M. Tech in Computer Science and Engineering
Department of Computer Science Science and Engineering

		Semester – I		
SN	Subject Code	Course Title	L-T-P	Credits
1	MCSE-501	Machine Learning Techniques	3-0-2	4
2	MCSE-502	Modelling and Simulation	3-0-2	4
3	MCSE-503	Advanced Data Structures and Algorithms	3-0-2	4
4	MCSE-50X	Distributed Systems	3-0-2	4
5	MCSE-50X	Elective I	3-0-0	3
6	MCSE-510	Seminar *	0-1-0	1
			Credits	20

*Seminar – To provide training to the students on presentations, paper writing and oratory skills at early stage.

		Semester – II		
SN	Subject Code	Course Title	L-T-P	Credits
1	MCSE-512	Cyber Physical Systems	3-0-2	4
2	MCSE-513	Complex Networks	3-0-2	4
3	MCSE-5XX	Optimization Techniques	3-0-0	3
4	MCSE-5XX	Elective II	3-0-0	3
5	MCSE-5XX	Elective III	3-0-0	3
6	MCSE-524	Engineering Research Methodology	2-1-0	3
			Credits	20

EXIT AFTER YEAR-1: Post Graduate Diploma in Computer Science and
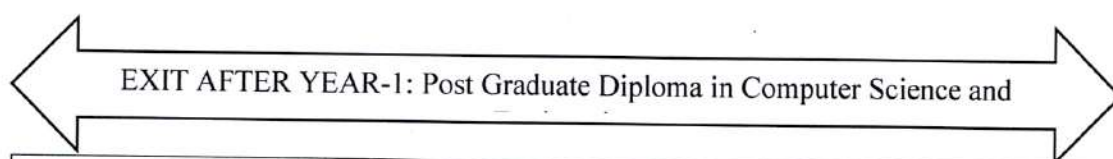
		Semester – III		
SN	Subject Code	Course Title	L-T-P	Credits
1	MCSE-523	Elective IV/MOOC	3-0-0	3
2		Dissertation Part - I		12
			Credits	15

		Semester – IV		
SN	Subject Code	Course Title	L-T-P	Credits
1		Dissertation Part - II		15
			Credits	15

Distribution of Credits:

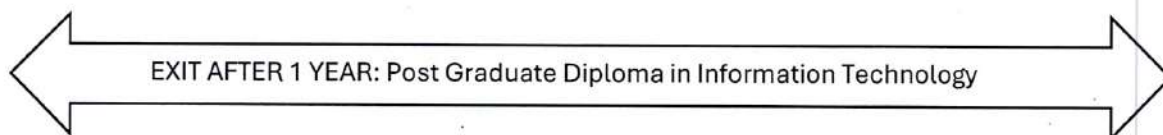| SEMESTER-I	SEMESTER-II	SEMESTER-III	SEMESTER-IV	TOTAL CREDITS
20	20	15	15	70

Atal Bihari Vajpayee
Indian Institute of Information Technology and Management Gwalior

M. Tech in Information Technology
Department of Information Technology

Track 1-Smart Mobility Systems Engineering

SN	Subject Code	Course Title	L-T-P	Credits
		Semester – I		
1	IT-601	Machine Learning Techniques	3-0-2	4
2	IT-602	Mathematical Foundations for Data Science	3-0-2	4
3	IT-603	Advanced Data Structures and Algorithms	3-0-2	4
4	IT-604	Introduction to Robotics	3-0-2	4
5	IT-605	Design for Reliability: Information and Computer Based Systems	3-0-2	4
			Credits	20

SN	Subject Code	Course Title	L-T-P	Credits
		Semester – II		
1	IT-612	Deep Learning	3-0-2	4
2	IT-613	Cyber Physical Systems	3-0-2	4
3	IT-614	Secure System Design	3-0-0	3
4	IT-6XX	Elective I	3-0-0	3
5	IT-6XX	Mini Project	0-0-6	3
6	IT-624	Engineering Research Methodology	2-1-0	3
			Credits	20

EXIT AFTER 1 YEAR: Post Graduate Diploma in Information Technology

SN	Subject Code	Course Title	L-T-P	Credits
		Semester – III		
1	IT-6XX	Elective II/MOOC	3-0-0	3
2		Dissertation Part - I		12
			Credits	15

SN	Subject Code	Course Title	L-T-P	Credits
		Semester – IV		
1		Dissertation Part - II		15
			Credits	15

Track 2- Intelligent Information Systems Engineering

		Semester – I		
SN	Subject Code	Course Title	L-T-P	Credits
1	IT-601	Machine Learning Techniques	3-0-2	4
2	IT-602	Mathematical Foundations for Data Science	3-0-2	4
3	IT-603	Advanced Data Structures and Algorithms	3-0-2	4
4	IT-604	Introduction to Natural Language Processing	3-0-2	4
5	IT-605	Design for Reliability: Information and Computer Based Systems	3-0-2	4
			Credits	20

		Semester – II		
SN	Subject Code	Course Title	L-T-P	Credits
1	IT-612	Deep Learning	3-0-2	4
2	IT-613	Advanced Natural Language Processing	3-0-2	4
3	IT-6XX	Social Networks Analysis	3-0-0	3
4	IT-6XX	Elective I	3-0-0	3
5	IT-6XX	Mini Project	0-0-6	3
6	IT-624	Engineering Research Methodology	2-1-0	3
			Credits	20

◄━━━ EXIT AFTER 1 YEAR: Post Graduate Diploma in Information Technology ━━━►

		Semester – III		
SN	Subject Code	Course Title	L-T-P	Credits
1	IT-6XX	Elective II/MOOC	3-0-0	3
2		Dissertation Part - I		12
			Credits	15

		Semester – IV		
SN	Subject Code	Course Title	L-T-P	Credits
1		Dissertation Part - II		15
			Credits	15

Distribution of Credits for both tracks 1 & 2:

1st Semester	2nd Semester	3rd Semester	4th Semester
20	20	15	15

MTech in Autonomous Systems and Machine Intelligence
Department of Electrical and Electronics Engineering

1st Semester

S.N.	Course Code	Name of Subject	L-T-P	Credit
1	EE-603	Machine Learning Techniques	3-0-2	4
2	EE-612	Sensors and Actuators	3-0-2	4
3	EE-613	Next-Generation Communication Systems	3-0-2	4
4	EE-614	Human-Machine Interaction	3-0-0	3
5	EE-XXX	Elective-1	3-0-0	3
6	EE-XXX	Elective-2	3-0-0	3
			Total	21

2nd Semester

S.N.	Course Code	Name of Subject	L-T-P	Credit
1	EE-615	Autonomous Systems	3-0-2	4
2	EE-616	Artificial Intelligence	3-0-2	4
3	EE-617	Advanced Embedded Systems	3-0-2	4
4	EE-609	Engineering Research Methodology	2-1-0	3
5	EE-XXX	Elective-3	3-0-0	3
6	EE-XXX	Elective-4	3-0-0	3
			Total	21

⬅ EXIST AFTER 1 YEAR: PG Diploma in Autonomous Systems and Machine ➡

3rd Semester

S.N.	Course Code	Name of Subject	L-T-P	Credit
1	EE-XXX	MOOC-1/ Elective-5	3-0-0	3
2	EE-698	M.Tech Dissertation-I / Internship	NA	12
			Total	15

4th semester

S.N.	Course Code	Name of Subject	L-T-P	Credit
1	EE-699	M.Tech Dissertation-II / Internship	NA	15
			Total	15

Semester-wise credit distribution:

1st Semester	2nd Semester	3rd Semester	4th Semester	Total Credits
21	21	15	15	72

List of Electives:

S.N.	Subject Code	Name of Subject	L-T-P	Credit
1	EE-069	Digital Image Computation (IAA)	3-0-0	3
2	EE-070	Audio Signal Processing (VP)	3-0-0	3
3	EE-071	Advanced Digital Signal Processing (VP)	3-0-0	3
4	EE-072	Biomedical Signal Processing (IAA)	3-0-0	3
5	EE-073	Data Analytics (PR)	3-0-0	3
6	EE-074	Computer Vision (IAA)	3-0-0	3
7	EE-075	Reinforcement Learning (IAA)	3-0-0	3
8	EE-076	Internet of Bio-Nano Things (GS)	3-0-0	3
9	EE-077	System Design using HDL (BJ)	3-0-0	3
10	EE-078	Quantum Computing (PR)	3-0-0	3
11	EE-079	Cyber Security (PR)	3-0-0	3
12	EE-080	Fundamentals of Machine Learning (IAA)	3-0-0	3
13	EE-081	Optimization Techniques (VP)	3-0-0	3
14	EE-082	Advanced Control System (VP)	3-0-0	3

15	EE-083	Internet of Things (PR)	3-0-0	3
16	EE-084	Embedded Softwares (BJ)	3-0-0	3
17	EE-085	Software Defined Radio (BP)	3-0-0	3
18	EE-086	Quantum Communication (GS)	3-0-0	3
19	EE-087	5G and 6G standards (PS)	3-0-0	3
20	EE-088	Smart Antennas (RC)	3-0-0	3
21	EE-089	Advanced Optical Communication (CP)	3-0-0	3
22	EE-090	CAD for VLSI (BJ)	3-0-0	3
23	EE-091	FPGA based System design (BJ)	3-0-0	3
24	EE-092	Data Communication Protocol (PS)	3-0-0	3
25	EE-051	Device and interconnect modelling	3-0-0	3
26	EE-052	VLSI Signal Processing	3-0-0	3
27	EE-053	Low Power VLSI	3-0-0	3
28	EE-054	Microcontroller and Embedded Systems	3-0-0	3
29	EE-055	Memory Devices and Circuits	3-0-0	3
30	EE-056	VLSI Architecture	3-0-0	3
31	EE-057	Hardware Security	3-0-0	3
32	EE-058	FPGA-Based System Design	3-0-0	3
33	EE-059	Quantum Electronics	3-0-0	3
34	EE-060	RF Circuit Design	3-0-0	3
35	EE-061	Mixed Signal SoC Design	3-0-0	3
36	EE-062	AI-Accelerator Design	3-0-0	3
37	EE-063	System-on-Performance Chip Design	3-0-0	3
38	EE-064	Embedded Software	3-0-0	3
39	EE-065	High-Performance Computing Systems	3-0-0	3
40	EE-066	Special Topics in IC Design and Technology	3-0-0	3
41	EE-067	Sensors for autonomous system	3-0-0	3
42	EE-068	Network on Chip	3-0-0	3
43	EE-608	Design Verification and Testing	3-0-0	3

Scheme of MS in Artificial Intelligence and Data Science
## Department of Engineering Sciences

Semester-I

S. No.	Course code	Title of the course	L-T-P	Credits
1	ES511	Fundamentals of Statistics	3-1-0	4
2	ES512	Computational Linear Algebra	3-1-0	4
3	ES513	Foundations of Data Science	3-0-0	3
4	ES514	Machine Learning Techniques	3-0-2	4
5	ES515	Data Structures and Algorithms	3-0-0	3
6	ES516	Programming for Data Science	3-0-2	4
			Total	22

Semester-II

S. No.	Course code	Title of the course	L-T-P	Credits
1	ES521	Statistical Inference	3-0-0	3
2	ES522	Artificial Intelligence	3-0-2	4
3	ES523	System Analysis and Design	3-0-2	4
4	ES524	Data Mining and Data Warehousing	3-0-0	3
5	ES525	Engineering Research Methodology	2-1-0	3
6	ES5XX	Elective-I/ MOOC	3-0-0	3
			Total	20

Summer Project/Internship (Tentative credits: 4)

⟵ EXIT AFTER 1 YEAR: PG Diploma in Artificial Intelligence and Data Science ⟶
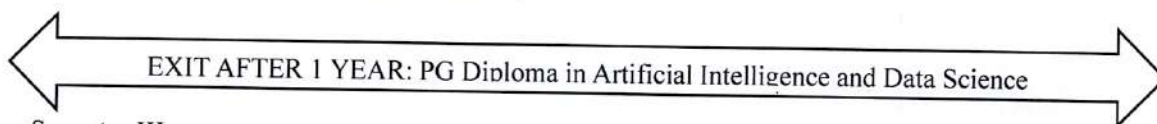
Semester-III

S. No.	Course code	Title of the course	L-T-P	Credits
1	ES531	Decision Support and Expert Systems	2-0-2	3
2	ES532	Deep Learning	2-0-2	3
3	ES533	Natural Language Processing	3-0-0	3
4	ES534	Big Data Analytics and Visualization	3-0-2	4
5	ES5XX	Elective-II/ MOOC	3-0-0	3
6	ES5XX	Elective-III/ MOOC	3-0-0	3
			Total	19

Semester-IV

S. No.	Course code	Title of the course	L-T-P	Credits
1	ES541	Internship / Major Project	-	12
2	ES5XX	Elective- IV/ MOOC	3-0-0	3
			Total	**15**

Distribution of credits:

1st semester	2nd semester	3rd semester	4th semester
22	20	19	15

Total Credits: 52 (core courses) & Minimum 28 (electives and project)

List of electives

S. No.	Name of Subject	L-T-P (Proposed)	Credit
1	Fuzzy Sets and Applications	3-0-0	3
2	Numerical Methods for Data Science	3-0-0	3
3	Optimization Methods for Computational Intelligence	3-0-0	3
4	Modelling and Simulation	3-0-1	4
5	Cyber Security and Cyber Law	3-0-0	3
6	Bayesian Data Analysis	3-0-0	3
7	Business Data Analysis	3-0-0	3
8	Introduction to Game Theory	3-0-0	3
9	Data Sciences for Biologists and Healthcare	3-0-0	0
10	Data Visualization and Interpretation	3-0-0	0
11	Advanced Graph Theory	3-0-0	3
12	Quantum Computing	3-0-1	4
13	Time Series and Forecasting Methods	3-0-1	4
14	Data Analytics for Material Science	3-0-0	3
15	Information Retrieval and Extraction	3-0-0	3
16	Innovation and Entrepreneurship	3-0-0	3
17	Database Management System	3-0-0	3
18	Digital Forensics	3-0-0	3