEXXX	Computer Organization & Processor Architecture Design	3-0-2-4	4
5	EEXXX	Measurement and Instrumentation	2-0-2-3	3
6	HSXXX	HSS Course	x-x-x-3	3
		Total		21

Table 60: B. Tech Electrical Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP301P / DE-1	ISTP/Discipline Elective - 1	0-0-6-4	4
2	DE-2	Discipline Elective - 2	x-x-x-4	4
3	DE-3	Discipline Elective - 3	x-x-x-4	4
4	FE-1	Free Elective - 1	x-x-x-3	3
5	FE-2	Free Elective - 2	x-x-x-3	3
6	HSXXX	HSS Course	x-x-x-3	3
		Total		21

Table 61: B. Tech ElectricalEngineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401 / DE-4	MTP-1/DE-4	0-0-4.5-3	3
2	DE-4	Discipline Elective - 4	x-x-x-4	4
3	DE-5	Discipline Elective - 5	x-x-x-4	4
4	FE-3	Free Elective - 3	x-x-x-4	4
5	FE-4	Free Elective - 4	x-x-x-4	4
		Total		19

Table 62: B. Tech Electrical Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401 / DE-7	MTP-II/DE-7	0-0-7.5-5	5
2	DE-7	Discipline Elective - 7	x-x-x-4	4
3	FE-5	Free Elective - 5	x-x-x-3	3
4	IC010	Inetrnship	2	
		Total		14

Bachelor of Technology - Engineering Physics

Table 63: B. Tech Engineering Physics Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	37
	Discipline Electives	29
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 64: Engineering Physics Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	PH 301	Quantum Mechanics and Application	3-0-0-3	3
2	EP 301	Engineering Mathematics - 2	3-1-0-4	4
3	EP 321	Foundations of Electrodynamics	3-0-0-3	3
4	EP 403	Physics of Atoms and Molecules	3-0-0-3	3
5	PH 501	Solid State Physics	3-0-0-3	3
6	EP XXX	Reverse Engineering	0-0-2-1	1
7	PH 302	Introduction to Statistical Mechanics	3-0-0-3	3
8	EE XXX	Device Electronics	3-0-0-3	3
9	EP 302	Computational Methods for Engineering	3-0-0-3	3
10	EP 402P	Engineering Physics Practicum	1-0-5-4	4
11	EP 401P	Engineering of Instrumentation	1-0-5-4	4
12	PH 502	Photonics	3-0-0-3	3
		Total Credits		37

Table 65: B. Tech Engineering Physics First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2 2	
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1		3
6		HSS Course		3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 66: B. Tech Engineering Physics Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8	IC XXX	Programming and Data Structures (IC Core Basket-II)	2.5-0.5-0-3	3
		Total		22

Table 67: B. Tech Engineering Physics Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	2-0-2-3	3
2	PH 301	Quantum Mechanics and Application	3-0-0-3	3
3	EP 301	Engineering Mathematics - 2	3-1-0-4	4
4	EP 321	Foundations of Electrodynamics	3-0-0-3	3
5		Discipline Elective - 1	3-0-0-3	3
6		Free Elective - 1	3-0-0-3	3
7		HSS Course	3-0-0-3	3
		Total 22		

Table 68: B. Tech Engineering Physics Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	EP 403	Physics of Atoms and Molecules	3-0-0-3	3
3	PH 501	Solid State Physics	3-0-0-3	3
4	EP XXX	Reverse Engineering	0-0-2-1	1
5		HSS Courses	3-0-0-3	3
6	PH 302	Introduction to Statistical Mechanics	3-0-0-3	3
7		Discipline Elective - 2		3
8		Discipline Elective - 3		3
		Total		22

Table 69: B. Tech Engineering Physics Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EE XXX	Device Electronics	3-0-0-3	3
2	EP 302	Computational Methods for Engineering	3-0-0-3	3
3	EP 402P	Engineering Physics Practicum	1-0-5-4	4
4		Discipline Elective - 4		3
5		Discipline Elective - 5		3
6		Free Elective - 2		3
7		HSS Course		3
		Total		22

Table 70: B. Tech Engineering Physics Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EP 401P	Engineering of Instrumentation	1-0-5-4	4
2	PH 502	Photonics 3-0-0-3	3	
3		Discipline Elective - 6		3
4		Discipline Elective - 7		3
5		Discipline Elective - 8		3
6		Free Elective - 3		3
7	DP 301P	ISTP or equivalent	0-0-6-4	4
		Total		23

Table 71: B. Tech Engineering Physics Seventh Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1		Discipline Elective - 9		3
2		Free Elective - 4		3
3		Free Elective - 5		3
4	DP 401P	MTP-1	0-0-4.5-3	3
		Total		12

Table 72: B. Tech Engineering Physics Eighth Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1		Discipline Elective - 10		3
2		Free Elective - 6		3
3		Free Elective - 7		3
4	DP 402P	MTP-2	0-0-7.5-5	5
5	IC 010	Inetrnship		2
		Total		16

Discipline Elective Courses

Table 73: Engineering Physics Discipline Elective Courses

Sl. No.	Course Code	Course Name	L-T-P-C	Credits
1	PH503	Laser and Applications	3-0-0-3	
2	PH504	Organic Optoelectronics	3-0-0-3	
3	PH507	X-ray as a probe to study the material pro	3-0-0-3	
4	PH508	Magnetism and Magnetic Materials	3-0-0-3	
5	PH601	Mesoscopic Physics and Quantum Trans	3-0-0-3	
6	PH603	Advanced Condensed Matter Physics	3-0-0-3	
7	PH612	Nuclear and Panicle Physics	3-0-0-3	
8	PH613	Social Topics in Quantum Mechanics	3-0-0-3	
9	PH605	Superconductivity	3-0-0-3	
10	PH606	Quantum Field Theory	3-0-0-3	
11	PH604	Optical Properties of Solids	3-0-0-3	
12	PH528	Introduction to General Relativity	3-0-0-3	

13	PH607	Physics of Ultra cold Quantum Gases	3-0-0-3	
14	PH521	Electromagnetic Theory	4-0-0-4	
15	PH608	Computer Assisted quantum mechanics	3-0-0-3	
16	PH609	Theory of quantum collision and spectros	3-0-0-3	
17	MA513	Ordinary Differential Equations	3-1 -0-4	
18	MA522	Partial Differential Equations	3- 1-0-4	
19	MA511	Real Analysis	3- 1-0-4	
20	MA521	Functional Analysis	3-1-0-4	
21	MA512	Linear Algebra	3-1-0-4	
22	EE614	Optical communication systems	3-0-0-3	
23	EE611	VLSI Technology	3-0-0-3	
24	EE520	Microelectronics Devices and Modelling	3-0-0-3	
25	EE307	Theory of Measurement	3-0-0-3	
26	EE621	Radiating Systems	3-0-0-3	
27	EE551	Applied Photonics for Scientists and Eng1	2-1 -0 -3	
28	CS241	Introduction to Cryptography	3-0-0-3	
29	CS208	Mathematical Foundations of Computer	3-0-0-3	
30	CS202	Data Structures and Algorithms	3-0-0-3	
31	CS403	Algorithm Design and Analysis	3-0-0-3	
32	ME307	Energy Conversion Devices	3-0-0-3	
33	ME615	Applied Computational Fluid Dynamics	3-0-0-3	
34	ME210	Fluid Mechanics	3-0-0-3	
35	ME509	Nano Manufacturing	3-0-0-3	
36	ME603	Advanced Fluid Mechanics	3-0-0-3	
37	PH701	Introduction to molecular simulations	2-0-4-4	
38	PH706	Introduction to stochastic problems in ph	3-0-0-3	
39	PH621	Computational Methods for Physicists	2-0-4-4	
40	EP502	Informatics for Material Design	2-0-2-3	
41	MA516	Topology	3-1-0-4	
42	EN502	Emerging energy sources	3-0-0-3	
43	DS201	Data Handling and Visualization	2-0-2-3	
44	DS404	Information Security and Privacy	3-0-0-3	
45	CS309	Information and Database Systems	3-0-2-4	
46	CS671	Deep Learning and Applications	3-1-0-4	
47	CS672	Advanced Topics in Deep Learning	3-0-2-4	
48	EE203	Network theory	3-0-0-3	
49	EE512	CMOS Analog IC Design	3-0-2-4	

50	DS301	Mathematical Foundations of Data Science	3-1-0-4	
51	DS403	Introduction to Statistical Learning	2-0-2-3	
52	CS511	Introduction to Probability	2-0-0-2	
53	ME303	Heat Transfer	2.5-0.5-0-3	
54	MA560	Nonlinear Dynamics and Chaos	3-0-0-3	
55	ME210	Fluid Mechanics	2.5-0.5-0-3	
56	DS401	Optimization for Data Science	3-0-0-3	
57	CS304	Formal Language and Automata Theory	3-0-0-3	
58	EE211	Analog Circuit Design	2-0-2-3	
59	EE511	Computer Vision	3-0-2-4	
60	EE519P	CMOS Digital IC Design Practicum	1-0-2-2	
61	EE524	Digital MOS LSI Circuits	3-0-0-3	
62	EE534	Probability and Random Processes	3-0-0-3	
63	EE593	Low power VLSI Design	3-0-0-3	

Bachelor of Technology - General Engineering

Will be updated soon.

Bachelor of Technology - Materials Science and Engineering

Table 74: B. Tech Materials Science and Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	45
	Discipline Electives	21
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 75: Materials Science and Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Physics of Solids		
2		Materials Synthesis and Characterization		2+2
3		Phase Transformations		
4		Thermodynamics and Kinetics of Materials		
5		Durability Behaviour of Materials		2+1
6		Quantum Mechanics and Applcations		
7		Functional Properties of Materials		2+2
8		Extraction and Materials Processing		2+2
9		Mechanics of Solids		
10		Tranport Phenomena		
11		Computational Materials Science		2+2
12		Product Realization Technology		2+2
13		Materials Science for Engineers		3
14		Reverse Engineering		1
		Total		

Table 76: B. Tech Materials Science and Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5	IC 131	Applied Chemistry for Engineers (Basket-1)	2-0-2-3	3
6	IC 241	Materials Science for Engineers (Basket-2)	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 77: B. Tech Materials Science and Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8		HSS Course	3-0-0-3	3
		Total		22

Table 78: B. Tech Electrica lEngineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 202P	Design Practicum	0-0-6-3	3
2	IC 272	Machine Learning	2-0-2-3	3
3	IC 240	Mechanics of Rigid Bodies (Basket-2)	1.5-1.5-0-3	3
4		Physics of Solids	3-0-0-3	3
5		Quantum Mechanics and Applications	3-0-0-3	3
6		Materials Synthesis and Characterization	3-0-2-4	4
7		HSS Course	3-0-0-3	3
		Total		22

Table 79: B. Tech ElectricalEngineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ME 206	Mechanics of Solids	3-0-0-3	3
2		Thermodynamics and Kinetics of Materials	3-0-0-3	3
3		Functional Properties of Materials	3-0-2-4	4
4		Extraction and Materials Processing	3-0-2-4	4
5		HSS Course	3-0-0-3	3
6		Discipline Elective - 1		3
7		Free Elective - 1		2
		Total		22

Table 80: B. Tech Materials Science and Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Phase Transformations	3-0-0-3	3
2		Transport Phenomena	3-0-0-3	3
3		Computational Materials Science	3-0-2-4	4
4		Durability Behaviour of Materials	3-0-2-4	4
5		Discipline Elective - 2		3
6		Discipline Elective - 3		3
7		Free Elective - 2		2
		Total		22

Table 81: B. Tech Materials Science and Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Product Realization Technology	3-0-2-4	4
2		Discipline Elective - 4	3-0-0-3	3
3		Discipline Elective - 5	3-0-0-3	3
4		Free Elective - 3	3-0-0-3	3
5		HSS Course	3-0-0-3	3
6		ISTP	0-0-6-4	4
		Total		20

Table 82: B. Tech Materials Science and Engineering Seventh Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1		Discipline Elective -6	3-0-0-3	3
2		Free Elective - 4	3-0-0-3	3
3		Free Elective - 5	3-0-0-3	3
4		MTP-1	0-0-4.5-3	3
		Total		12

Table 83: B. Tech Materials Science and Engineering Eighth Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1		Discipline Elective - 7	3-0-0-3	3
2		Free Elective - 6	3-0-0-3	3
3		Free Elective - 7	3-0-0-3	3
4		Free Elective - 8	3-0-0-3	3
5		MTP-2	0-0-7.5-5	5
6		Internship		2
		Total		19

Materials Science and Engineering - Discipline Electives

Table 84: Engineering Physics Discipline Electives

Sl. No	Course Code	Course Name	L-T-P-C
1		Smart Materials and Actuators	
2		Biomaterials	
3		Thin Film Technology	
4		Carbon Materials	
5		Ancient Materials	
6		Structural Materials	

Bachelor of Technology - Maths and Computing

Table 85: B. Tech Maths and Computing Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	51
	Discipline Electives	15
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 86: Maths and Computing Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	MAXXX	Real and Complex Analysis	2.5-0.5-0-3	3
2	CS208	Mathematical Foundation of Computer Sciences	3-1-0-4	4
3	MAXXX	Ordinary Differential Equation	3-1-0-4	4
4	MAXXX	Partial Differential Equation	3-1-0-4	4
5	CS201	Computer Organization	3-0-0-3	3
6	CS201P	Computer Organization Laboratory	0-0-2-1	1
7	MAXXX	Numerical Analysis	3-1-0-4	4
8	MAXXX	Applied Mathematics Programming	3-1-0-4	4
9	MAXXX	Matrix Computation & Lab	3-0-2-4	4
10	CS304	Formal Language and Automata Theory	3-0-0-3	3
11	CSXXX	Design of Algorithms	3-0-2-4	4
12	MAXXX	Mathematical Modelling	3-0-0-3	3
13	MAXXX	Reverse Engineering	1	1
14	CS207	Applied Databases Practicum	0-0-3-2	2
15	MAXXX	Numerics of PDE	3-0-0-3	3
16	MAXXX	Applied Graph Theory	3	3

Table 87: B. Tech Maths and Computing First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5	IC 131	Applied Chemistry for Engineers (Basket-1)	2-0-2-3	3
6	IC 241	Materials Science for Engineers (Basket-2)	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 88: B. Tech Maths and Computing Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 102P	Foundations of Design Practicum	3-0-2-4	4
7	IC 222P	Physics Practicum	0-0-3-2	2
8		HSS Course	3-0-0-3	3
		Total		22

Table 89: B. Tech Maths and Computing Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	IC272	Machine Learning	2-0-2-3	3
3	MAXXX	Real and Complex Analysis	2.5-0.5-0-3	3
4	CS208	Mathematical Foundation of Computer Sciences	3-1-0-4	4
5	MAXXX	Ordinary Differential Equation	3-1-0-4	4
6	FE	Free Elective	4	3
		Total		20

Table 90: B. Tech Maths and Computing Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	MAXXX	Partial Differential Equation	3-1-0-4	4
2	CS201	Computer Organization	3-0-0-3	3
3	CS201P	Computer Organization Laboratory	0-0-2-1	1
4	MAXXX	Numerical Analysis	3-1-0-4	4
5	MAXXX	Applied Mathematics Programming	3-1-0-4	4
6	HSXXX	HSS Course	3-0-0-3	3
7	MAXXX	Discipline Elective Basket - I (Foundation Module)	3	3
		Total		22

Table 91: B. Tech Maths and Computing Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	MAXXX	Matrix Computation & Lab	3-0-2-4	4
2	CS304	Formal Language and Aumata Theory	3-0-0-3	3
3	CSXXX	Design of Algorithms	3-0-2-4	4
4	DE	Discipline Elective	3	3
5	MAXXX	Mathematical Modelling	3-0-0-3	3
6	HSSXXX	HSS or Management course	3	3
7	MAXXX	Reverse Engineering	1	1
		Total		21

Table 92: B. Tech Maths and Computing Sixth Semester

1	CS207	Applied Databases Practicum	0-0-3-2	2
2		Discipline Elective Basket-II (Advance Modelling Module)	3-0-0-3	3
3	MAXXX	Numerics of PDE	3-0-0-3	3
4	FE	Free Elective	3-0-0-3	3
5	HSSXX	HSS or Management course	3	3
6	ISTP	ISTP	4	4
7	MAXXX	Applied Graph Theory	3	3
		Total		21

Table 93: B. Tech Maths and Computing Seventh Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1	DE	Discipline Elective	3	3
2	FE	Free Elective	3	3
3	FE	Free Elective	3	3
4	MTP-1	MTP-1	0-0-4.5-3	3
		Total		12

Table 94: B. Tech Maths and Computing Eighth Semester

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1	DE	Discipline Elective	3 3	
2	FE	Free Elective	3	4
3	FE	Free Elective	3	4
4	FE	Free Elective	3	3
5	MTP-2	MTP-2	0-0-7.5-5	5
6	IC 010	Internship 2	2	
		Total		21

Maths and Computing - Discipline Electives

Table 95: Maths and Computing Discipline Elective Basket I: Foundation Module

Sl. No	Course Code	Course Name	Credits
1	MAXXX	Abstract Algebra	3
2	MAXXX	Functional analysis	4
3	MAXXX	Measure Theory	4
4	MAXXX	Topology	4
5	MAXXX	Number Theory	3

Table 96: Maths and Computing Discipline Elective Basket II: Advance Modelling Module

Sl. No	Course Code	Course Name	Credits
1	MAXXX	Climate Modelling	
2	MAXXX	Computational Financial Modelling & Lab	4

3	MAXXX	Modelling of infectious disease	
4	MAXXX	Mathematical Image Processing	
5	MAXXX	Mathematical Control Theory	
6	MAXXX	Modelling and Simulation	3
7	MAXXX	Modelling Population Dynamics	3

Table 97: Maths and Computing Discipline Electivese

Sl. No	**Course Code**	**Course Name**	**Credits**
1	MA605	Statistical Data Analysis	3
2	MAXXX	Mathematical Foundations of Financial Engineering	3
3	MAXXX	Numerical Methods in Quantitative Finance	3
4	MAXXX	Computational Fluid Dynamics	3
5	MAXXX	Financial Engineering	3
6	MAXXX	Stochastic Calculus for Financial Engineering	3
7	MAXXX	Semigroup of Bounded Linear Operators	3
8	MAXXX	Topics in Semigroup Theory	3
9	MA765	Fractional Differential Equations	4
10	CS502	Compiler Design	4
11	CS562	Artificial Intelligence	3
12	CSXXX	Computer Networks	4
13	CSXXX	Operating Systems	4
14	MAXXX	Time Series Analysis	3
15	MAXXX	Mathematical Method for Signal Processing	4
16	EE511	Computer Vision	4
17	EE608	Digital Image Processing	4
18	MAXXX	Advanced Data Structure and Algorithms	4
19	MAXXX	Speech Processing	3
20	CS669	Pattern Recognition	4
21	MAXXX	Soft Computing	3
22	BE304	Bioinformatics	4
23	BE301	Biomechanics	4
24	BE3XX	Genetic Engineering	4
25	BE303	Applied Biostatistics	4
26	CE352	Transportation Engineering	3
27	CE352P	Transporting Engg. Lab	1

28	CE251	Hydraulics Engineering	3
29	CS302	Paradigms of Programming	4
30	CS309	Information Systems and Databases	4
31	DS201	Data Handling and Visualization	3
32	DS302	Computing Systems for Data Processing	4
33	DSXXX	Times Series Analysis and Applications / Bayesian Data Analysis and Applications	3
34	DSXXX	Big Data: Management and Analytics	4
35	EE203	Network Theory	3
36	EEXXX	Signal & Systems	3
37	EE301	Control Systems	3
38	EP302	Computational Methods for Engineering	3
39	ME2XX	Engineering Thermodynamics	4
40	ME210	Fluid Mechanics	3
41	ME303	Heat Transfer	3
42	ME310	System Dynamics and Control	3
43	MEXXXP	Fluid Mechanics Lab	1
44	MEXXXP	Heat Transfer Lab	1
45	MAXXX	Cellular Automata	3
46	CS606	Computational Modeling of Social Systems	3

Bachelor of Technology - Mechanical Engineering

Table 98: B. Tech Mechanical Engineering Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	51
	Discipline Electives	15
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 99: Mechanical Engineering Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 241	Materials Science for Engineers	3-0-0-3	3
2	ME 100	Reverse engineering	0-0-2-1	1
3	ME 206	Mechanics of Solids	3-0-0-3	2
4	ME 210	Fluid Mechanics	2.5-0.5-0-3	3
5	ME 212	Product Manufacturing Technology	2-0-3-4	4
6	ME 213	Engineering Thermodynamics	3-1-0-4	4
7	ME 215	Manufacturing Engineering 1	3-0-0-3	3
8	ME 315	Manufacturing Engineering 2	3-0-0-3	3
9	ME205	Machine drawing	1-0-4-3	3
10	ME210P	Fluid Mechanics Lab	0-0-2-1	1
11	ME303	Heat Transfer	2.5-0.5-0-3	3
12	ME305	Design of Machine Elements	3-1-0-4	4
13	ME307	Energy conversion devices	3-0-0-3	3
14	ME309	Theory of machines	3-1-0-4	4
15	ME310	System Dynamics and Control	3-0-0-3	3
16	ME311P	Design Lab 1	0-0-2-1	1
17	ME312P	Design lab 2	0-0-2-1	1
18	MExxxP	Heat Transfer Lab	0-0-2-1	1
19		Electrical Systems Around Us	3-0-2-4	4
				51

Table 100: B. Tech Mechanical Engineering First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1	3	
6		HSS Course	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 101: B. Tech Mechanical Engineering Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6	IC 240	IC Core Basket-2(Rigid Body Mechanics)	1.5-1.5-0-3	3
7	IC 102P	Foundations of Design Practicum	3-0-2-4	4
8	IC 222P	Physics Practicum	0-0-3-2	2
		Total		22

Table 102: B. Tech Electrica lEngineering Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	2-0-2-3	3
2		Electrical Systems Around Us	3-0-2-4	4
3		ME 210 Fluid Mechanics	2.5-0.5-0-3	3
4		ME 212 Product Manufacturing Technology	2-0-3-4	4
5		ME 213 Engineering Thermodynamics	3-1-0-4	4
6		ME 206 Mechanics of Solids	3-0-0-3	2
7		IC 241 Materials Science for Engineers	3-0-0-3	3
		Total		23

Table 103: B. Tech Mechanical Engineering Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-3	3
2	ME 100	Reverse engineering	0-0-2-1	1
3	ME205	Machine drawing	1-0-4-3	3
4	ME 215	Manufacturing Engineering 1	3-0-0-3	3
5	ME303	Heat Transfer	2.5-0.5-0-3	3
6	ME210P	Fluid Mechanics Lab	0-0-2-1	1
7	DE-1	Discipline Elective		3
8	HSS-2	HSS Course	3-0-0-3	3
		Total		20

Table 104: B. Tech Mechanical Engineering Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ME305	Design of Machine Elements	3-1-0-4	4
2	ME307	Energy conversion devices	3-0-0-3	3
3	ME309	Theory of machines	3-1-0-4	4
4	ME310	System Dynamics and Control	3-0-0-3	3
5	ME 315	Manufacturing Engineering 2	3-0-0-3	3
6	ME311P	Design Lab 1	0-0-2-1	1
7	MExxxP	Heat Transfer Lab	0-0-2-1	1
8	DE-2	Discipline Elective		3
		Total		22

Table 105: B. Tech Mechanical Engineering Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ME312P	Design lab 2	0-0-2-1	1
2	DE-3	Discipline Elective		3
3	DE-4	Discipline Elective		3
4	HSS-3	HSS	3-0-0-3	3
5	FE-1	Free Elective		3
6	ISTP	ISTP	0-0-6-4	4
		Total 17		

Table 106: B. Tech Mechanical Engineering Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Discipline Elective		4
2		Free Elective		3
3		Free Elective		3
4	DP 401	MTP 1	0-0-4.5-3	3
5		HSS	3-0-0-3	3
		Total		16

Table 107: B. Tech Mechanical Engineering Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1		Free Elective		3
2		Free Elective		3
3		Free Elective		3
4		Free Elective		3
5		MTP-2	0-0-7.5-5	5
6	IC 010	Inetrnship		2
		Total		19

Bachelor of Technology - Microelectronics and VLSI

Table 108: B. Tech Microelectronics and VLSI Credit Distribution

Division	**Subdivision**	**Credits**
IC Core Courses	IC Compulsory	39
	IC Basket	6
	IKS	3
	HSS	12
Discipline Courses	Discipline Core	54
	Discipline Electives	12
Electives	Free Electives	22
	MTP + ISTP or Equivalent	12
	Total	160

Table 109: Microelectronics and VLSI Core Courses

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EExxx	Signals and Systems	2.5-0.5-0-3	3
2	EE210	Digital System Design and Practicum	3-0-2-4	4
3	EE203	Network Theory	2.5-0.5-0-3	3
4	VLxxx	Semiconductor Device for ICs	3-0-0-3	3
5	EE301	Control Systems	3-0-2-4	4
6	VLxxx	Electro Magnetic Theory and Transmission Lines	3-0-0-3	3
7	EExxx	Computer Organization and Design	3-0-2-4	4
8	EE211	Analog Circuit Design	3-0-2-4	4
9	VLxxx	CMOS Processing and Practicum	3-0-2-4	4
10	VLxxx	RF IC Design	3-0-0-3	3
11	VLxxx	Electronic System Packaging	3-0-0-3	3
12	VLxxx	CMOS Analog IC Design	3-0-2-4	4
13	VLxxx	CMOS Digital IC Design	3-0-2-4	4
14	VLxxx	RTL Design and Verification	2-0-2-3	3
15	VLxxx	Design For Testability	3-0-2-4	4
16	VLxxx	Reverse Engineering	0-0-2-1	1
				54

Table 110: B. Tech Microelectronics and VLSI First Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 112	Calculus	1.5-0.5-0-2	2
2	IC 113	Complex Variables and Vector Calculus	1.5-0.5-0-2	2
3	IC 140	Engineering Graphics	2-0-3-4	4
4	IC 152	Introduction to Python and Data Science	3-0-2-4	4
5		IC Core Basket-1	3	
6		HSS Course	3-0-0-3	3
7	IC 181	Introduction to Consciousness and Holistic Wellbeing	2-0-2-3	3
		Total		21

Table 111: B. Tech Microelectronics and VLSI Second Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 114	Linear Algebra	2-0-0-2	2
2	IC 115	ODE and Integral Transforms	2-0-0-2	2
3	IC 161	Applied Electronics	3-0-0-3	3
4	IC 161P	Applied Electronics Lab	0-0-3-2	2
5	IC 252	Probability and Statistics	3-0-2-4	4
6		IC Core Basket-2	3-0-0-3	3
7	IC 102P	Foundations of Design Practicum	3-0-2-4	4
8	IC 222P	Physics Practicum	0-0-3-2	2
		Total		22

Table 112: B. Tech Microelectronics and VLSI Third Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 272	Machine Learning	3-0-0-3	3
2	EE 210	Digital System Design and Practicum	3-0-2-4	4
3	VLxxx	Electro Magnetic Theory and Transmission Lines	3-0-0-3	3
4	EE xxx	Signals and Systems	2.5-0.5-0-3	3
5	EE 301	Control Systems	3-0-2-4	4
6	EE 203	Network Theory	2.5-0.5-0-3	3
7	VL xxx	Semiconductor Devices for ICs	3-0-0-3	3
		Total		23

Table 113: B. Tech Microelectronics and VLSI Fourth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC 201P	Design Practicum	0-0-6-3	3
2	EE 211	Analog Circuit Design	3-0-2-4	4
3	EExxx	Computer Organization and Design	3-0-2-4	4
4	VLxxx	CMOS Processing and Practicum	3-0-2-4	4
5	VLxxx	Reverse Engg (E-Waste Management and Recycling)	0-0-2-1	1
6	VLxxx	Electronic System Packaging	3-0-0-3	3
7	HSxxx	HSS course	3-0-0-3	3
		Total		22

Table 114: B. Tech Microelectronics and VLSI Fifth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	VLxxx	RF IC Design	3-0-0-3	3
2	VLxxx	Design for Testability	3-0-2-4	4
3	VLxxx	CMOS Digital IC Design	3-0-2-4	4
4	VL xxx	CMOS Analog IC Design	3-0-2-4	4
5	VLxxx	RTL Design and Verification	2-0-2-3	3
6	HS xxx	HSS course	3-0-0-3	3
		Total		21

Table 115: B. Tech Microelectronics and VLSI Sixth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	HSxxx	HSS course-3	3-0-0-3	3
2	DP301 / DE -1	ISTP / DE-1	4	4
3	DE-2	DE-2	3-0-0-3	3
4	DE-3	DE-3	3-0-0-3	3
5	FE-1	FE-1	3-0-0-3	3
6	FE-2	FE-2	3-0-0-3	3
		Total		19

Table 116: B. Tech Microelectronics and VLSI Seventh Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401 / DE-4	MTP-1 / DE-4	3-0-0-3	3
2	DE-5	DE-5	3-0-0-3	3
3	DE-6	DE-6	3-0-0-3	3
4	FE-3	FE-3	4	4
5	FE-4	FE-4	4	4
		Total		17

Table 117: B. Tech Microelectronics and VLSI Eighth Semester

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401 / DE-7	MTP-II / DE-7	0-0-7.5-5	5
2	FE-5	FE-5		4
3	FE-6	FE-6		4
4	IC010	Inetrnship		2
		Total		15

UG Curriculum-Old

[1]

Integrated B. Tech-M. Tech Bioengineering

Credit Distribution

Table 118: Bio Credit Distribution

Sl. No	Component	Credits
1	Institute Core	76
2	Discipline Core	33
3	Free Electives	22
4	Humanities Electives	5
5	M. Tech Core	9
6	M. Tech Electives	21
7	Technical Communication	1
8	Bioethics and Regulatory Affairs	1
9	Mini Project, Term Paper, Seminar	4
10	M. Tech Dissertation	34
	Total	206

Table 119: Bioengineering

Semester-1				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Data Science I	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for Design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HS106	English I	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3

[1]Discontinued with respect to 2022 B. Tech Batch

Table 119 continued from previous page

Semester-1				
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		**22 credits**	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC260	Signals and Systems (Engg. Science basket)	2.5-0.5-0-3	3
2	IC136	Understanding Biotechnology and its applications (Science II basket)	3-0-0-3	3
3	IC2XX	Data Science III	2-0-2-3	3
4	IC240	Mechanics of Rigid Bodies	2.5-0.5-0-3	3
5	BEXX1	Biology-I	3-0-2-4	4
6	BEXX2	Biology-II	2-0-2-3	3
7	HSXXX	HSS Communication Skills basket course	3-0-0-3	3
	Total		**22 credits**	22
Semester-4				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-4	4
2	BEXX3	Biology-III	2-0-2-3	3
3	BEXX4	Physics and modeling of biological systems	3-0-2-4	4
4	BEXX5	Computational Biology	2-0-2-3	3
5	BEXX6	Biostatistics	3-0-2-4	4
6	BEXX7	Biomechanics	3-0-2-4	4
		Total	**22 Credits**	22
Semester-5				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC221	Foundations of Electrodynamics	3-0-0-3	3
2	ICXXX	Science I basket course	3-0-0-3	3
3	BEXX8	Bioethics and Regulatory affairs	1-0-0-1	1

Table 119 continued from previous page

Semester-1				
4	BEXX9	Biomaterials	3-0-2-4	4
5	BEXX10	Biosensing and Bioinstrumentation	3-0-2-4	4
6	HSXX3	HSS basket course	3-0-0-3	3
7	BEMC1	M.Tech Core-I	3-0-0-3	3
	Total		**21 credits**	21
Semester-6				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC222P	Physics Practicum	0-0-3-2	2
2	BEMC2	M.Tech Core-II	3-0-0-3	3
3	BEMC3	M.Tech Core-III	3-0-0-3	3
4	BEXE1	Discipline Elective-I	3-0-0-3	3
5	BEXE2	Discipline Elective-II	3-0-0-3	3
6	BEXE3	Discipline Elective-III	3-0-0-3	3
7	FEXX1	Free Elective-I	3-0-0-3	3
	Total		**20 credits**	20
Semester-7				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ITXX1	Industrial Internship	0-0-2-2	2
2	BEXE4	Discipline Elective-IV	3-0-0-3	3
3	BEXE5	Discipline Elective-V	3-0-0-3	3
4	BEXE6	Discipline Elective-VI	3-0-0-3	3
5	HSXE1	HSS Elective-I	3-0-0-3	3
6	FEXX2	Free Elective-II	3-0-0-3	3
7	FEXX3	Free Elective-III	3-0-0-3	3
8	HS541	Technical Communication	1-0-0-1	1
	Total		**21 credits**	21
Semester-8				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BEXE7	Discipline Elective-VII	3-0-0-3	3
2	FEXX4	Free Elective-IV	3-0-0-3	3
3	FEXX5	Free Elective-V	3-0-0-3	3
4	FEXX6	Free Elective-VI	3-0-0-3	3
5	FEXX7	Free Elective VII	4-0-0-4	4
6	BEXE8	Mini Project, Term Paper and Seminar	0-0-8-4	4
7	HSXX5	HSS Elective-II	2-0-0-2	2
	Total		**22 credits**	22
Semester-9				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BEXE9	M.Tech Project-1	0-0-34-17	17
	Total		**17 credits**	17

Table 119 continued from previous page

Semester-1				
Semester-10				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	BEXE10	M.Tech Project-2	0-0-34-17	17
	Total		**17 credits**	17

Civil Engineering

Table 120: Civil Engineering

Semester-1				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data science	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for Design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HSXXX	HSS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		**22 credits**	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC240	Mechanics of Rigid Bodies	3-0-0-3	3

Table 120 continued from previous page

Semester-1				
2	IC272	Data Science III	2-0-2-3	3
3	CE201	Surveying: Traditional and Digital	2-0-2-3	3
4	CE251	Hydraulics Engineering	3-0-0-3	3
5	CE304P	Hydraulics Engineering Lab	0-0-2-1	1
6	HSXXX	HSS basket Course	3-0-0-3	3
7	HSXXX	HSS basket Course	3-0-0-3	3
8	ICXXX	Science I Basket	3-0-0-3	3
	Total		**22 credits**	22
Semester-4				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC221	Foundations of Electrodynamics	3-0-0-3	3
2	IC222P	Physics Practicum /Practical	0-0-3-2	2
3	IC XXX	Science II Basket	3-0-0-3	3
4	IC201P	Design Practicum	0-0-6-4	4
5	CE301	Strength of Materials and Structures	3-0-2-4	4
6	CE302	Geotechnical Engineering	3-0-2-4	4
7	ICXXX	Eng. Sciences Basket	3-0-0-3	3
	Total		23 Credits	23
Semester-5				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CE303	Water Resources Engineering	3-0-0-3	3
2	CE351	Design of Reinforced Concrete Structures	2-1-0-3	3
3	CE352	Transportation Engineering	3-0-0-3	3
4	CE353P	Civil Engineering Drawing	0-0-2-1	1
5	CE305P	Environment and Earth Science Lab	0-0-2-1	1
6	FE – 1	Free Elective		3/4
7	CEXXX	Discipline Elective	3-0-0-3	3
8	FE – 2	Free Elective		3/4
	Total		20-21 credits	20/21
Semester-6				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**

Table 120 continued from previous page

Semester-1				
1	CE401	Design of Steel Structures	2-1-0-3	3
2	CE403	Wastewater Engineering	3-0-0-3	3
3	CE354P	Building and Pavement Materials Lab	0-0-2-1	3
4	CEXXX	Discipline Elective		3/4
5	FE – 3	Free Elective		3/4
6	HSXXX	HSS Elective		3/4
7	FE – 4	Free Elective	3-0-0-3	3/4
	Total		19-23 credits	19-23
Semester-7				
S. No.	**Core/ Elective**	**Course Name**	**L-T-P-C**	**Credits**
1	CEXXX	Discipline Elective		3/4
2	CEXXX	Discipline Elective		3/4
3	FE – 5	Free Elective		3/4
4	HSXXX	HSS Elective		2/3
5	DP401P	MTP-I		3
6	ITXX1	Internship	0-0-2-2	2
	Total		15-23 credits	15-23
Semester-8				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	FE – 6	Free Elective		3/4
2	FE – 7	Free Elective		3/4
3	DP402P	MTP-II		5
	Total		11-13 credits	11-13

Civil Engineering Electives

Table 121: Civil Engineering Electives

Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
Geology and Remote Sensing				
1	CE252	Geology and Geomorphology	2-0-2-3	3
2	CE508	Photogeology and Photogrammetry	2-0-2-3	3
3	CE501	Remote Sensing	2-0-2-3	3
4	CE601	Geo-Informatics	2-0-1-3	3
Geotechnical Engineering				
5	CE402	Geotechnical Engineering-II	2-1-0-3	3

Table 121 continued from previous page

Sl. No.	Course Code	Course Name	L-T-P-C	Credits
6	CE504	Slope Stability and Retaining Structures	3-0-0-3	3
7	CE505	Engineering of Ground Modification	3-0-0-3	3
8	CE551	Geosynthetics and their applications	3-0-0-3	3
9	CE560	Soil Dynamics	3-0-0-3	3
10	CE512	Advanced Soil Mechanics	3-0-0-3	3
11	CE513	Advanced Foundation Engineering	3-0-0-3	3
12	CE606	Constitutive Modeling of Frictional Material	3-0-0-3	3
Structural Engineering				
13	CE506	Analysis of Indeterminate Structures	3-0-0-3	3
14	CE507	Advanced Concrete Science	3-0-0-3	3
15	CE509	Bridge Engineering	3-0-0-3	3
16	CE511	Structural Dynamics with Application to Earthquake Engineering	3-0-0-3	3
17	CE552	Concrete Technology	3-0-0-3	3
18	CE 554	Prestressed Concrete Structure	3-0-0-3	3
19	CE555	Advanced Design of Structures	3-0-0-3	3
20	CE556P	Structural Engineering Laboratory	0-0-4-2	2
21	CE557	Solid Mechanics in Structural Engineering	3-0-0-3	3
22	CE605	Engineering Seismology and Seismi Hazard Assessment	3-0-0-3	3
23	CE610	Analysis and Design for Earthquake Resistant Structures	3-0-0-3	3
24	CE611	Structural Health Monitoring	3-0-0-3	3
25	CE612	Theory of Plates and Shells	3-0-0-3	3
26	ME513	Finite Element Methods in Engineering	3-0-0-3	4
Water Resource and Environmental Engineering				
27	CE355	Hydrology	3-0-0-3	3
28	CE502	Groundwater Flow and Contaminant Transport Modeling	3-0-0-3	3

Table 121 continued from previous page

Sl. No.	Course Code	Course Name	L-T-P-C	Credits
29	CE510	Modelling and Simulation in Water Resources Engineering	2-0-2-3	3
30	CE558	Air Pollution and its Mitigation	3-0-0-3	3
31	CE559	Biological Wastewater Treatment	3-0-0-3	3

Computer Science and Engineering

Table 122: CSE Compulsory Courses

Sl. No	Course Code	Course Name	L-T-P-C	Semester
1	CS202	Data Structures and Algorithms	3-0-2-4	III
2	CS207	Applied Database Practicum	0-0-3-2	III
3	CS208	Mathematical Foundations of Computer Science	3-1-0-4	III
4	CS201	Computer Organization	3-0-0-3	IV
5	CS201P	Computer Organization Laboratory	0-0-2-1	IV
6	CS304	Formal Languages and Automata Theory	3-0-0-3	IV
7	CS309	Information and Database Systems	3-0-2-4	IV
8	CS310	Introduction to Computing and Distributed Processes	3-0-2-4	V
9	CS308	Large Application Practicum	0-0-3-2	V
10	CS302	Paradigms of Programming	3-0-2-4	VI
11	CS307	System Practicum	0-0-3-2	VI

CSE Semester-wise Breakup

Table 123: CSE semester-wise

Semester-1				
Sl. No.	Course Code	Course Name	L-T-P-C	Credits
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data science	3-0-3-4	4

Table 123 continued from previous page

Semester-1				
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HSXXX	HS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
		Semester-2		
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		**22 credits**	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC240	Mechanics of Rigid Bodies	3-0-0-3	3
2	IC272	Data Science III	2-0-2-3	3
3	CS202	Data Structures and Algorithms	3-0-2-4	4
4	CS207P	Applied Database Practicum	0-0-3-2	2
5	CS208	Mathematical Foundations of Computer Science	3-1-0-4	4
6	HSXXX	HSS basket Course	3-0-0-3	3
7	ICXXX	Science I or II or Engineering Basket	3-0-0-3	3
	Total		**22 credits**	22
Semester-4				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**

Table 123 continued from previous page

Semester-1				
1	CS201	Computer Organization	3-0-0-3	3
2	CS201P	Computer Organization Laboratory	0-0-2-1	1
3	CS304	Formal Languages and Automata Theory	3-0-0-3	3
4	CS309	Information and Database Systems	3-0-2-4	4
5	IC201P	Design Practicum	0-0-6-4	4
6	IC222P	Physics Practicum	0-0-3-2	2
7	ICXXX	Science 1 or Science 2 or Engineering Science Basket	3-0-0-3	3
	Total			20
Semester-5				
Sl. No	**Course Code**	**Course Name**	L-T-P-C	Credits
1	CS310	Introduction to Computing and Distributed Processes	3-0-2-4	4
2	CS308P	Large Application Practicum	0-0-3-2	2
3	ICXXX	Science 1 or Science Basket	3-0-0-3	3
4	CSXXX	Discipline Elective	3/4	3/4
5	CSXXX	Discipline Elective	3/4	3/4
6	CSXXX	Discipline Elective / Free Elective	3-0-0-3	3
7	HSXXX	HSS Basket Course	3-0-0-3	3
	Total			21-23
Semester-6				
Sl. No	**Course Code**	**Course Name**	L-T-P-C	Credits
1	CS302	Paradigms of Programming	3-2-0-4	4
2	CS307P	System Practicum	0-0-3-2	2
3	IC221	Foundations of Electrodynamics	3-0-0-3	3
4	CSXXX	Discipline Elective	3 or 4	3 or 4
5	CSXXX	Discipline Elective / Free Elective / ISTP	3 or 4	3 or 4
6	HSXXX	HSS Basket Course	3-0-0-3	3
7	-	Internship	0-0-3-2	2
	Total			20-22
Semester-7				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CSXXX	Discipline Elective / Free Elective	3-2-0-4	3 or 4

Table 123 continued from previous page

Semester-1				
2	CSXXX	Discipline Elective / Free Elective	0-0-3-2	3 or 4
3	CSXXX	Discipline Elective / Free Elective	3-0-0-3	3 or 4
4	CSXXX	Discipline Elective / Free Elective	3 or 4	3 or 4
5	HSXXX	HSS Basket Course	3 or 4	3
6	MTP	MTP-I	3-0-0-3	3
	Total			18-22
Semester-8				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	CSXXX	Discipline Elective / Free Elective		3 or 4
2	CSXXX	Discipline Elective / Free Elective		3 or 4
3	CSXXX	Discipline Elective / Free Elective		3 or 4
4	HSXXX	HSS Basket Course		3 or 4
5	MTP	MTP-II	0-0-10-5	5
				17-21

CSE Electives

Table 124: CSE Electives

Sl. No.	Course Code	Course Name	L-T-P-C	Specialization
1	CS 523	Verification of Reactive Systems	3-0-0-3	Theory
2	CS 544	Formal Concept Analysis: Theory and Practice	2-0-2-3	Theory
3	EE 534	Probability and Random Processes	4-0-0-4	Theory
4	CS 562	Artificial Intelligence	3-0-0-3	Machine Intelligence
5	EE 608	Digital Image Processing	3-0-2-4	Machine Intelligence
6	CS 609	Speech Processing	3-0-2-4	Machine Intelligence
7	CS 660	Data Mining for Decision Making	3-0-0-3	Machine Intelligence

Table 124 continued from previous page

Sl. No.	Course Code	Course Name	L-T-P-C	Specialization
8	CS 669	Pattern Recognition	3-1-0-4	Machine Intelligence
9	CS 303	Software Engineering	2-0-2-3	Systems
10	CS 507	Computer Architecture	3-0-2-4	Systems
11	CS 5XX	Compiler Design	3-0-2-4	Systems
12	CS 561	Map Reduce and Big Data	3-0-0-3	Systems
13	CS 403	Algorithm Design and Analysis	3-0-2-4	Theory
14	CS 522	Distributed Algorithms	3-0-0-3	Theory
15	EE 530	Optimization Theory	3-0-0-3	Theory
16	EE 511	Computer Vision	3-1-0-4	Machine Intelligence
17	CS 606	Computational Modeling of Social Systems	3-0-0-3	Machine Intelligence
18	CS 670	Kernel Methods for Pattern Recognition	4-0-0-4	Machine Intelligence
19	CS671	Deep Learning and Applications	3-0-1-4	Machine Intelligence
20	CS 456	Distributed Databases	3-0-0-3	Systems
21	CS 508	Introduction to Heterogeneous Computing	2-0-0-2	Systems
22	CS 541P	IoT Systems and the Cloud	3-0-2-4	Systems
23	CS 545	Software Design Pattern	3-0-0-3	Systems
24	CS 546	Design of Concurrent Software	3-0-0-3	Systems
25	CS 549	Computer Networks Analysis	3-0-0-3	Systems
26	CS 594	Introduction to Computer Graphics and Design	3-0-2-4	Systems

Data Science and Engineering

DSE Compulsory

Table 125: DSE Compulsory

Sl. No.	Course Name	L-T-P-C	Semester
1	Data handling and visualization	2-0-2-3	III
2	Mathematical Foundations of Data Science I	3-0-0-3	III
3	Introduction to Data structures and Algorithms	2-0-2-3	IV

Table 125 continued from previous page

Sl. No.	Course Name	L-T-P-C	Semester
4	Statistical Foundations of Data Science	3-0-0-3	IV
5	Mathematical Foundations of Data Science II	3-0-0-3	V
6	Matrix Computations for Data Science	2-0-2-3	V
7	Information Security and Privacy	3-0-0-3	V
8	Computing Systems for ata Science	2-0-2-3	VI
9	Introduction to Statistical Learning	2-0-2-3	VI
10	Optimization for Data Science	3-0-0-3	VI

DSE Semester-Wise

Table 126: DSE semester wise

Semester-1				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data Science	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HSXXX	HS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2

Table 126 continued from previous page

Semester-1				
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		22 credits	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC121	Mechanics of Particles and Waves	2.5-0.5-0-3	3
2	IC272	Data Science III	2-0-2-3	3
3	DS201	Data Handling and Visualization	2-0-2-3	3
4	DS203	Mathematical Foundations of Data Science	3-0-0-3	3
5	IC160	Signals and Systems	2.5-0.5-0-3	3
6	HSXXX	HSS basket Course	3-0-0-3	3
	Total			18
Semester-4				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC241	Materials Science for Engineers	3-0-0-3	3
2	IC221	Foundations of Electrodynamics	3-0-0-3	3
3	IC222P	Physics Practicum	0-0-3-2	2
4	IC242	Continuum Mechanics	2.5-0.5-0-3	3
5	IC201P	Design Practicum	0-0-6-4	4
6	DS202	Introduction to Data Structures and Algorithms	2-2-0-3	3
7	DS303	Statistical Foundations of Data Science	3-0-0-3	3
	Total			21
Semester-5				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC240	Mechanics of Rigid Bodies	1.5-1.5-0-3	3

Table 126 continued from previous page

Semester-1				
2	IC136	Understanding Biotechnology & Its applications	3-0-0-3	3
3	IC130	Applied Chemistry for Engineers	3-0-0-3	3
4	IC130P	Chemistry Practicum	0-0-3-2	2
5	DS402	Matrix Computations for Data Science	2-0-2-3	3
6	DS301	Mathematical Foundations of Data Science II	3-0-0-3	3
7	DS404	Information Security and Privacy	3-0-0-3	3
	Total			20
Semester-6				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DS403	Introduction to Statistical Learning	3-0-2-3	3
2	DS302	Computing Systems for Data Processing	3-0-3-3	3
3	DS401	Optimization for Data Science	3-0-0-3	3
4	DE-1	Discipline Elective		3 or 4
5	DE-2	Discipline Elective		3 or 4
6	OE-1	Open Elective		3 or 4
	Total			18-21
Semester-7				
Sl. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DE-3	Discipline Elective		3 or 4
2	DE-4	Discipline Elective		3 or 4
3	OE-4	Open Elective		3 or 4
4	OE-5	Open Elective		3 or 4
5	OE-6	Open Elective		3 or 4
6	DP	MTP-I		3
	Total			18-21
Semester-8				
Sl . No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	OE-7	Open Elective		3 or 4
2	OE-8	Open Elective		3 or 4
3	OE-9*	Open Elective		3 or 4
4	OE-10*	Open Elective		3 or 4

Table 126 continued from previous page

Semester-1				
5	DP	MTP-II		5
	Total			12-18

DSE Electives

Table 127: DSE Electives

Sl. No.	**Course Name**	**Credits**
Machine Learning		
1	Pattern Recognition	4
2	Deep Learning	4
3	Estimation and Detection Theory	3
4	Kernel Methods for Pattern Analysis	4
5	Digital Image Processing	4
6	Computer Vision	4
7	Biomedical Image and Signal Processing	4
Networks and Distributed Computing		
1	IoT systems and the Cloud	3
2	Computer Networks	3
3	High Performance Computing	2
Theoretical Computer Science		
1	Algorithm Design and Algorithms	4
2	Formal Concept Analysis: Theory and Practice	3
3	Formal Languages and Automata Theory	3
4	Semantic Analysis	4
Applied Mathematics		
1	Linear Algebra	4
2	Numerical Analysis	2
3	Ordinary Differential Equations	3
4	Introduction to Partial Differential Equations for Engineers	4
Statistics and Optimization		
1	Time Series	3
2	Optimization for Machine Learning	3
3	Numerical Methods in Finance	3

Table 127 continued from previous page

4	Computational Financial Modelling	3
Neuroscience Basket		
1	Cognitive Modelling	3
2	Computational Neuroscience	3
3	Brain Inspired Computing	3
4	Computational and Cognitive Models of perception: Vision, Sound	3

Electrical Engineering

EE Compulsory Courses

Table 128: EE compulsory

Sl. No.	Course Name	L-T-P-C	Semester
1	Digital System Design	3-0-2-4	III
2	Network Theory	2.5-0.5-0-3	III
3	Device Electronics for Integrated Circuits	3-0-0-3	III
4	Electro-mechanics	2.5-0.5-0-3	IV
5	Analog Circuit Design	2-0-2-3	IV
6	Communication Theory	3-0-2-4	IV
7	Computer Organization	3-0-2-4	V
8	Control Systems	3-0-2-4	V
9	Power Systems	3-1-0-4	V

Electrical Engineering Semester-wise

Table 129: EE Semester-wise

Semester-1				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data science	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2

Table 129 continued from previous page

7	HSXXX	HS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		22 credits	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC240	Mechanics of Rigid Bodies	3-0-0-3	3
2	IC272	Data Science III	2-0-2-3	3
3	IC260	Signals and Systems	2.5-0.5-0-3	3
4	EE210+ EE201P	Digital Systems Design	3-0-2-4	4
5	EE203	Network Theory	2.5-0.5-0-3	3
6	EE311	Device Electronics for Integrated Circuits	3-0-0-3	3
7	HSXXX	HSS basket Course	3-0-0-3	3
	Total			22
Semester-4				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-4	4
2	ICXXX	Science-I IC basket course or M&I Practicum	3-0-0-3	3
3	EE211	Analog Circuit Design	2-0-2-3	3
4	EE201+ EE201P	Electro-mechanics	2.5-0.5-2-4	3
5	EE304+ EE 304P	Communication Theory	3-0-2-4	4
6	EEXX1	Discipline Elective-I	3-0-0-3	4

Table 129 continued from previous page

	Total			**21**
Semester-5				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ICXXX	Science-II IC basket course or M&I Practicum	3-0-0-3	3
2	IC221	Foundations of Electrodynamics	3-0-0-3	3
3	CS201+ CS201P	Computer Organization	3-0-2-4	4
4	EE301+ EE 301P	Control Systems	3-0-2-4	4
5	EE303	Power Systems	3-1-0-4	4
6	EEXX2	Discipline Elective-II	3-0-0-3	3
	Total		**21 credits**	**21**
Semester-6				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC222P	Physics Practicum	0-0-3-2	2
2	EEXX3	Discipline Elective-III	3-0-0-3	3
3	EEXX4	Discipline Elective-IV	3-0-0-3	3
4	FEXX1	Free Elective-I	3-0-0-3	3
5	FEXX2	Free Elective-II	3-0-0-3	3
6	HSXX3	HSS basket course	3-0-0-3	3
7	DP301P/ EEXX5	Interdisciplinary Socio Technical Practicum / Discipline Elective-V	0-0-6-4	4
	Total		**21 credits**	**21**
Semester-7				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ITXX1	Industrial Internship	0-0-2-2	2
2	FEXX3	Free Elective-III	3-0-0-3	3
3	FEXX4	Free Elective-IV	4-0-0-4	4
4	HSXX1	HSS Elective-I	3-0-0-3	3
5	DP401P/ EEXX6	Major Technical Project-I / Discipline Elective-VI	0-0-6-3	3
	Total			**15**
Semester-8				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	FEXX5	Free Elective-V	3-0-0-3	3
2	FEXX6	Free Elective-VI	3-0-0-3	3
3	FEXX7	Free Elective-VII	3-0-0-3	3

Table 129 continued from previous page

4	HSXX2	HSS Elective-II	2-0-0-2	2
5	DP402P/ EEXX7	Major Technical Project-II /Discipline Elective-VII	0-0-10-5	5
	Total		**16 credits**	**16**

EE Electives

Table 130: EE Electives

Sl. No	**Course Code**	**Course Name**	**L-T-P-C**
1	EE 312P	Microelectronics Circuits Design Practicum	0-0-3-2
2	EE 305	Digital Signal Processing	3-1-0-4
3	EE512	CMOS analog IC design	3-0-2-4
4	EE514	Robust Control Systems	3-0-0-3
5	EE615	Nano-electronics and nano-microfabrication	3-0-0-3
6	EE516	Biomedical Systems	2.5-0.5-2-4
7	EE621	Radiating Systems	3-1-0-4
8	EE534	Probability and Random Processes	4-0-0-4
9	EE522	Matrix Theory	3-0-0-3
10	EE524	Digital MOS LSI Circuits	3-0-0-3
11	EE509	Linear Dynamical Systems	3-0-0-3
12	EE519P	CMOS Digital IC design practicum	0-0-3-2
13	EE520	Microelectronics devices and modeling	3-0-0-3
14	EE608	Digital Image Processing	3-0-2-4
15	EE503	Advanced Communication Theory	3-0-0-3
16	EE504	Switch Mode Power Conversion	2.5-0.5-0-3
17	EE508	Fundamentals of Electric Drives	3-0-0-3
18	EE508P	Practicum on Electrical Drives	0-0-3-2
19	EE513	Special Electrical Machines	3-0-0-3
20	EE527	Analysis and Design of Power Electronic Converters	3-0-0-3
21	EE527P	Practicum on Analysis and Design of Power Electronic Converters	0-0-3-2
22	EE528	Modeling and Analysis of Electrical Machines	3-0-0-3

Table 130 continued from previous page

23	EE622	Microwave Integrated Circuits	3-0-0-3
24	EE309	Power Electronics	2.5-0.5-0-3
25	EE309P	Power Electronics Lab	0-0-2-1
26	EE511	Computer Vision	3-0-2-4
27	EE517	Wireless Communication and Networking	3-0-0-3
28	EE523	Digital VLSI Architecture Design	3-0-2-4
29	EE529	Embedded Systems	3-0-2-4
30	EE619	Mixed Signal VLSI Design	3-1-0-4
31	EE621	Radiating Systems	3-1-0-4
32	EE507	Transmission Lines and Basic Microwave Engineering	3-1-0-4
33	EE526	Power Semiconductor Devices	3-0-0-3
34	EE530	Applied Optimization	2-0-2-3
35	EE531	Estimation and Detection theory	3-0-0-3
36	EE593	Selected Topics in Low Power VLSI Design	3-0-0-3
37	EE536	IoT Systems	2-0-2-3
38	EE604	Advanced Electrical Drives	2.5-0.5-0-3
39	EE604P	Practicum on Advanced Electrical Drives	0-0-2-1
40	EE606	Introduction to High Voltage Engineering and Dielectric Breakdown	3-0-0-3
41	EE611	VLSI Technology	3-0-0-3
42	EE611P	VLSI Fabrication Practicum	0-0-3-2
43	EE620	Advanced Digital Signal Processing	3-0-0-3
44	EE623P	Practicum on Digital Control of Electric Drives	1-0-3-3
45	EE592	Selected Topics in Resonant Soft-switched DC-DC Converters	2-0-0-2
46	CS307	Systems Practicum	0-0-3-2
47	CS309	Information and Database Systems	3-0-2-4
48	CS508	Introduction to Heterogeneous Computing	2-0-0-2
49	CS671	Deep Learning and Applications	3-0-1-4
50	CS202	Data Structure and Algorithms	3-0-2-4
51	CS207	Applied Database Practicum	0-0-3-2

Engineering Physics

EP Compulsory

Table 131: EP Compulsory

Sl. No.	Course Code	Course Title	L-T-P-C	Semester
1	EP301	Engineering Mathematics-2	3-1-0-4	III
2	PH301	Quantum Mechanics and Applications	3-0-0-3	III
3	PH302	Introduction to Statistical Mechanics	3-0-0-3	IV
4	PH501	Solid State Physics	3-0-0-3	IV
5	EE311	Device Electronics for Integrated Circuits	3-0-0-3	IV
6	EP302	Computational Methods for Engineering	2-0-2-3	V
7	EP402P	Engineering Physics Practicum	1-0-5-4	VI
8	PH502	Photonics	3-0-0-3	VI
9	EP403	Physics of Atoms and Molecules	3-0-0-3	VI
10	EP401P	Eng. of Instrumentation	1-0-5-4	VII

Engineering Physics Semester-wise

Table 132: EP Semester-wise

		Semester - 1		
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data Science	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for Design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HSXXX	HS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				

Table 132 continued from previous page

Sl. No	Course Code	Course Name	L-T-P-C	Credits
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		22 credits	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC121	Mechanics of Particles and Waves	2.5-0.5-0-3	3
2	IC272	Data Science III	2-0-2-3	3
3	IC240	Mechanics of Rigid Bodies	3-0-0-3	3
4	PH301	Quantum Mechanics and Applications	3-0-0-3	3
5	EP301	Engineering Mathematics-2	3-1-0-4	4
6	IC230	Environmental Science	3-0-0-3	3
7	HSXXX	HSS basket Course	3-0-0-3	3
	Total			**22**
Semester-4				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	PH501	Solid State Physics	3-0-0-3	3
2	IC221	Foundations of Electrodynamics	3-0-0-3	3
3	IC222P	Physics Practicum	0-0-3-2	2
4	PH302	Introduction to Statistical Mechanics	3-0-0-3	3
5	IC201P	Design Practicum	0-0-6-4	4
6	OEXX1	Open Elective- 1	3-0-0-3	3
7	OEXX2	Open Elective- 2	3-0-0-3	3
	Total			21
Semester-5				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**

Table 132 continued from previous page

1	ICXXX	Measurements and Instrumentation (engineering science basket course)	3-0-0-3	3
2	EE311	Device Electronics for Integrated Circuits	3-0-0-3	3
3	EP302	Computational Methods for Engineering	2-0-2-3	3
4	DEXX1	Discipline Elective- 1	3-0-0-3	3
5	DEXX2	Discipline Elective- 2	3-0-0-3	3
6	HSXXX	HSS basket course	3-0-0-3	3
	Total			18
Semester-6				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EP402P	Eng. Physics Practicum	3-0-2-4	4
2	PH502	Photonics	3-0-0-3	3
3	EP403	Physics of Atoms and Molecules	2-0-2-3	3
4	DEXX3	Discipline elective - 3	3-0-0-3	3
5	HSXX1	HSS Elective -1	3-0-0-3	3
6	DP301P/ DEXXX	ISTP/ Discipline Elective		4
	Total			20
Semester-7				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	EP401P	Engineering of Instrumentation	1-0-3-4	4
2	DP401P/ DEXXX	MTP-I / Discipline Elective	3-0-0-3	3
3	DEXX4	Discipline Elective- 4	3-0-0-3	3
4	HSXX2	HSS Elective -2	3-0-0-3	3
5	OEXX3	Open Elective- 3	3-0-0-3	3
	Total			16
Semester-8				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401P/ DEXXX	MTP-II / Discipline Elective	0-0-10-5	5
2	OEXX4	Open Elective - 4	3-0-0-3	3
3	OEXX5	Open Elective - 5	3-0-0-3	3
4	OEXX6	Open Elective - 6	3-0-0-3	3

Table 132 continued from previous page

5	OEXX7	Open Elective - 7	3-0-0-3	3
	Total			17

EP Electives

Table 133: Engineering Physics Electives

Sl. No.	Course Code	Course Name	L-T-P-C
1	PH503	Laser and Applications	
2	PH503	Organic Optoelectronics	
3	PH507	X-ray as a probe to study the material properties	
4	PH508	Magnetism and Magnetic Materials	
5	PH601	Mesoscopic Physics and Quantum Transport	
6	PH603	Advanced Condensed Matter Physics	
7	PH612	Nuclear and Particle Physics	
8	PH524	Atomic and Molecular Physics	
9	PH613	Special Topics in Quantum Mechanics	
10	PH605	Superconductivity	

Mechanical Engineering

ME Compulsory

Table 134: ME Compulsory

S.No.	Course Code	Course Title	L-T-P-C	Semester
1	ME205	Machine Drawing	1-0-4-3	III
2	ME210	Fluid Mechanics	2.5-0.5-0-3	IV
3	ME206	Mechanics of Solids	3-0-0-3	V
4	ME303	Heat Transfer	3-0-0-3	V
5	ME308	Manufacturing Engineering	2.5-0.5-0-3	V
6	ME307	Energy Conversion Devices	2.5-0.5-0-3	VI
7	ME309	Theory of Machines	3-1-0-4	VI
8	ME452	Robotics and Control	2-1-0-3	VI

Table 134 continued from previous page

9	ME 311P/ 312P	Design Labs 1 and 2	0-0-2-1	V and VI
10	ME305	Design of Machine Elements	3-1-0-4	VII
11	ME310P	Thermo-Fluid Laboratory	0-0-3-2	VII

ME Semester-wise

Table 135: ME Semester-wise

Semester-1				
S. No.	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC110	Engineering Mathematics	2.5-0.5-0-3	3
2	IC152	Computing and Data Science	3-0-3-4	4
3	IC160	Electrical Systems Around Us	3-0-0-3	3
4	IC160P	Electrical Systems Around Us Lab	0-0-3-2	2
5	IC140	Graphics for Design	2-0-3-4	4
6	IC101P	Reverse Engineering	0-0-3-2	2
7	HSXXX	HS Basket Course	3-0-0-3	3
8	HS10X	Creative Understanding	1-0-0-1	1
	Total		22 credits	22
Semester-2				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC111	Linear Algebra	2.5-0.5-0-3	3
2	IC141	Product Realization Technology	2-0-0-2	2
3	IC141P	Product Realization Technology Lab	0-0-3-2	2
4	IC161	Applied Electronics	3-0-0-3	3
5	IC161P	Applied Electronics Lab	0-0-3-2	2
6	IC252	Data Science II	3-0-2-4	4
7	HSXX1	HSS Language Competence basket course	3-0-0-3	3
8	IC142	Engineering Thermodynamics	3-0-0-3	3
	Total		22 credits	22
Semester-3				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	Science-1	Applied Chemistry/ Material Science / Mechanics of Particles and Waves	2.5-0.5-0-3	3

Table 135 continued from previous page

2	IC272	Data Science III	2-0-2-3	3
3	IC240	Mechanics of Rigid Bodies	3-0-0-3	3
4	IC230 Science 2	Environmental Science / Biotechnology	3-0-0-3	3
5	ME205	Machine Drawing	1-0-4-3	3
6	DE	Discipline Elective	3-0-0-3	3
7	HSXXX	HSS basket Course	3-0-0-3	3
	Total			21
Semester-4				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	IC201P	Design Practicum	0-0-6-4	4
2	IC221	Electrodynamics	3-0-0-3	3
3	IC222P	Physics Practicum	0-0-3-2	2
4	Enginee-ring Sciences	Measurement and Instrumentation/ Signals and Systems/ Continuum Mechanics		3
5	ME210	Fluid Mechanics	2.5-0.5-0-3	3
6	DE	Discipline Elective 2		3
7	HSS	HSS		3
	Total			21
Semester-5				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ME206	Mechanics of Solids	3-0-0-3	3
2	ME303	Heat Transfer	3-0-0-3	3
3	ME308	Manufacturing Engineering	2.5-0.5-0-3	3
4	ME311P	Design Lab 1	0-0-2-1	1
5	DE	Discipline Elective 3		3
6	HSS	HSS Elective		3
7	HSS	HSS Core/Elective		3
8	FE	Free Elective		3
	Total			22
Semester-6				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	ME309	Theory of Machines	3-1-0-4	4
2	ME307	Energy Conversion Devices	2.5-0.5-0-3	3
3	ME312P	Design Lab 2	0-0-2-1	1
4	DP 301P / FE	ISTP or Discipline Elective + Free Elective)	0-0-6-4	4

Table 135 continued from previous page

5	DE	Discipline Elective 4		3
6	HSS	HSS Core / Elective		3
7	ME452	Robotics and Control	2-1-0-3	3
	Total			21
Semester-7				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	MEXXX	Internship		2
2	ME305	Design of Machine Elements	3-1-0-4	4
3	ME310P	Thermo-fluid Lab	0-0-3-2	2
4	DP401 P_ME	Major Technical Project 1 or Discipline Elective	0-0-4.5-3	3
5	FE	Free Elective		3
6	FE	Free Elective		3
7	FE	Free Elective		3
	Total			20
Semester-8				
Sl. No	**Course Code**	**Course Name**	**L-T-P-C**	**Credits**
1	DP401 P_ME	Major Technical Project 2 or Discipline Elective + Free Elective	0-0-8-5	5
2	FE	Free Elective		3
3	FE	Free Elective		3
4	FE	Free Elective		3
5	FE	Free Elective		1
Total				15

Mechanical Engineering Electives

Table 136: Mechanical Engineering Electives

Sl. No.	Course Code	Course Title
1	ME352	Finite Element Methods in Engineering
2	ME353	Electronic Materials and Their Applications
3	ME355	Internal Combustion Engines
4	ME356	Principles of Energy Conversion
5	ME451	Refrigeration and Air-Conditioning
6	ME501	Materials Science for Failure Analysis
7	ME504	Numerical Methods for Engineering Computation

8	ME505	Applied Finite Element Method
9	ME506	Fundamentals of Fracture Mechanics
10	ME507	Micro and Nano-Scale Fluid Mechanics
11	ME509	Nano Manufacturing
12	ME510	Advanced Manufacturing Processes
13	ME513	Finite Element Method in Engineering
14	ME601	Finite Element Methods in Engineering
15	ME602	Mechanical Vibration
16	ME603	Advanced Fluid Mechanics
17	ME604	Experimental Methods In Thermal Engineering
18	ME605	Air Conditioning and Ventilation
19	ME606	Advanced Solid Mechanics
20	ME607	Materials Science for Failure Analysis
21	ME609	Functional Materials
22	ME610	Advanced Thermodynamics
23	ME611	Design and Optimization of Thermal Systems
24	ME613	Thermal Radiation
25	ME614	Compressible Flow and Gas Dynamics
26	ME615	Applied Computational Fluid Dynamics
27	ME616	Convective Heat and Mass Transfer
28	ME617	Mechanics of Composite Materials
29	ME618	Stealth Technology: Infrared Signatures
30	ME619	Experiments in Materials Science
31	ME620	Modelling and Simulations
32	ME621	Aircraft Propulsion
33	ME622	Biomechanics of Muscoskeletal Systems
34	ME625	Introduction to Turbulence and its Modelling
35	ME626	Acoustics
36	ME631	Heat Transfer and Fluid Flow In Energy Systems
37	ME632	Mechanics for Energy Systems
38	ME633	Design of Energy Systems
39	ME634	Thermodynamics of Energy Systems
40	ME635	Manufacturing for Energy Systems
41	ME636	Combustion Technology
42	ME637	Wind Power Plant
43	ME638	Solar Thermal Power Plant
44	ME639	Thermal Power Plant Engineering
45	ME640	Solar Power Utilization
46	ME641	Finite Element Method
47	CS508	Introduction to Heterogeneous Computing
48	EE305	Digital Signal Processing
49	EE509	Linear Dynamical Systems
50	EE516	Biomedical Systems

51	EN501	Energy Source and Power Plants
52	EN502	Emerging Energy Sources
53	EN503	Energy Storage Technologies
54	EN504	Energy Environment Policy and Law
55	EN613	Creep-Fatigue Interaction
56	MA521	Functional Analysis
57	MA522	Partial Differential Equations
58	MA605	Statistical Data Analysis
59	MA608	Computational Fluid Dynamics
60	MA609	Numerics of Partial Differential Equations
61	PH512	Classical Mechanics
62	PH513	Quantum Mechanics
63	PH522	Statistical Mechanics
64	PH603	Advanced Condensed Matter Physics
65	PH701	Introduction to Molecular Simulation

References:

1. https://iitmandi.ac.in/new/sites/default/files/2022-09/CE_Curriculum.pdf
2. https://iitmandi.ac.in/new/sites/default/files/2022-03/btech_cse.pdf
3. https://iitmandi.ac.in/new/sites/default/files/2022-03/btech_ee_6.pdf
4. https://iitmandi.ac.in/new/sites/default/files/2022-07/btech_mech2022.pdf
5. https://iitmandi.ac.in/new/sites/default/files/2022-03/B.TechEngg.Physics_0.pdf
6. https://iitmandi.ac.in/new/sites/default/files/2022-03/bioengg_dual_btech_mtech_3.pdf

Notes

i. Each student is supposed to complete at least 160 credits / 163 credits over 8 semesters / 4 years for B. Tech / B. S.

ii. Minimum credits to be done in a semester is 12.

iii. Maximum credits to be done in a semester is 22.

iv. Average load per semester is 20.

v. Internship has to be done during the vacations, following 5th semester and before 8th semester. Internship credits (02) will be credited only during the 8th semester.

vi. Semester long internship can be done during 6th and 7th semesters only. This internship is to be done only during the regular semester.

vii. Students may be allowed to combine both semester long internship and compulsory internship.

viii. Students need to register for DP399 course of relevant branch, during the semester long internship.

ix. During remote semester long internship (students staying at IIT Mandi), students may be permitted to take courses along with internship. For this, approval of Dean Academics / AD Courses is needed. Number of course credits will be restricted.

x. ISTP has to be done only during 3rd year.