भारतीय सूचना प्रौद्योगिकी अभिकल्पना एवं विनिर्माण संस्थान कर्नूल

Indian Institute of Information Technology Design and Manufacturing Kurnool

CURRICULA AND SYLLABI

Bachelor and Master of Technology
(Dual Degree)

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING

B. Tech. and M. Tech. (Dual Degree) in
COMPUTER SCIENCE AND ENGINEERING

		FIRST SEMESTER				
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
Total No. of Credits						24

		SECOND SEMESTER				
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	DS152	Linear Algebra	BSC	3	0	3
3.	DS153	Modern Physics	BSC	3	0	3
4.	DSxxx	Design Elective	DES	2	0	2
5.	DSxxx	Humanities Elective	HMC	2	0	0
6.	ME151	Concepts in Engineering Design	DES	3	0	3
7.	ME152	Design Realization Practice	DES	0	3	2
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	CS151	Digital Logic Design	BEC	2	3	4
10.	CS152	Python Programming Practice	BEC	0	3	2
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
Total No. of Credits						24

THIRD SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS201	Random Variables and Stochastic Processes	BSC	3	0	3
2.	CS201	Discrete Mathematics	PEC	3	0	3
3.	CS202	Data Structures	PEC	3	0	3
4.	CS203	Computer Organization and Architecture	PEC	3	0	3
5.	CS204	Design and Analysis of Algorithms	PEC	3	0	3
6.	CS205	Data Structures Practice	PEC	0	3	2
7.	CS206	Computer Organization and Architecture Practice	PEC	0	3	2
8.	CS207	Design and Analysis of Algorithms Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
Total No. of Credits						**21**

FOURTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS251	Automata Theory and Compiler Design	PEC	3	0	3
2.	CS252	Artificial Intelligence	PEC	3	0	3
3.	CS253	Operating Systems	PEC	3	0	3
4.	CS254	Data Communication and Computer Networking	PEC	3	0	3
5.	CS255	Embedded Systems and IoT	PEC	2	2	3
6.	CS256	Automata and Compiler Design Practice	PEC	0	3	2
7.	CS257	Operating Systems Practice	PEC	0	3	2
8.	CS258	Computer Networks Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
Total No. of Credits						**23**

FIFTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	CS301	Machine Learning	PEC	3	0	3
3.	CS302	Database Management Systems	PEC	3	0	3
4.	CS303	Software Engineering	PEC	3	0	3
5.	CS304	Data Mining	PEC	3	0	3
6.	CS305	Machine Learning Practice	PEC	0	3	2
7.	CS306	Database Management Systems Practice	PEC	0	3	2
8.	CS307	Software Engineering Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
Total No. of Credits						**21**

SIXTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	CS351	High Performance and GPU Computing	PEC	3	0	3
3.	CS352	Computer Vision	PES	3	0	3
4.	XXxxx	Elective I	PEC	3	0	3
5.	XXxxx	Elective II	PEC	3	0	3
6.	CS353	High Performance and GPU Computing Practice	PEC	0	3	2
7.	CS354	Computer Vision Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
9.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
Total No. of Credits						**23**

SEVENTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS501	Mathematical Foundations of Computer Science	PEC	3	0	3
2.	CS502	Advanced Data Structures and Algorithms	PEC	3	3	5
3.	CS503	Artificial Intelligence	PEC	3	3	5
4.	CS504	Computer Systems	PEC	3	3	5
5.	XXxxx	Elective III	PEC	3	0	3
6.	CS594	Seminar	PCD	0	3	2
Total No. of Credits						**23**

EIGHT SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS511	Embedded Systems and IoT	PEC	3	3	5
2.	CS512	Distributed Systems	PEC	3	3	5
3.	CS513	HPC and GPU Computing	PEC	3	3	5
4.	XXxxx	Elective IV	PEC	3	0	3
5.	XXxxx	Elective V	PEC	3	0	3
6.	CS595	Technical Writing	PCD	0	3	2
Total No. of Credits						**23**

NINTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS598	Dissertation Phase I	PCD	-	-	13
Total No. of Credits						**13**

TENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS599	Dissertation Phase II	PCD	-	-	15
Total No. of Credits						**15**

Elective Courses

List of Design Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS470	Principles of Programming	PEC	3	0	3
2.	CS471	Artificial Intelligence and Machine Learning	PEC	3	0	3
3.	CS472	Introduction to Data Science	PEC	3	0	3
4.	CS473	Systems Engineering	PEC	3	0	3
5.	DS470	Differential Equations	PEC	3	0	3
6.	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
7.	DS472	Numerical Methods	PEC	3	0	3
8.	DS473	Quantum Computing	PEC	3	0	3
9.	DS474	Sustainable Design	PEC	3	0	3
10.	CS521	Game Theory	PEC	3	0	3
11.	CS522	Natural Language Processing	PEC	3	0	3
12.	CS523	Information Retrieval	PEC	3	0	3
13.	CS524	Recommender Systems	PEC	3	0	3
14.	CS525	Systems Engineering	PEC	3	0	3
15.	CS526	Health Analytics	PEC	3	0	3
16.	CS527	Social Network Analysis	PEC	3	0	3
17.	CS528	Unmanned Aerial Vehicle	PEC	3	0	3
18.	CS529	Robotics	PEC	3	0	3
19.	CS530	Time Series Analysis	PEC	3	0	3
20.	CS531	Human Computer Interaction	PEC	3	0	3
21.	CS532	Modern Computational Algebra	PEC	3	0	3
22.	CS533	Affective Computing	PEC	3	0	3
23.	CS534	Simulation and Modelling	PEC	3	0	3

24.	CS535	Decision Science	PEC	3	0	3
25.	CS536	Quantum Computing	PEC	3	0	3
26.	CS537	Data Science	PEC	3	0	3
27.	CS538	Parallel and Distributed Systems	PEC	3	0	3
28.	CS539	Real-time Systems	PEC	3	0	3
29.	CS540	Big Data Analytics	PEC	3	0	3
30.	CS541	Data Privacy	PEC	3	0	3
31.	CS542	Marketing Science and Predictive Analysis	PEC	3	0	3
32.	CS543	Cyber Forensics	PEC	3	0	3
33.	CS544	Statistical Learning	PEC	3	0	3
34.	CS545	Decision Support Systems	PEC	3	0	3
35.	CS546	Immersive Technologies	PEC	3	0	3
36.	CS547	Bioinformatics	PEC	3	0	3
37.	CS548	Advanced Data Mining	PEC	3	0	3
38.	CS549	Computational Learning Theory	PEC	3	0	3
39.	CS550	Wireless Networked Systems	PEC	3	0	3
40.	CS551	Post Quantum Cryptography	PEC	3	0	3
41.	CS552	Research Methodology	PEC	3	0	3
42.	CS553	Scalable Data Science	PEC	3	0	3
43.	CS402	Internet of Things	PEC	3	0	3
44.	CS406	Blockchain	PEC	3	0	3
45.	CS407	Object Oriented Programming	PEC	3	0	3
46.	CS409	Industry 4.0	PEC	3	0	3
47.	CS412	Information Theory and Coding	PEC	3	0	3
48.	CS416	Information Security	PEC	3	0	3
49.	CS418	Design Patterns	PEC	3	0	3
50.	CS421	Genetic Algorithm	PEC	3	0	3
51.	CS425	Software Testing	PEC	3	0	3
52.	CS426	Soft Computing	PEC	3	0	3
53.	CS428	Advanced Data Structures and Algorithms	PEC	3	0	3
54.	CS429	Graph Theory	PEC	3	0	3
55.	CS430	Approximation and Randomized Algorithms	PEC	3	0	3
56.	CS431	Digital Image Processing	PEC	3	0	3
57.	CS432	Mobile Computing	PEC	3	0	3
58.	CS433	Pattern Recognition	PEC	3	0	3
59.	CS434	Cloud Computing	PEC	3	0	3
60.	CS436	Business Intelligence	PEC	3	0	3
61.	CS437	Service Oriented Architecture	PEC	3	0	3
62.	CS440	Fault-Tolerant Systems	PEC	3	0	3
63.	CS441	Computer Graphics and Multimedia	PEC	3	0	3
64.	CS442	Scalable Data Science	PEC	3	0	3
65.	CS443	Optimization Techniques	PEC	3	0	3
66.	CS444	Embedded Systems	PEC	3	0	3
67.	CS449	Financial Analytics	PEC	3	0	3

68.	CS450	Data Analysis and Visualization	PEC	3	0	3
69.	CS454	Bio-Inspired Computing	PEC	3	0	3
70.	CS458	Algorithmic Techniques for Big Data	PEC	3	0	3
71.	CS459	Mining of Massive Datasets	PEC	3	0	3
72.	CS460	Virtual Reality and Augmented Reality	PEC	3	0	3
73.	CS461	Cluster Computing	PEC	3	0	3
74.	CS464	Modern Computational Algebra	PEC	3	0	3
75.	CS465	Web Technologies	PEC	3	0	3
76.	CS466	Cryptography and Network Security	PEC	3	0	3
77.	CS467	Principles of Programming	PEC	3	0	3
78.	CS468	Remote Sensing and GIS	PEC	3	0	3
79.	CS469	Gen AI	PEC	3	0	3

Self-Improvement Courses

List of Self Improvement Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

Skill Development Courses

S. No.	Course Code	Course Name	Category Code	I	P	C
		List of Skill Development Courses				
1.	CS381	Linux Administration	PCD	2	0	2
2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2
15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2
18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2
20.	EC381	Industry 4.0	PCD	2	0	2

DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

B. Tech. and M. Tech. (Dual Degree) in
ELECTRONICS AND COMMUNICATION ENGINEERING
(SPECIALIZATION IN VLSI AND EMBEDDED SYSTEMS)

		FIRST SEMESTER				
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
Total No. of Credits						**24**

		SECOND SEMESTER				
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS155	Differential Equations	BSC	3	0	3
2.	DS153	Modern Physics	BSC	3	0	3
3.	DSxxx	Design Elective	DES	2	0	2
4.	DSxxx	Humanities Elective	HMC	2	0	0
5.	ME151	Concepts in Engineering Design	DES	3	0	3
6.	ME152	Design Realization Practice	DES	0	3	2
7.	ME153	Engineering Graphics	DES	1	3	3
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	EC151	Electronic Devices and Circuits	BEC	3	0	3
10.	EC152	Signals and Systems	BEC	3	0	3
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
Total No. of Credits						**24**

		THIRD SEMESTER				
S. No.	**Course Code**	**Course Name**	**Category Code**	**I**	**P**	**C**
1.	DS152	Linear Algebra	BSC	3	0	3
2.	EC201	Digital Logic Circuits	PEC	3	0	3
3.	EC202	Analog Electronics	PEC	3	0	3
4.	EC203	Fundamentals of Data structures and Algorithms	PEC	3	0	3
5.	EC204	Electromagnetic Waves and Transmission Lines	PEC	3	0	3
6.	EC205	Digital Logic Circuits Practice	PEC	0	3	2
7.	EC206	Analog Electronics Practice	PEC	0	3	2
8.	EC207	Fundamentals of Data structures and Algorithms Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
Total No. of Credits						**21**

		FOURTH SEMESTER				
S. No.	**Course Code**	**Course Name**	**Category Code**	**I**	**P**	**C**
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	EC251	Microprocessors and Microcontrollers	PEC	3	0	3
3.	EC252	Analog and Digital Communications	PEC	3	0	3
4.	EC253	Digital Signal processing	PEC	3	0	3
5.	EC254	Control Systems	PEC	3	0	3
6.	EC255	Microprocessors and Microcontrollers Practice	PEC	0	3	2
7.	EC256	Analog and Digital Communications Practice	PEC	0	3	2
8.	EC257	Digital Signal Processing Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
Total No. of Credits						**23**

		FIFTH SEMESTER				
S. No.	**Course Code**	**Course Name**	**Category Code**	**I**	**P**	**C**
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	EC301	Wireless Communication	PEC	3	0	3
3.	EC302	Electronic Manufacturing and Prototyping	PEC	3	0	3
4.	EC303	VLSI System Design	PEC	3	0	3
5.	EC304	Data Communication and Networking	PEC	3	0	3
6.	EC305	Wireless Communication Practice	PEC	0	3	2
7.	EC306	Electronic Manufacturing and Prototyping Practice	PEC	0	3	2
8.	EC307	VLSI System Design Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
Total No. of Credits						**21**

SIXTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	EC351	Antenna and Microwave Circuits Design	PEC	3	0	3
3.	EC352	Information Theory and Coding	PES	3	0	3
4.	XXxxx	Elective I	PEC	3	0	3
5.	XXxxx	Elective II	PEC	3	0	3
6.	EC353	Antenna and Microwave Circuits Design Practice	PEC	0	3	2
7.	EC354	Information Theory and Coding Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
10.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
Total No. of Credits						**23**

SEVENTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC501	MOSFET Modelling for VLSI Circuits	PEC	3	2	4
2.	EC502	Digital VLSI System Design	PEC	3	2	4
3.	EC503	Embedded System Design	PEC	3	2	4
4.	EC504	Analog VLSI Design	PEC	3	2	4
5.	EC505	Advanced Computer Architecture	PEC	3	0	3
6.	XXxxx	Elective III	PEC	3	0	3
7.	EC594	Seminar	PCD	-	-	1
Total No. of Credits						**23**

EIGHT SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC511	Digital Signal Processing and Architectures	PEC	3	2	4
2.	EC512	Mixed Signal Integrated Circuits	PEC	3	2	4
3.	EC513	VLSI Verification and Testing	PEC	3	2	4
4.	EC514	RFIC Design	PEC	3	0	3
5.	EC515	Electronic Packaging and Manufacturing	PEC	3	2	4
6.	XXxxx	Elective IV	PEC	3	0	3
7.	EC595	Technical Writing	PCD	-	-	1
Total No. of Credits						**23**

NINTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC598	Dissertation Phase I	PEC	-	-	13
Total No. of Credits						**13**

TENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC599	Dissertation Phase II	PEC	-	-	15
Total No. of Credits						**15**

Elective Courses

List of Design Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1	EC521	Analog and Mixed Signal Circuit Design	PEC	3	0	3
2	EC522	Artificial Intelligence and Machine Learning	PEC	3	0	3
3	EC523	Circuits for Electronics System Design	PEC	3	0	3
4	EC524	Cognitive Communication Networks	PEC	3	0	3
5	EC525	Communication Protocols for Electronic System Design	PEC	3	0	3
6	EC526	Design of Switched Mode Power Supply	PEC	3	0	3
7	EC527	Detection and Estimation Theory	PEC	3	0	3
8	EC528	Digital Image Processing	PEC	3	0	3
9	EC529	Electrical Drives	PEC	3	0	3
10	EC530	Electromagnetic Interference and Compatibility	PEC	3	0	3
11	EC531	MIMO Communication Systems	PEC	3	0	3
12	EC532	Numerical Techniques in Electromagnetics	PEC	3	0	3
13	EC533	Power Electronics	PEC	3	0	3
14	EC534	Reliable Digital Communication System Design	PEC	3	0	3
15	EC535	RF and Microwave Integrated Circuits	PEC	3	0	3
16	EC536	Satellite Communication	PEC	3	0	3
17	EC537	Sensing and Instrumentation	PEC	3	0	3
18	EC538	Signal and Power Integrity	PEC	3	0	3
19	EC539	Software Defined Radio	PEC	3	0	3
20	EC540	Testing and Testability	PEC	3	0	3
21	EC541	VLSI Technology	PEC	3	0	3
22	EC542	Design of IoT System	PEC	3	0	3
23	EC543	Electric Vehicle Technology	PEC	3	0	3
24	EC544	Navigation System	PEC	3	0	3

25	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
26	DS472	Numerical Methods	PEC	3	0	3
27	DS473	Quantum Computing	PEC	3	0	3
28	DS474	Sustainable Design	PEC	3	0	3

Self-Improvement Courses

List of Self Improvement Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

Skill Development Courses

List of Skill Development Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS381	Linux Administration	PCD	2	0	2
2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2
15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2

18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2

B. Tech. and M. Tech. (Dual Degree) in
ELECTRONICS AND COMMUNICATION ENGINEERING
(SPECIALIZATION IN DRONE AND IoT)

S. No.	Course Code	Course Name	Category Code	I	P	C
FIRST SEMESTER
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
Total No. of Credits						**24**

FIRST SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS155	Differential Equations	BSC	3	0	3
2.	DS153	Modern Physics	BSC	3	0	3
3.	DSxxx	Design Elective	DES	2	0	2
4.	DSxxx	Humanities Elective	HMC	2	0	0
5.	ME151	Concepts in Engineering Design	DES	3	0	3
6.	ME152	Design Realization Practice	DES	0	3	2
7.	ME153	Engineering Graphics	DES	1	3	3
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	EC151	Electronic Devices and Circuits	BEC	3	0	3
10.	EC152	Signals and systems	BEC	3	0	3
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
Total No. of Credits						**24**

SECOND SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
THIRD SEMESTER						
1.	DS152	Linear Algebra	BSC	3	0	3
2.	EC201	Digital Logic Circuits	PEC	3	0	3
3.	EC202	Analog Electronics	PEC	3	0	3
4.	EC203	Fundamentals of Data structures and Algorithms	PEC	3	0	3
5.	EC204	Electromagnetic Waves and Transmission Lines	PEC	3	0	3
6.	EC205	Digital Logic Circuits Practice	PEC	0	3	2
7.	EC206	Analog Electronics Practice	PEC	0	3	2
8.	EC207	Fundamentals of Data structures and Algorithms Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
Total No. of Credits						**21**

S. No.	Course Code	Course Name	Category Code	I	P	C
FOURTH SEMESTER						
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	EC251	Microprocessors and Microcontrollers	PEC	3	0	3
3.	EC252	Analog and Digital Communications	PEC	3	0	3
4.	EC253	Digital Signal Processing	PEC	3	0	3
5.	EC254	Control Systems	PEC	3	0	3
6.	EC255	Microprocessors and Microcontrollers Practice	PEC	0	3	2
7.	EC256	Analog and Digital Communications Practice	PEC	0	3	2
8.	EC257	Digital Signal processing Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
Total No. of Credits						**23**

S. No.	Course Code	Course Name	Category Code	I	P	C
FIFTH SEMESTER						
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	EC301	Wireless Communication	PEC	3	0	3
3.	EC302	Electronic Manufacturing and Prototyping	PEC	3	0	3
4.	EC303	VLSI System Design	PEC	3	0	3
5.	EC304	Data Communication and Networking	PEC	3	0	3
6.	EC305	Wireless Communication Practice	PEC	0	3	2
7.	EC306	Electronic Manufacturing and Prototyping Practice	PEC	0	3	2
8.	EC307	VLSI System Design Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
Total No. of Credits						**21**

SIXTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	EC351	Antenna and Microwave Circuits Design	PEC	3	0	3
3.	EC352	Information Theory and Coding	PES	3	0	3
4.	XXxxx	Elective I	PEC	3	0	3
5.	XXxxx	Elective II	PEC	3	0	3
6.	EC353	Antenna and Microwave Circuits Design Practice	PEC	0	3	2
7.	EC354	Information Theory and Coding Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
10.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
Total No. of Credits						**23**

SEVENTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC571	Drone Technology	PEC	3	2	4
2.	EC572	Autonomous systems	PEC	3	2	4
3.	EC573	Artificial Intelligence	PEC	3	0	3
4.	EC574	Embedded System Design	PEC	3	2	4
5.	EC575	Guidance, Navigation, and Control	PEC	3	2	4
6.	XXxxx	Elective III	PEC	3	0	3
7.	EC594	Seminar	PCD	-	-	1
Total No. of Credits						**23**

EIGHT SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC581	Design of IoT system	PEC	3	2	4
2.	EC582	Mobile Communication and Networking	PEC	3	2	4
3.	EC583	Smart Sensors & Actuators	PEC	3	2	4
4.	EC584	Internet and Wireless Networks Security	PEC	3	0	3
5.	EC585	Edge, Cloud, and Distributed Computing	PEC	3	2	4
6.	XXxxx	Elective IV	PEC	3	0	3
7.	EC595	Technical Writing	PCD	-	-	1
Total No. of Credits						**23**

NINTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC598	Dissertation Phase I	PEC	-	-	13
Total No. of Credits						**13**

TENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	EC599	Dissertation Phase II	PEC	-	-	15
Total No. of Credits						**15**

Elective Courses

List of Design Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1	EC521	Analog and Mixed Signal Circuit Design	PEC	3	0	3
2	EC522	Artificial Intelligence and Machine Learning	PEC	3	0	3
3	EC523	Circuits for Electronics System Design	PEC	3	0	3
4	EC524	Cognitive Communication Networks	PEC	3	0	3
5	EC525	Communication Protocols for Electronic System Design	PEC	3	0	3
6	EC526	Design of Switched Mode Power Supply	PEC	3	0	3
7	EC527	Detection and Estimation Theory	PEC	3	0	3
8	EC528	Digital Image Processing	PEC	3	0	3
9	EC529	Electrical Drives	PEC	3	0	3
10	EC530	Electromagnetic Interference and Compatibility	PEC	3	0	3
11	EC531	MIMO Communication Systems	PEC	3	0	3
12	EC532	Numerical Techniques in Electromagnetics	PEC	3	0	3
13	EC533	Power Electronics	PEC	3	0	3
14	EC534	Reliable Digital Communication System Design	PEC	3	0	3
15	EC535	RF and Microwave Integrated Circuits	PEC	3	0	3
16	EC536	Satellite Communication	PEC	3	0	3
17	EC537	Sensing and Instrumentation	PEC	3	0	3
18	EC538	Signal and Power Integrity	PEC	3	0	3
19	EC539	Software Defined Radio	PEC	3	0	3
20	EC540	Testing and Testability	PEC	3	0	3
21	EC541	VLSI Technology	PEC	3	0	3
22	EC542	Design of IoT System	PEC	3	0	3
23	EC543	Electric Vehicle Technology	PEC	3	0	3
24	EC544	Navigation System	PEC	3	0	3

25	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
26	DS472	Numerical Methods	PEC	3	0	3
27	DS473	Quantum Computing	PEC	3	0	3
28	DS474	Sustainable Design	PEC	3	0	3

Self-Improvement Courses

List of Self Improvement Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

Skill Development Courses

List of Skill Development Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS381	Linux Administration	PCD	2	0	2
2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2

15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2
18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2
20.	EC381	Industry 4.0	PCD	2	0	2

DEPARTMENT OF
MECHANICAL ENGINEERING

**B. Tech. and M. Tech. (Dual Degree) in
MECHANICAL ENGINEERING
(SPECIALIZATION IN SMART MANUFACTURING)**

S. No.	Course Code	Course Name	Category Code	I	P	C
		FIRST SEMESTER				
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
Total No. of Credits						**24**

S. No.	Course Code	Course Name	Category Code	I	P	C
		SECOND SEMESTER				
1.	DS155	Differential Equations	BSC	3	0	3
2.	DS153	Modern Physics	BSC	3	0	3
3.	DSxxx	Design Elective	DES	2	0	2
4.	DSxxx	Humanities Elective	HMC	2	0	0
5.	ME151	Concepts in Engineering Design	DES	3	0	3
6.	ME152	Design Realization Practice	DES	0	3	2
7.	ME153	Engineering Graphics	DES	1	3	3
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	ME154	Material Science and Metallurgy	BEC	3	0	3
10.	ME155	Thermodynamics	BEC	3	0	3
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
Total No. of Credits						**24**

THIRD SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS152	Linear Algebra	BSC	3	0	3
2.	ME201	Mechanics of Materials	PEC	3	0	3
3.	ME202	Kinematics of Machines	PEC	3	0	3
4.	ME203	Fluid Mechanics and Hydraulic Machinery	PEC	3	0	3
5.	ME204	Electrical Drives, Sensors, and Microprocessor	PEC	3	0	3
6.	ME205	Materials and Mechanics Practice	PEC	0	3	2
7.	ME206	Electrical Drives, Sensors, and Microprocessor Practice	PEC	0	3	2
8.	ME207	Machine Drawing & Manufacturability Analysis Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
Total No. of Credits						**21**

FOURTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	ME251	Basic Concepts in Manufacturing Processes	PEC	3	0	3
3.	ME252	Dynamics of Machines	PEC	3	0	3
4.	ME253	Design of Machine Elements	PEC	3	0	3
5.	ME254	Heat Transfer	PEC	3	0	3
6.	ME255	Basic Concepts in Manufacturing Processes Practice	PEC	0	3	2
7.	ME256	Dynamics of Machines Practice	PEC	0	3	2
8.	ME257	Fluid Mechanics and Heat Transfer Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
Total No. of Credits						**23**

FIFTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	ME301	Quality Inspection and Product Validation	PEC	3	0	3
3.	ME302	Automation in Manufacturing	PEC	3	0	3
4.	ME303	Thermal Engineering	PEC	3	0	3
5.	ME304	Operation Research	PEC	3	0	3
6.	ME305	Quality Inspection and Product Validation Practice	PEC	0	3	2
7.	ME306	Automation in Manufacturing Practice	PEC	0	3	2
8.	ME307	Thermal Engineering Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
Total No. of Credits						**21**

SIXTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	ME351	Computational Methods in Engineering	PEC	3	0	3
3.	ME352	Machine Tool Technology	PES	3	0	3
4.	XXxxx	Elective I	PEC	3	0	3
5.	XXxxx	Elective II	PEC	3	0	3
6.	ME353	Computational Methods in Engineering Practice	PEC	0	3	2
7.	ME354	Machine Tool Technology Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
10.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
Total No. of Credits						**23**

SEVENTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME501	Mathematics for Simulation and Modelling	PEC	2	2	3
2.	ME502	Applied AI for Manufacturing	PEC	3	0	3
3.	ME503	Mechatronic Product Design	PEC	3	0	3
4.	ME504	Advanced Manufacturing Processes	PEC	3	0	3
5.	ME505	Applied AI for Manufacturing Practice	PEC	0	3	2
6.	ME506	Mechatronic Product Design Practice	PEC	0	3	2
7.	ME507	Advanced Manufacturing Practice	PEC	0	3	2
8.	XXxxx	Elective III	PEC	3	0	3
9.	ME594	Seminar	PCD	-	-	2
Total No. of Credits						**23**

EIGHTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME511	Industrial IoT and Cloud Computing	PEC	3	0	3
2.	ME512	Modelling and Simulation of Manufacturing Systems	PEC	3	0	3
3.	ME513	Micro and Nano Manufacturing Technology	PEC	3	0	3
4.	ME514	Industrial IoT and Cloud Computing Practice	PEC	0	3	2
5.	ME515	Manufacturing Simulation Practice	PEC	0	3	2
6.	ME516	Micro and Nano Manufacturing Technology Practice	PEC	0	3	2
7.	XXxxx	Free Elective IV	PEC	3	0	3
8.	XXxxx	Free Elective V	PEC	3	0	3
9.	ME595	Technical Writing	PCD	-	-	2
Total No. of Credits						**23**

NINTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME598	Dissertation Phase I	PEC	-	-	13
Total No. of Credits						**13**

TENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME599	Dissertation Phase II	PEC	-	-	15
Total No. of Credits						**15**

Elective Courses

List of Design Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1	ME404	Designing Intelligent Systems	PEC	3	0	3
2	ME405	Design for Quality and Reliability	PEC	3	0	3
3	ME406	System Thinking for Design	PEC	3	0	3
4	ME521	Information Systems in Manufacturing	PEC	3	0	3
5	ME522	Inspection and Testing in Manufacturing	PEC	3	0	3
6	ME523	Lasers in Manufacturing	PEC	3	0	3
7	ME524	Digital Manufacturing	PEC	3	0	3
8	ME525	Smart Materials and Structures	PEC	3	0	3
9	ME526	Design for Manufacturing and Assembly	PEC	3	0	3
10	ME527	Additive Manufacturing	PEC	3	0	3
11	ME528	Materials Fabrication and Characterization	PEC	3	0	3
12	ME529	Introduction to Smart Manufacturing	PEC	3	0	3
13	ME530	Processing of Alloys and Composites	PEC	3	0	3
14	ME531	Computer Integrated Manufacturing Systems	PEC	3	0	3
15	ME532	Industrial Instrumentation and Metrology	PEC	3	0	3
16	ME533	MEMS / NEMS and Sensors	PEC	3	0	3
17	ME534	Metal Forming	PEC	3	0	3
18	ME535	Total Quality Management	PEC	3	0	3
19	ME536	Nano Finishing Science and Technology	PEC	3	0	3
20	ME537	Processing of Composites	PEC	3	0	3
21	ME538	Surface Engineering	PEC	3	0	3
22	ME539	Modern Manufacturing Technologies	PEC	3	0	3
23	ME540	Robotics and Intelligent Systems	PEC	3	0	3

				I	P	C
24	ME541	Mechanical Vibration and Condition Monitoring	PEC	3	0	3
25	ME542	Mechanical Vibrations	PEC	3	0	3
26	ME543	Advanced Solid Mechanics	PEC	3	0	3
27	ME544	Finite Element Methods	PEC	3	0	3
28	ME545	IC Engines and Gas Turbines	PEC	3	0	3
29	ME546	Computational Fluid Dynamics	PEC	3	0	3
30	ME547	Optimization Techniques for Mechanical Engineers	PEC	3	0	3
31	ME548	Product Design and Development	PEC	3	0	3
32	ME549	Computational Tools for Engineers	PEC	3	0	3
33	ME550	Soft Computing Techniques	PEC	3	0	3
34	ME551	Big Data Analytics	PEC	3	0	3
35	ME552	Applied Operations Research	PEC	3	0	3
36	ME553	Digital Control for Automation	PEC	3	0	3
37	ME554	Non-linear Dynamics	PEC	3	0	3
38	ME555	Operations and Supply Chain Management	PEC	3	0	3
39	ME556	Industry 4.0	PEC	3	0	3
40	ME557	Design and Analysis of Experiments	PEC	3	0	3
41	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
42	DS472	Numerical Methods	PEC	3	0	3
43	ME401	Computer-Aided Design and Manufacturing	PEC	3	0	3
44	ME402	Refrigeration and Air conditioning	PEC	3	0	3
45	ME403	Automobile Engineering Systems	PEC	3	0	3
46	DS473	Quantum Computing	PEC	3	0	3
47	DS474	Sustainable Design	PEC	3	0	3

Self-Improvement Courses

List of Self Improvement Courses						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

Skill Development Courses

		List of Skill Development Courses				
S. No.	**Course Code**	**Course Name**	**Category Code**	**I**	**P**	**C**
1.	CS381	Linux Administration	PCD	2	0	2
2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2
15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2
18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2
20.	EC381	Industry 4.0	PCD	2	0	2

B. Tech. and M. Tech. (Dual Degree) in
MECHANICAL ENGINEERING
(SPECIALIZATION IN ROBOTICS AND AUTOMATION)

S. No.	Course Code	Course Name	Category Code	I	P	C
**FIRST SEMESTER**						
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
Total No. of Credits						**24**

S. No.	Course Code	Course Name	Category Code	I	P	C
**SECOND SEMESTER**						
1.	DS155	Differential Equations	BSC	3	0	3
2.	DS153	Modern Physics	BSC	3	0	3
3.	DSxxx	Design Elective	DES	2	0	2
4.	DSxxx	Humanities Elective	HMC	2	0	0
5.	ME151	Concepts in Engineering Design	DES	3	0	3
6.	ME152	Design Realization Practice	DES	0	3	2
7.	ME153	Engineering Graphics	DES	1	3	3
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	ME154	Material Science and Metallurgy	BEC	3	0	3
10.	ME155	Thermodynamics	BEC	3	0	3
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
Total No. of Credits						**24**

THIRD SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS152	Linear Algebra	BSC	3	0	3
2.	ME201	Mechanics of Materials	PEC	3	0	3
3.	ME202	Kinematics of Machines	PEC	3	0	3
4.	ME203	Fluid Mechanics and Hydraulic Machinery	PEC	3	0	3
5.	ME204	Electrical Drives, Sensors, and Microprocessor	PEC	3	0	3
6.	ME205	Materials and Mechanics Practice	PEC	0	3	2
7.	ME206	Electrical Drives, Sensors, and Microprocessor Practice	PEC	0	3	2
8.	ME207	Machine Drawing & Manufacturability Analysis Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
Total No. of Credits						**21**

FOURTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	ME251	Basic Concepts in Manufacturing Processes	PEC	3	0	3
3.	ME252	Dynamics of Machines	PEC	3	0	3
4.	ME253	Design of Machine Elements	PEC	3	0	3
5.	ME254	Heat Transfer	PEC	3	0	3
6.	ME255	Basic Concepts in Manufacturing Processes Practice	PEC	0	3	2
7.	ME256	Dynamics of Machines Practice	PEC	0	3	2
8.	ME257	Fluid Mechanics and Heat Transfer Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
Total No. of Credits						**23**

FIFTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	ME301	Quality Inspection and Product Validation	PEC	3	0	3
3.	ME302	Automation in Manufacturing	PEC	3	0	3
4.	ME303	Thermal Engineering	PEC	3	0	3
5.	ME304	Operation Research	PEC	3	0	3
6.	ME305	Quality Inspection and Product Validation Practice	PEC	0	3	2
7.	ME306	Automation in Manufacturing Practice	PEC	0	3	2
8.	ME307	Thermal Engineering Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
Total No. of Credits						**21**

SIXTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	ME351	Computational Methods in Engineering	PEC	3	0	3
3.	ME352	Machine Tool Technology	PES	3	0	3
4.	XXxxx	Elective I	PEC	3	0	3
5.	XXxxx	Elective II	PEC	3	0	3
6.	ME353	Computational Methods in Engineering Practice	PEC	0	3	2
7.	ME354	Machine Tool Technology Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
10.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
Total No. of Credits						**23**

SEVENTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME501	Mathematics for Simulation and Modelling	PEC	2	2	3
2.	ME571	Robot Kinematics and Dynamics	PEC	3	0	3
3.	ME572	Embedded Systems for Automation	PEC	3	0	3
4.	ME573	Fluid Power System for Automation	PEC	3	0	3
5.	ME574	Robot Kinematics and Dynamics Practice	PEC	0	3	2
6.	ME575	Embedded Systems for Automation Practice	PEC	0	3	2
7.	ME576	Fluid Power System for Automation Practice	PEC	0	3	2
8.	XXxxx	Elective III	PEC	3	0	3
9.	ME594	Seminar	PCD	-	-	2
Total No. of Credits						**23**

EIGHTH SEMESTER

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME511	Industrial IoT and Cloud Computing	PEC	3	0	3
2.	ME581	Autonomous Navigation and Path Planning	PEC	3	0	3
3.	ME582	Experimental Techniques for Robotics and Automation	PEC	3	0	3
4.	ME514	Industrial IoT and Cloud Computing Practice	PEC	0	3	2
5.	ME583	Autonomous Navigation and Path Planning Practice	PEC	0	3	2
6.	ME584	Experimental Techniques for Robotics and Automation Practice	PEC	0	3	2
7.	XXxxx	Elective IV	PEC	3	0	3
8.	XXxxx	Elective V	PEC	3	0	3
9.	ME595	Technical Writing	PCD	-	-	2
Total No. of Credits						**23**

NINTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME598	Dissertation Phase I	PEC	-	-	13
Total No. of Credits						**13**

TENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ME599	Dissertation Phase II	PEC	-	-	15
Total No. of Credits						**15**

Elective Courses

List of Design Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Electives

S. No.	Course Code	Course Name	Category Code	I	P	C
1	ME404	Designing Intelligent Systems	PEC	3	0	3
2	ME405	Design for Quality and Reliability	PEC	3	0	3
3	ME406	System Thinking for Design	PEC	3	0	3
4	ME521	Information Systems in Manufacturing	PEC	3	0	3
5	ME522	Inspection and Testing in Manufacturing	PEC	3	0	3
6	ME523	Lasers in Manufacturing	PEC	3	0	3
7	ME524	Digital Manufacturing	PEC	3	0	3
8	ME525	Smart Materials and Structures	PEC	3	0	3
9	ME526	Design for Manufacturing and Assembly	PEC	3	0	3
10	ME527	Additive Manufacturing	PEC	3	0	3
11	ME528	Materials Fabrication and Characterization	PEC	3	0	3
12	ME529	Introduction to Smart Manufacturing	PEC	3	0	3
13	ME530	Processing of Alloys and Composites	PEC	3	0	3
14	ME531	Computer Integrated Manufacturing Systems	PEC	3	0	3
15	ME532	Industrial Instrumentation and Metrology	PEC	3	0	3
16	ME533	MEMS / NEMS and Sensors	PEC	3	0	3
17	ME534	Metal Forming	PEC	3	0	3
18	ME535	Total Quality Management	PEC	3	0	3
19	ME536	Nano Finishing Science and Technology	PEC	3	0	3
20	ME537	Processing of Composites	PEC	3	0	3
21	ME538	Surface Engineering	PEC	3	0	3
22	ME539	Modern Manufacturing Technologies	PEC	3	0	3
23	ME540	Robotics and Intelligent Systems	PEC	3	0	3

24	ME541	Mechanical Vibration and Condition Monitoring	PEC	3	0	3
25	ME542	Mechanical Vibrations	PEC	3	0	3
26	ME543	Advanced Solid Mechanics	PEC	3	0	3
27	ME544	Finite Element Methods	PEC	3	0	3
28	ME545	IC Engines and Gas Turbines	PEC	3	0	3
29	ME546	Computational Fluid Dynamics	PEC	3	0	3
30	ME547	Optimization Techniques for Mechanical Engineers	PEC	3	0	3
31	ME548	Product Design and Development	PEC	3	0	3
32	ME549	Computational Tools for Engineers	PEC	3	0	3
33	ME550	Soft Computing Techniques	PEC	3	0	3
34	ME551	Big Data Analytics	PEC	3	0	3
35	ME552	Applied Operations Research	PEC	3	0	3
36	ME553	Digital Control for Automation	PEC	3	0	3
37	ME554	Non-linear Dynamics	PEC	3	0	3
38	ME555	Operations and Supply Chain Management	PEC	3	0	3
39	ME556	Industry 4.0	PEC	3	0	3
40	ME557	Design and Analysis of Experiments	PEC	3	0	3
41	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
42	DS472	Numerical Methods	PEC	3	0	3
43	ME401	Computer-Aided Design and Manufacturing	PEC	3	0	3
44	ME402	Refrigeration and Air conditioning	PEC	3	0	3
45	ME403	Automobile Engineering Systems	PEC	3	0	3
46	DS473	Quantum Computing	PEC	3	0	3
47	DS474	Sustainable Design	PEC	3	0	3

Self-Improvement Courses

S. No.	Course Code	Course Name	Category Code	I	P	C
		List of Self Improvement Courses				
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

Skill Development Courses

	List of Skill Development Courses					
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS381	Linux Administration	PCD	2	0	2
2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2
15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2
18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2
20.	EC381	Industry 4.0	PCD	2	0	2