Post Graduates Schema
(For batch 2025 onwards)

M. Tech. (Computer Science and Engineering)
M. Tech. (Information and Cyber Security)
(Department of Computer Science and Engineering)

M. Tech. (Information Technology)
M. Tech. (Wireless Networks and Computing)
(Department of Information Technology)

M. Tech. (IC Design and Technology)
M. Tech. (Autonomous Systems and Machine Intelligence)
(Department of Electrical and Electronics Engineering)

M.S. (Artificial Intelligence and Data Science)
(Department of Engineering Science)

Master of Business Administration
(Department of Management Studies)

Dual Degree (M.Tech. and PhD)

ATAL BIHARI VAJPAYEE-
INDIAN INSTITUTE OF INFORMATION TECHNOLOGY AND MANAGEMENT,
GWALIOR (MADHYA PRADESH)
(AN INSTITUTE OF NATIONAL IMPORTANCE, MINISTRY OF EDUCATION, GOVT. OF INDIA)

NDEX

Schema

M. Tech.
(Computer Science and Engineering)

Department of Computer Science and Engineering

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (Computer Science and Engineering)

(Credits: 70)

Name of the Department: Computer Science and Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**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 Structure and Algorithms	3-0-2	4
4.	MCSE-504	Distributed Systems	3-0-2	4
5.	MCSE-50X	Elective-I	3-0-0	3
6.	MCSE-510	Seminar*	0-1-0	1
			Total credits	**20**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**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-514	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
			Total credits	**20**

EXIT AFTER YEAR-1: Post Graduate Diploma in Computer Science and Engineering

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	MCSE-523	Elective-IV	3-0-0	3
2	MCSE-598	Dissertation Part - I		12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	MCSE-599	Dissertation Part – II		15
			Total credits	**15**

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

Electives Courses

S. No.	Electives I, II, III, and IV Category: Computer Science and Engineering
1	Cryptography and Network Security
2	Modern Cryptography
3	Formal Verification of Security Protocols
4	IoT and its security
5	Data privacy in Social Networks
6	Cyber Forensics: Tools and Techniques
7	Malware Analysis
8	Big Data and Cyber fraud analysis
9	Hardware Security
10	Fault Tolerant Systems
11	Secure System Engineering
12	Blockchain Technology
13	AI and ML Techniques for Cyber Security
14	Natural Language Processing
15	Information Retrieval
16	Recommender Systems
17	Reinforcement Learning
18	Graphical Neural Networks
19	Nature Inspired Computing
20	Meta-Heuristics for Multi-Objective Optimization
21	Distributed Machine Learning
22	Fair, Accountable, Transparent AI
23	Machine Learning System Optimization
24	Computational Biology
25	Pattern Recognition
26	Deep Learning Techniques
27	Cognitive Science
28	Data Mining Techniques

29	Cloud Computing
30	Advanced Software Engineering
31	Machine Learning for Operations (MLOps)
32	Data Science
33	Data Visualization and Explainable Model
34	Time Series Data Analysis
35	Quantum Computing
36	Robotics and Intelligent Systems (Multi-Agents)
37	Big Data Analytics
38	Complexity and Advanced Algorithms
39	Randomized Algorithms
40	Algorithmic Game Theory
41	Computational Learning Theory
42	Biometric Image Processing
43	Perception for Autonomous Systems
44	Computer Vision
45	Remote Sensing and Satellite Image Processing
46	Human-Computer Interaction
47	Medical Imaging
48	Virtual Reality and Augmented Reality
49	Speech Processing
50	Digital Signal Processing
51	Multimedia Systems
52	Digital Watermarking & Steganalysis
53	Video Analytics
54	Visual Saliency and Attention Modelling

Schema

M. Tech.

(Information and Cyber Security)

Department of Computer Science and Engineering

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (Information and Cyber Security)

(Credits: 72)

Name of the Department: Computer Science and Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1.	CS-601	Modelling and Simulation	3-0-0	3
2.	CS-602	Fundamentals of Cryptography	3-1-0	4
3.	CS-604	Advanced Data Structures and Algorithms	3-0-2	4
4.	CS-605	Cyber Laws and Information Crime	3-0-0	3
5.	CS-607	Machine Learning Techniques	3-0-2	4
6.	CS-6XX	Elective-I	3-0-0	3
			Total credits	**21**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1.	CS-603	Advanced Computer Networks and Security	3-0-2	4
2.	CS-606	Engineering Research Methodology	2-1-0	3
3.	CS-608	Cyber Forensics: Tools and Techniques	3-0-2	4

4.	CS-609	Information Privacy and Security	3-1-0	4
5.	CS-6XX	Elective-II	3-0-0	3
6.	CS-6XX	Elective-III	3-0-0	3
			Total credits	**21**

EXIT AFTER YEAR-1: Post Graduate Diploma in Information and Cyber Security

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	CS-6XX	Elective-III/MOOC	3-0-0	3
2	CS-698	Dissertation Part - I		12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	CS-699	Dissertation Part – II		15*
			Total credits	**15**

For students going on internship in Semester IV: Major Project Part II: 12 credits and additional Colloquium/Industrial Seminar: 3 credits.

SEMESTER-I	**SEMESTER-II**	**SEMESTER-III**	**SEMESTER-IV**	**TOTAL CREDITS**
21	21	15	15	**72**

Electives Courses

S. No.	Electives I,II,III, and IV Category: Information and Cyber Security
1	Wireless & Mobile Security
2	Intrusion Detection and Prevention
3	Web application and Cloud Security
4	Malware Analysis
5	Authentication and Access Control
6	Digital Watermarking and Steganalysis
7	IoT Protocols and Security
8	Data Privacy in Social Networks
9	Blockchain Technology
10	Software System Design
11	Modern Cryptography
12	Database Security
13	Hardware Security
14	Operating Systems Security
15	Fault Tolerant System
16	Quantum Cryptography
17	Big Data and Cyber fraud analysis
18	Secure System Engineering
19	Formal Verification of Security Protocols
20	Digital Forensics
21	Natural Language Processing
22	Information Retrieval
23	Recommender Systems
24	Reinforcement Learning
25	Fair, Accountable, Transparent AI
26	Machine Learning System Optimization
27	Pattern Recognition
28	Deep Learning Techniques

Schema

M. Tech.

(Information Technology)

Department of Information Technology

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (Information Technology)

(Credits: 70)

Name of the Department: Information Technology

Track 1-Smart Mobility Systems Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT-701	Machine Learning Techniques	3-0-2	4
2.	IT-702	Mathematical Foundations for Data Science	3-0-2	4
3.	IT-703	Advanced Data Structures and Algorithms	3-0-2	4
4.	IT-704	Introduction to Robotics	3-0-2	4
5.	IT-705	Design for Reliability: Information and Computer Based Systems	3-0-2	4
			Total credits	**20**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT-712	Deep Learning	3-0-2	4
2.	IT-713	Cyber Physical Systems	3-0-2	4
3.	IT-714	Secure System Design	3-0-0	3
4.	IT-XXX	Elective I	3-0-0	3
5.	IT-XXX	Mini Project	0-0-6	3

6.	IT-717	Engineering Research Methodology	2-2-0	3
			Total credits	**20**

EXIT AFTER YEAR-1: Post Graduate Diploma in Information Technology

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	IT-XXX	Elective II/MOOC	3-0-0	3
2	IT-698	Dissertation Part - I		12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	IT-699	Dissertation Part - II		15
			Total credits	**15**

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

Track 2- Intelligent Information Systems Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT-701	Machine Learning Techniques	3-0-2	4
2.	IT-702	Mathematical Foundations for Data Science	3-0-2	4
3.	IT-703	Advanced-Data Structures and Algorithms	3-0-2	4
4.	IT-706	Introduction to Natural Language Processing	3-0-2	4
5.	IT-705	Design for Reliability: Information and Computer-Based Systems	3-0-2	4
			Total credits	**20**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT-712	Deep Learning	3-0-2	4
2.	IT-715	Advanced Natural Language Processing	3-0-2	4
3.	IT-716	Social Networks Analysis	3-0-0	3
4.	IT-XXX	Elective I	3-0-0	3
5.	IT-XXX	Mini Project	0-0-6	3
6.	IT-717	Engineering Research Methodology	2-2-0	3
			Total credits	**20**

EXIT AFTER YEAR-1: Post Graduate Diploma in Information Technology

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	IT-XXX	Elective II/MOOC	3-0-0	3
2	IT-698	Dissertation Part - I		12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	IT-699	Dissertation Part - II		15
			Total credits	**15**

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

Electives Courses

S. No.	Electives I and II Category: Track in Smart Mobility Systems Engineering
IT-001	Computer Vision
IT-002	Digital Signal Processing
IT-004	Information Retrieval and Extraction
IT-005	Human Computer Interaction
IT-006	Digital Video Processing
IT-007	Advanced Machine Learning
IT-008	Multimedia Processing
IT-012	Next Generation Networks
IT-013	Queuing Theory
IT-014	Network design and Optimization
IT-015	Advanced Wireless
IT-016	Multimedia Networks
IT-016	Distributed Systems
IT-020	Information Theory and Coding
IT-022	Digital Watermarking and Steganalysis
IT-023	Cryptography and Network Security
IT-024	Distributed System Security
IT-025	Cyber Security and Laws
IT-026	Advanced cryptography

IT-027	Information Security and Secure Coding
IT-028	Malware Analysis
IT-029	Formal methods for Security
IT-030	IoT and its security
IT-031	Blockchain Technologies
IT-032	Convex Optimization
IT-033	Parallel and Concurrent Programming
IT-035	Game Theory
IT-036	Big Data Analytics
IT-040	Nature Inspired computing
IT-038	Program Analysis Verification and Testing
IT-039	Competitive Programming
IT-718	Large Language Models
IT-402	Digital Image Processing
EE-057	Hardware Security
IT-706	Introduction to Natural Language Processing
IT-715	Advanced Natural Language Processing
IT-716	Social Networks Analysis

S. No.	**Electives I and II Category: Intelligent Information Systems Engineering**
IT-001	Computer Vision

IT-002	Digital Signal Processing
IT-004	Information Retrieval and Extraction.
IT-005	Human Computer Interaction
IT-006	Digital Video Processing
IT-007	Advanced Machine Learning
IT-008	Multimedia Processing
IT-012	Next Generation Networks
IT-013	Queuing Theory
IT-014	Network design and Optimization
IT-015	Advanced Wireless
IT-016	Multimedia Networks
IT-016	Distributed Systems
IT-020	Information Theory and Coding
IT-022	Digital Watermarking and Steganalysis
IT-023	Cryptography and Network Security
IT-024	Distributed System Security
IT-025	Cyber Security and Laws
IT-026	Advanced cryptography
IT-027	Information Security and Secure Coding
IT-028	Malware Analysis
IT-029	Formal methods for Security
IT-030	IoT and its security

IT-031	Blockchain Technologies
IT-032	Convex Optimization
IT-033	Parallel and Concurrent Programming
IT-035	Game Theory
IT-036	Big Data Analytics
IT-040	Nature Inspired computing
IT-038	Program Analysis Verification and Testing
IT-039	Competitive Programming
IT-718	Large Language Models
IT-402	Digital Image Processing
EE-057	Hardware Security
IT-704	Introduction to Robotics
IT-713	Cyber-Physical Systems
IT-714	Secure System Design

Schema

M. Tech.

(Wireless Networks and Computing)

Department of Information Technology

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (Wireless Networks and Computing)

(Credits: 75)

Name of the Department: Information Technology

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT 601	Probability and Stochastic Process	3-1-0	4
2.	IT 602	Wireless Networks	3-0-0	3
3.	IT 608	Machine Learning Techniques	3-0-2	4
4.	IT 604	Modelling and Simulation	3-0-0	3
5.	IT 6XX	Elective-I	3-0-0	3
6.	IT 605	Network and Computing Lab	0-0-6	3
			Total credits	**20**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1.	IT 606	Next Generation Networks	3-1-0	4
2.	IT 607	Graphs and Networks	3-0-0	3
3.	IT 603	Mobile Computing	3-0-0	3
4.	IT 609	Engineering Research Methodology	2-1-0	3
5.	IT 6XX	Elective-II	3-0-0	3

6.	IT 6XX	Elective-III	3-0-0	3
			Total credits	**19**

EXIT AFTER YEAR-1: Post Graduate Diploma in Wireless Networks and Computing

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	IT 6XX	Elective-IV/MOOC-I	3-0-0	3
2	IT 6XX	Elective-V/MOOC-II	3-0-0	3
3	IT 698	Thesis Part-I/ Internship	0-0-24	12
			Total credits	**18**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	IT 6XX	Elective-VI/MOOC-III	3-0-0	3
2	IT 699	Thesis Part-II	0-0-3	15
			Total credits	**18**

SEMESTER-I	**SEMESTER-II**	**SEMESTER-III**	**SEMESTER-IV**	**TOTAL CREDITS**
20	19	18	18	**75**

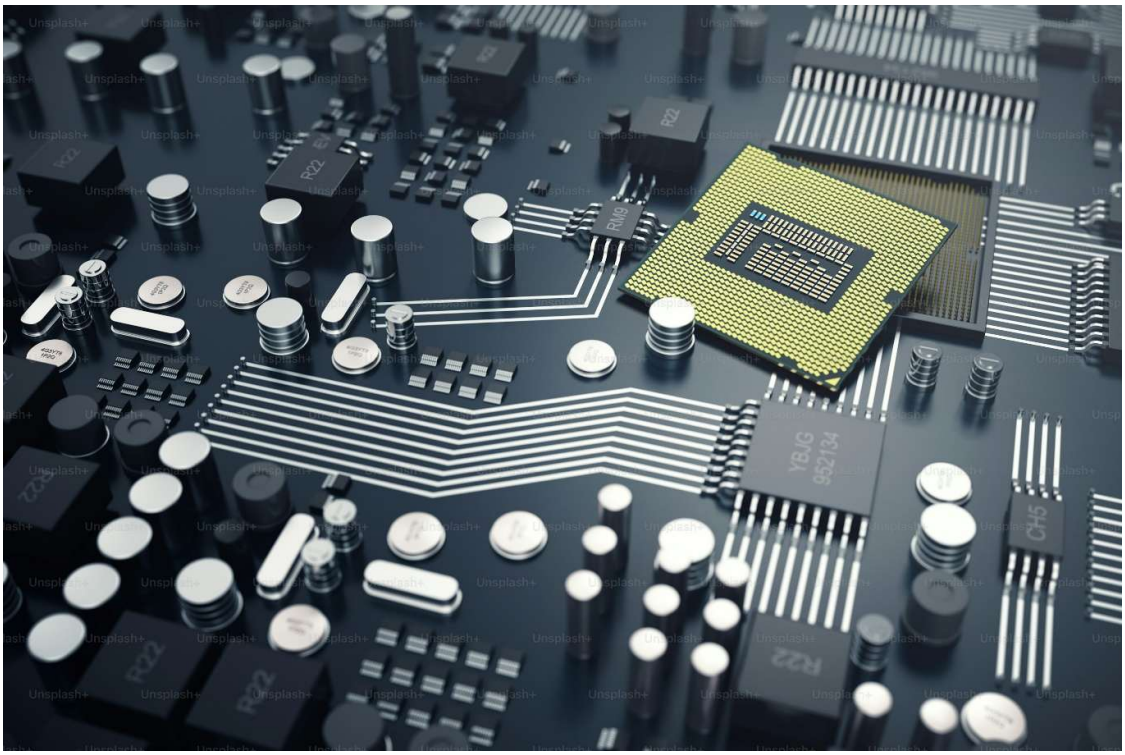
Electives Courses

S.No.	Code	Electives I,II,III,IV,V and VI Category: Wireless Networks and Computing
1	IT 611	Network Design and Optimization
2	IT 612	Grid and Peer-To-Peer Computing
3	IT 613	Cloud Computing and Security
4	IT 614	Iot Protocols and Security
5	IT 615	High Speed Network
6	IT 616	Machine Vision
7	IT 617	Nature Inspired Computing
8	IT 618	Computer Graphics and Multimedia
9	IT 619	Advance Machine Learning
10	IT 620	Special Topics in AI
11	IT 621	Information Theory and Coding
12	IT 622	Detection and Estimation Theory
13	IT 623	Adaptive Signal Processing
14	IT 624	Queuing Theory
15	IT 625	Digital Signal Processing
16	IT 626	Modern Cryptography
17	IT 627	Cognitive Radio
18	IT 628	Digital Watermarking and Steganalysis
19	IT 629	Game Theory and its Application

Schema

M. Tech.

(IC Design and Technology)



Electrical and Electronics Engineering Department (EEE)

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (IC Design and Technology)

(Credits: 73)

Name of the Department: Electrical and Electronics Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1.	EE-601	Digital IC Design	3-0-0	3
2.	EE-602	System Design using HDL	3-0-0	3
3.	EE-603	Machine Learning Techniques	3-0-2	4
4.	EE-604	IC Technology	3-0-0	3
5.	EE-605	Device Modelling and Simulation	3-0-0	3
6.	EE-606	Advanced IC Design and Technology Lab-1	0-1-4	3
7.	EE-XXX	Elective 1	3-0-0	3
			Total credits	**22**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1.	EE-607	Analog IC Design	3-0-0	3
2.	EE-608	Design Verification and Testing	3-0-0	3

3.	EE-609	Engineering Research Methodology	2-1-0	3
4.	EE-610	CAD for VLSI	3-0-0	3
5.	EE-611	Advanced IC Design and Technology Lab-II	0-1-4	3
6.	EE-XXX	Elective- II	3-0-0	3
7.	EE-XXX	Elective-III	3-0-0	3
			Total credits	**21**

EXIT AFTER YEAR-1: Post Graduate Diploma in IC Design and Technology

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	XXX	Elective-IV/MOOC course	3-0-0	3
2	EE-698	Major Project Part I/Internship	-	12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	EE-699	Major Project Part II/Internship	-	15
			Total credits	**15**

SEMESTER-I	SEMESTER-II	SEMESTER-III	SEMESTER-IV	TOTAL CREDITS
22	21	15	15	**73**

Electives Courses

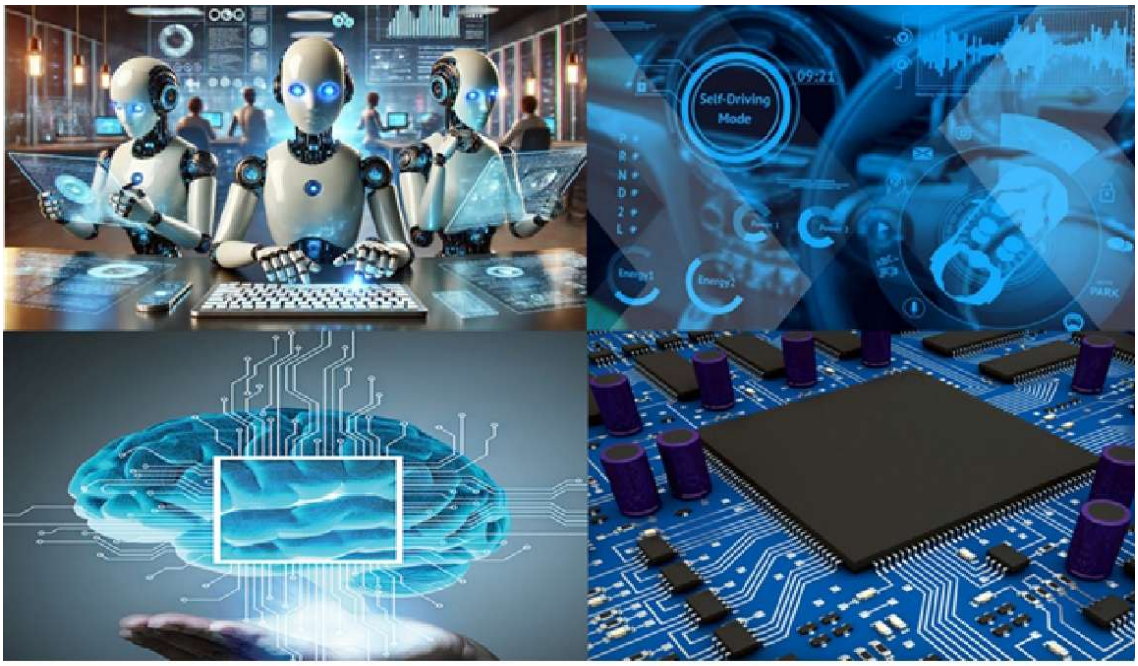
S.N.	Code	Electives I,II,III, and IV Category: IC Design and Technology
1	EE-051	Device and Interconnect Modelling
2	EE-052	VLSI Signal Processing
3	EE-053	Low Power VLSI
4	EE-054	Microcontroller and Embedded Systems
5	EE-055	Memory Devices and Circuits
6	EE-056	VLSI Architecture
7	EE-057	Hardware Security
8	EE-058	FPGA-Based System Design
9	EE-059	Quantum Electronics
10	EE-060	RF Circuit Design
11	EE-061	Mixed Signal SoC Design
12	EE-062	AI-Accelerator Design
13	EE-063	System-on-Chip Design
14	EE-064	Embedded Software
15	EE-066	Special Topics in IC Design and Technology
16	EE-068	Network on Chip
17	EE-069	Digital Image Computation
18	EE-070	Audio Signal Processing
19	EE-071	Advanced Digital Signal Processing
20	EE-072	Biomedical Signal Processing
21	EE-074	Computer Vision
22	EE-076	Internet of Bio-Nano Things
23	EE-079	Cyber Security
24	EE-081	Optimization Techniques

25	EE-083	Internet of Things
26	EE-085	Software Defined Radio
27	EE-086	Quantum Communication
28	EE-087	5G and 6G standards
29	EE-088	Smart Antennas
30	EE-089	Advanced Optical Communication
31	EE-092	Data Communication Protocol
32	EE-613	Next-Generation Communication Systems
33	EE-065	High-Performance Computing Systems
34	EE-067	Sensors for Autonomous System
35	EE-073	Data Analytics
36	EE-075	Reinforcement Learning
37	EE-078	Quantum Computing
38	EE-080	Deep Learning for Autonomous Systems
39	EE-082	Advanced Control System
40	EE-093	Drone Technology and Robotics
41	EE-612	Sensors and Actuators
42	EE-615	Autonomous Systems

Schema

M. Tech.

Autonomous Systems and Machine Intelligence (ASMI)



Electrical and Electronics Engineering Department (EEE)

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: M. Tech. (Autonomous Systems and Machine Intelligence)

(Credits: 72)

Name of the Department: Electrical and Electronics Engineering

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
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 credits	**21**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
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 credits	**21**

EXIT AFTER YEAR-1: Post Graduate Diploma in Autonomous Systems and Machine Intelligence

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	EE-XXX	MOOC-1/ Elective-5	3-0-0	3
2	EE-698	M. Tech Dissertation-I / Internship	NA	12
			Total credits	**15**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	EE-699	M. Tech Dissertation-II / Internship	NA	15
			Total credits	**15**

SEMESTER-I	SEMESTER-II	SEMESTER-III	SEMESTER-IV	TOTAL CREDITS
21	21	15	15	**72**

Electives Courses

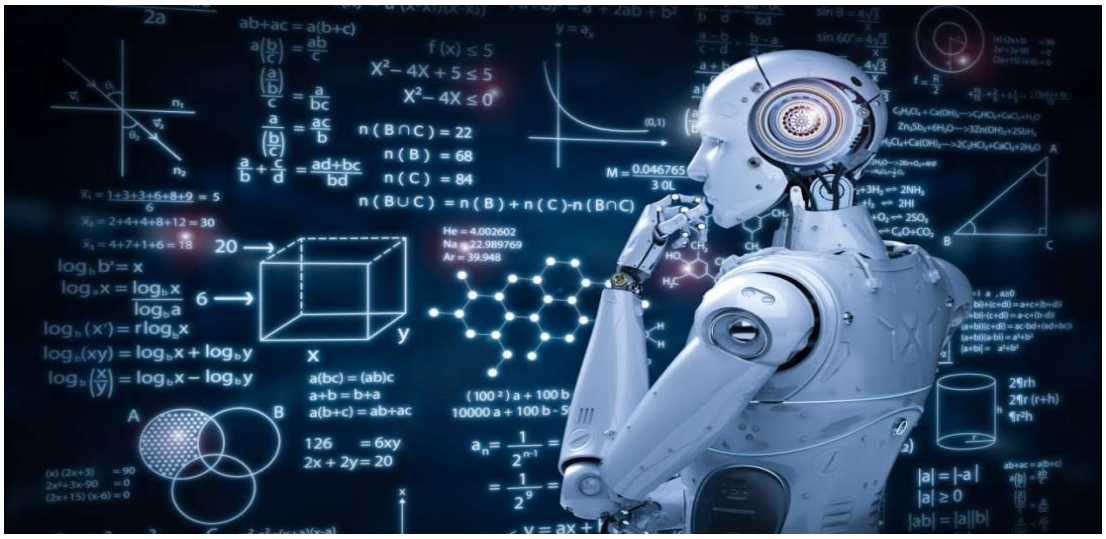
S.N.	Code	Electives I,II,III, IV, and V Category: Autonomous & Intelligent Transportation, Communication & Signal Processing, VLSI & Embedded Systems
1	EE-065	High-Performance Computing Systems
2	EE-067	Sensors for Autonomous System
3	EE-073	Data Analytics
4	EE-075	Reinforcement Learning
5	EE-078	Quantum Computing
6	EE-080	Deep Learning for Autonomous Systems
7	EE-082	Advanced Control System
8	EE-069	Digital Image Computation
9	EE-070	Audio Signal Processing
10	EE-071	Advanced Digital Signal Processing
11	EE-072	Biomedical Signal Processing
12	EE-074	Computer Vision
13	EE-076	Internet of Bio-Nano Things
14	EE-079	Cyber Security
15	EE-081	Optimization Techniques
16	EE-083	Internet of Things
17	EE-085	Software Defined Radio
18	EE-086	Quantum Communication
19	EE-087	5G and 6G standards
20	EE-088	Smart Antennas

21	EE-089	Advanced Optical Communication
22	EE-092	Data Communication Protocol
23	EE-051	Device and Interconnect Modelling
24	EE-052	VLSI Signal Processing
25	EE-053	Low Power VLSI
26	EE-054	Microcontroller and Embedded Systems
27	EE-055	Memory Devices and Circuits
28	EE-056	VLSI Architecture
29	EE-057	Hardware Security
30	EE-058	FPGA-Based System Design
31	EE-059	Quantum Electronics
32	EE-060	RF Circuit Design
33	EE-061	Mixed Signal SoC Design
34	EE-062	AI-Accelerator Design
35	EE-063	System-on-Chip Design
36	EE-064	Embedded Software
37	EE-066	Special Topics in IC Design and Technology
38	EE-068	Network on Chip
39	EE-602	System Design using HDL
40	EE-608	Design Verification and Testing
41	EE-610	CAD for VLSI

Schema

M.S.

(Artificial Intelligence and Data Science)



Department of Engineering Sciences

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management Gwalior

SCHEMA

Name of the program: MS (Artificial Intelligence and Data Science)

(Credits: 76)

Name of the Department: Engineering Sciences

SEMESTER-I				
S. No.	**Subject 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 credits	**22**

SEMESTER-II				
S. No.	**Subject 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 credits	**20**

**Summer Project/Internship (Tentative credits: 4)*

EXIT AFTER YEAR-1: Post Graduate Diploma in Artificial Intelligence and Data Science

SEMESTER-III				
S. No.	**Subject 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 credits	**19**

SEMESTER-IV				
S. No.	**Subject 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 credits	**15**

SEMESTER-I	SEMESTER-II	SEMESTER-III	SEMESTER-IV	TOTAL CREDITS
22	20	19	15	**76**

Electives Courses

S. No.	Electives I,II,III, and IV Category: Artificial Intelligence and Data Science
1	Fuzzy Sets and Applications
2	Numerical Methods for Data Science
3	Optimization Methods for Computational Intelligence
4	Modelling and Simulation
5	Cyber Security and Cyber Law
6	Bayesian Data Analysis
7	Business Data Analysis
8	Introduction to Game Theory
9	Data Science for Biology and Medicine
10	Data Visualization and Interpretation
11	Advanced Graph Theory
12	Quantum Computing
13	Time Series and Forecasting Methods
14	Data Analytics for Material Science
15	Information Retrieval and Extraction
16	Innovation and Entrepreneurship
17	Database Management System
18	Software Reliability
19	Digital Forensics

Schema

Master of Business Administration (MBA)

Department of Management Studies

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Name of the program: Master of Business Administration

(Credits: 111)

Name of the Department: Management Studies

Focus of MBA-I Year: The First Year of the programme intends to impart the general management principles and practices along with the analytical ability required for modern businesses.

Focus of MBA-II Year: The second year of the programme is intended to provide specialized and sectorial management ability through a blend of technology-embedded analytics. The students can flexibly choose their area of specialization in the six baskets of electives. The four massive open online courses complement the chosen basket of electives openly to meet the business needs of students.

Credit Requirement: First Year (Semester I+II+ Summer Term): 26+27+4=57

Second Year (Semester III+IV): 30+24=54

Total Credits: 111

SEMESTER-I				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1	MS600	Foundation of Mathematics and Computer Programming	1-0-2	2
2	MS601	Principles and Practices of Management	3-0-0	3
3	MS602	Business Statistics	3-0-0	3
4	MS603	Business Economics	3-0-0	3
5	MS604	Business and Legal Environment	3-0-0	3
6	MS605	Financial Reporting and Control	3-0-0	3
7	MS606	Organizational Behavior	3-0-0	3
8	MS607	IoT and Big Data Management	3-0-0	3
9	MS608	International Business	3-0-0	3
		Computational laboratory (based on semester courses)	Part of course MS607	
			Total credits	**26**

SEMESTER-II				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	MS609	Human Resource Management	3-0-0	3
2	MS610	Operations Management	3-0-0	3
3	MS611	Marketing Management	3-0-0	3
4	MS612	Financial Engineering and Management	3-0-0	3
5	MS613	Business Research Method	3-0-0	3
6	MS614	Decision Modelling and Optimization	3-0-0	3
7	MS615	Artificial Intelligence and Machine Learning	3-0-0	3
8	MS616	Project Management	3-0-0	3
9	MSA03	Seminar on Contemporary Business*	0-0-2	0
10		Massive Open Online Course (MOOC-1)	0-0-6	3
		Computational laboratory (based on semester courses)	Part of the course MS615	
			Total credits	**27**

***Compulsory Audit course for MBA batch**

Summer Term

1	MS697	Summer term of 6-8 weeks (Industry project. R&D Project etc.)	0-0-8	4

Remark: If some student quits the MBA programme after successful completion of the first year, the student may be awarded a "Post Graduate Diploma in Management."

EXIT AFTER YEAR-1: Post Graduate Diploma in Management

SEMESTER-III				
S. No.	**Subject code**	**Title of the course**	**L-T-P**	**Credits**
1	MS618	Strategic Management	3-0-0	3
2	MS619	Entrepreneurship and Innovation	3-0-0	3
3	MS620	Business Process Management	3-0-0	3
4	MS621	Business Ethics and Sustainability	3-0-0	3
5		Elective-I	3-0-0	3
6		Elective-II	3-0-0	3
7		Elective-III	3-0-0	3
8		Massive Open Online Course (MOOC-2)	3-0-0	3
9	MS698	Major Project Part-I	0-0-12	6
			Total credits	**30**

SEMESTER-IV				
S. No.	**Subject Code**	**Title of the course**	**L-T-P**	**Credits**
1		Elective-IV/ Massive Open Online Course (MOOC-3)	3-0-0	3
2		Elective-V/ Massive Open Online Course (MOOC-4)	3-0-0	3
3	MS699	Major Project Part-II	0-0-36	18
			Total credits	**24**

SEMESTER-I	SEMESTER-II	SUMMER TERM	SEMESTER-III	SEMESTER-IV	TOTAL CREDITS
26	27	04	30	24	**111**

Composition of Electives: A student has to choose 07 electives from the basket of 04 MOOC courses and 05 Departmental Electives. The composition of electives shall be a minimum of 03 from the departmental electives and a minimum of 02 from MOOC electives, and the remaining two electives may be flexibly chosen either from the department or from MOOC electives.

List of suggested courses for MOOC: MOOC courses should be relevant to the area of management programs catering to the need for specialization and relevant to the frontier areas of technology, information technology, or management fulfilling modern business needs and are not being offered as in-house courses of ABV-IIITM Gwalior.

Specialization in the MBA degree: A student will be able to earn specialization in a particular area(s) by earning a minimum of ***15 credits (ordinarily equal to 05 courses)***. MOOC courses for the IV Semester will be given as per institute norms.

Exit Option from MBA Program: A student can exercise the option of program exit after completing the First Year of the DoMS MBA. In such a scenario, the student may be awarded the **certificate of *Post Graduate Diploma in Management.***

Schema

Dual Degree Program (M. Tech. + PhD)

Offered by

Department of Computer Science and Engineering

Department of Information Technology

विश्वजीवनामृतं ज्ञानम्

ABV-Indian Institute of Information Technology & Management, Gwalior

SCHEMA

Dual Degree Program – M. Tech. and PhD

Offered by:

Department of Computer Science and Engineering (M. Tech. (CSE)
and
Department of Information Technology (M. Tech. (IT) and PhD)

Semester – I					
SN	**Subject Code**	**Course Title**	**Component**	**L-T-P**	**Credits**
		All courses as per the 1st semester of the M. Tech. program	M. Tech.		
				Credits	

Note:

- **Supervisor allocation and formation of SRC**

Semester – II					
SN	**Subject Code**	**Course Title**	**Component**	**L-T-P**	**Credits**
		All courses as per the 1st semester of the M. Tech. program	M. Tech.		
				Credits	

Note:

- **Exit option for Post Graduate Diploma**

Semester – III					
SN	**Subject Code**	**Course Title**	**Component**	**L-T-P**	**Credits**
1		M. Tech. Elective/MOOC	PhD*	3-0-0	3
2		Elective/MOOC as per PhD ordinance	PhD*	3-0-0	3
3		M. Tech. Research Credits	M. Tech.		12
				Credits	18

Note:

- **Students with a planned exit follow the M. Tech. course structure from the next semester onwards.**

***Convertible to M.Tech. in case of an exit without PhD.**

Semester – IV					
SN	**Subject Code**	**Course Title**	**Component**	**L-T-P**	**Credits**
1		Research Credits	Flexible		15
				Credits	15

Note:

- **Students with abrupt exit can convert PhD Research Credits into M. Tech. research credits, re-defend PhD Research Credits as M. Tech. Research Credits with a letter grade and exit as an M. Tech.**

Semester V and onwards					
SN	**Subject Code**	**Course Title**	**Component**	**L-T-P**	**Credits**
1		Research Credits	Flexible		As per PhD Ordinance

Note:

- **Students with abrupt exit can convert PhD Research Credits into M. Tech. research credits, re-defend PhD Research Credits as M. Tech. Research Credits with a letter grade and exit as an M. Tech.**

Note: The M.Tech. course content is identical to that of the M.Tech. CSE/IT of the corresponding departments (Computer Science and Engineering, and Information Technology)

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