



INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY BANGALORE

iMTECH – CSE PROGRAM – 2019- 20

Course Name	Credits	Course Category	Level
SEMESTER 1		18	
Mathematics - 1	4	Mathematics and Basic Sciences	Level 1
Programming in C	2	Programming	Level 1
Programming in Python	2	Programming	Level 1
Digital Design	4	Systems	Level 1
Physical Education 1	0	Others	Level 1
English	2	HSS/M Core	Level 1
Economics	4	HSS/M Core	Level 1
SEMESTER 2		20	
Mathematics - 2	4	Mathematics and Basic Sciences	Level 1
Computer Architecture	4	Systems	Level 1
Data Structures and Algorithms	4	Engineering Core	Level 1
Data Structures Lab	2	Engineering Core	Level 1
Computer Networks	4	Engineering Core	Level 1
Technical Communication	2	HSS/M Core	Level 1
Physical Education 2	0	Others	Level 1
SEMESTER 3		20	
Mathematics - 3	4	Mathematics and Basic Sciences	Level 1
Programming II	4	Programming	Level 1
Physics (Theory)	3	Mathematics and Basic Sciences	Level 1
Physics (Lab)	1	Mathematics and Basic Sciences	Level 1
Signals and Systems	4	Systems	Level 1
Discrete Mathematics	4	CSE Core Engineering	Level 1
SEMESTER 4		19	
Operating Systems (Theory)	3	Systems	Level 1
Operating Systems (Lab)	1	Systems	Level 1
Design and Analysis of Algorithms	3	CSE Core Engineering	Level 1
Database systems (Theory)	3	CSE Core Engineering	Level 1
Database systems (Lab)	1	CSE Core Engineering	Level 1
1 Elective in the pool of Maths and Science	4	Mathematics and Basic Sciences	Level 1
History of Ideas	4	HSS/M Core	Level 1
SEMESTER 5		23	
Introduction to Automata theory and Computability	3	CSE Core	Level 1

Software Engineering (Theory)	3	CSE Core	Level 1
Software Engineering (Lab)	1	CSE Core	Level 1
Elective-1 *	4	Elective	Level 1
Elective-2 *	4	Elective	Level 1
Elective-3 *	4	Elective	Level 1

Course Name	Credits	Course Category	Level
Elective-4 *	4	Elective	Level 1
SEMESTER 6	20		
Elective-5 *	4	Elective	Level 2
Elective-6 *	4	Elective	Level 2
Elective-7 *	4	Elective	Level 2
Elective-8 *	4	Elective	Level 2
Elective-9 *	4	Elective	Level 2
SEMESTER 7	20		
Elective-10 *	4	Elective	Level 2 / Level 3
Elective - 11 *	4	Elective	Level 2 / Level 3
Elective - 12 *	4	Elective	Level 2 / Level 3
Elective - 13 *	4	Elective	Level 2 / Level 3
Elective - 14 *	4	Elective	Level 2 / Level 3
SEMESTER 8	20		
Elective - 15 *	4	Elective	Level 2 / Level 3
Elective - 16 *	4	Elective	Level 2 / Level 3
Elective - 17 *	4	Elective	Level 2 / Level 3
Elective - 18 *	4	Elective	Level 2 / Level 3
Elective - 19 *	4	Elective	Level 2 / Level 3
SEMESTER 9	20		
Combination of Courses and Project	20	Masters Project	Masters Project
SEMESTER 10	20		
M.Tech. Project / Thesis	20	Masters Project	Masters Project



iMTECH – ECE PROGRAM – 2019- 20

Course Name	Credits	Course Category	Level
Semester 1		18	
Mathematics - 1	4	Mathematics and Basic Sciences	Level 1
Programming in C	2	Programming	Level 1
Programming in Python	2	Programming	Level 1
Digital Design	4	Systems	Level 1
Physical Education 1	0	Others	Level 1
English	2	HSS/M Core	Level 1
Economics	4	HSS/M Core	Level 1
Semester 2		20	
Mathematics - 2	4	Mathematics and Basic Sciences	Level 1
Computer Architecture	4	Systems	Level 1
Data Structures and Algorithms	4	Engineering Core	Level 1
Data Structures Lab	2	Engineering Core	Level 1
Computer Networks	4	Engineering Core	Level 1
Technical Communication	2	HSS/M Core	Level 1
Physical Education 2	0	Others	Level 1
Semester 3		20	
Mathematics - 3	4	Mathematics and Basic Sciences	Level 1
Programming II	4	Programming	Level 1
Physics (Theory)	3	Mathematics and Basic Sciences	Level 1
Physics (Lab)	1	Mathematics and Basic Sciences	Level 1
Signals and Systems	4	Systems	Level 1
Electronic Circuits	2	ECE Core	Level 1
Electronics Lab	2	ECE Core	Level 1
Semester 4		23	
Operating Systems (Theory)	3	Systems	Level 1
Operating Systems (Lab)	1	Systems	Level 1
Analog Circuits	3	ECE Core Engineering	Level 1
Analog Circuits lab	1	ECE Core Engineering	Level 1
Signal Processing	3	ECE Core Engineering	Level 1
1 Elective in the pool of Maths and Science	4	Mathematics and Basic Sciences	Level 1
History of Ideas	4	HSS/M Core	Level 1
Principles of Communication System	3	ECE Core Engineering	Level 1
Principles of Communication System Lab	1	ECE Core Engineering	Level 1
Semester 5		19	
Digital Communication	3	ECE Core Engineering	Level 1
Digital Communication Lab	1	ECE Core Engineering	Level 1
Control Theory	3	ECE Core Engineering	Level 1

Course Name	Credits	Course Category	Level
Mobile Computing	4	ECE Core Engineering	Level 1
Elective-1 *	4	Electives	Level 1
Elective-2 *	4	Electives	Level 1
Semester 6	20		
Elective-3 *	4	Elective	Level 2
Elective-4 *	4	Elective	Level 2
Elective-5 *	4	Elective	Level 2
Elective-6 *	4	Elective	Level 2
Elective-7 *	4	Elective	Level 2
Semester 7	20		
Elective-8 *	4	Elective	Level 2 / Level 3
Elective - 9 *	4	Elective	Level 2 / Level 3
Elective - 10 *	4	Elective	Level 2 / Level 3
Elective - 11 *	4	Elective	Level 2 / Level 3
Elective - 12 *	4	Elective	Level 2 / Level 3
Semester 8	20		
Elective - 13 *	4	Elective	Level 2 / Level 3
Elective - 14 *	4	Elective	Level 2 / Level 3
Elective - 15 *	4	Elective	Level 2 / Level 3
Elective - 16 *	4	Elective	Level 2 / Level 3
Elective - 17 *	4	Elective	Level 2 / Level 3
Semester 9	20		
Combination of Courses and Project	20	Masters Project	Masters Project
Semester 10	20		
M.Tech. Project / Thesis	20	Masters Project	Masters Project



MTECH – CSE PROGRAM – 2019- 20

Term	Duration	Credits	Courses
Preparatory Term	2 weeks	Not applicable	Orientation sessions on various topics
Semester 1	16 weeks	16 credits	Foundation Courses 1. Algorithms 2. Networking and Communication 3. Machine Learning 4. Mathematics for Machine Learning 5. Software Systems 6. Discrete Mathematics and Computability Each course here is of 4 credits.
Semester 2	16 weeks	16 credits	Electives The number of electives to be completed by each student is eight . Thus the total number of credits that can be accumulated through electives is now 32 credits. Each elective will be associated with one or more areas of specialization Elective list is given below
		0 credits	Technical Communication for those found deficient in a test conducted in Semester 1 (Pass /Fail)
Semester 3	16 weeks	16 credits	Electives
Semester 4	26 weeks	16 credits	Masters Project / Thesis
Total			64 credits



MTECH – ECE PROGRAM – 2019- 20

Term	Duration	Credits	Courses
Preparatory Term	2 weeks	Not applicable	Orientation sessions on various topics
Semester 1	16 weeks	16 credits	Foundation Courses 1. Digital CMOS VLSI Design (4 Credits) 2. Analog CMOS VLSI Design (4 Credits) 3. Machine Learning (4 Credits) 4. Mathematics for Machine Learning (4 Credits) 5. Networking and Communication (4 Credits) 6. System Software (2 Credits) 7. System design with FPGA (2 Credits) 8. Principles of Embedded Systems (2 Credits)
Semester 2	16 weeks	16 credits	Electives The number of electives to be completed by each student is eight . Thus the total number of credits that can be accumulated through electives is now 32 credits. Each elective will be associated with one or more areas of specialization Elective list is given below
		0 credits	Technical Communication for those found deficient in a test conducted in Semester 1 (Pass /Fail)
Semester 3	16 weeks	16 credits	Electives
Semester 4	26 weeks	16 credits	Masters Project / Thesis
Total			64 credits

MSc DIGITAL SOCIETY CORE COURSES – 2019- 20

Term	Duration	Credits	Courses
Preparatory Term	2 weeks	Not applicable	Programming Foundations Social Science Foundations
Term 1	15 weeks	18 credits	<u>5 core courses</u> 1. Digital Components of a Connected Society (4) 2. Application Development for a Connected Society (2) 3. Human Computer Interaction (4) 4. Research Methods (Quantitative and Qualitative) (4) 5. Technology and Society (4)
Term 2	15 weeks	16 credits	<u>3 core courses</u> 1. Technology in Development (4) 2. ICT Policy and Regulation (4) 3. Social Complexity and Systems Thinking (4) <u>1 Elective Course</u> 1. Elective I (4) Elective list is given below
Term 3	15 weeks	16 credits	4 Electives Elective list is given below
Term 4	26 weeks	16 credits	Masters Project / Thesis
Total			66 credits

Sl.No	Course Code	Course Name
1	CS 511	Algorithms
2	CS 512	Discrete Mathematics and Computability
3	CS 513	Software Systems
4	CS 604	Artificial Intelligence
5	CS 731	Software Testing
6	CS 841	Autonomous Robotics
7	CS 855	Data Visualization
8	CS 868	Compilers
9	CS 873	Cryptographic Engineering
10	CS/DS 732	Data Visualization
11	CS/DS 855	Data Visualization
12	CS/DS 856	Neural Networks and Reinforcement Learning
13	CS/NC 716	Computing on Private Data
14	CS/NC 824	Cyber Security Fundamentals with tools and techniques for defense
15	CS/NC 852	Network Security
16	CS/NC 866	Advanced Cyber Security
17	DS 608	Network Science for the web
18	DS/NC 821	Automatic Speech Recognition
19	DS/NC 826	Advanced Visual Recognition
20	DT 303	Advanced Qualitative Research Methods
21	DT 306	Privacy in the Digital Age
22	DT 307	The Web and the Mind
23	DT 385	Cyberspace, Globalization, and Location
24	EC 502	Analog CMOS VLSI Design
25	EC 503	Digital CMOS VLSI Design
26	EC 504	System design with FPGA
27	EC 506	System Software
28	ESD 601	Testing & Design For Testability
29	ESD 853	Advanced ARM Architectures
30	ESD 855	Device Driver Development
31	GEN 511	Machine Learning
32	GEN 512	Mathematics for Machine Learning
33	GEN 705	Information Technology Project and Product Management
34	GEN 811	Introduction to Robotics
35	NC 501	Networking and Communication
36	NC 601	Wireless Access Networks
37	NC 864	Software Defined Network and Network Function Virtualization
38	NC/ESD 854	Digital Image Processing
39	SE 701	Design Patterns and Enterprise System Development
40	CS 602	Advanced Algorithms

41	CS 606	Computer Graphics
42	CS 816	Software Production Engineering
43	CS 825	Graph Theory
44	CS 835	Algorithmic Thinking
45	CS/DS 704	Multi-Agent Systems
46	CS/DS 815	Topological Data Analysis
47	CS/DS 817	Optimization, Learning and Cognition
48	CS/DS 832	Advanced Data Visualization
49	CS/NC 616	Foundations of Cryptography
50	DS 603	Data Modelling
51	DS 703	Geographic Information Systems
52	DS/NC 615	Techno-Economics of Networks
53	DS/SP 823	Automatic Speech Recognition
54	DS/SP 828	Probabilistic Graphical Models
55	DT 211/ ITS 601	Dynamics of the Information Technology Industry
56	DT 212/DS/NC 615	Techno-Economics of Networks
57	GEN 201	Technical Communication
58	HSS 102	The City
59	HSS 106	Digital Sociology
60	HSS 107	News Literacies in the Digital Society.
61	NC 812/ESD 812	Internet of Things
62	NC 851	Mathematical Analysis of Networks
63	NC 862	Advanced Computer Networks
64	PS 202	Technical communication
65	SE 601	OOAD UML and Intro to Web 2.0
66	SP 825	Visual Recognition
67	SP 854	Digital Image Processing
68	VL 602	High Level Synthesis and Optimization of Digital Circuits
69	VL 701	Functional Verification of SOCs
70	VL 801	Analysis and Design of VLSI Sub-systems
71	VL 802	Advanced Analog Design
72	VL 803	Processor Architecture
73	VL 813	Real Time Operating Systems
74	VL 818	Virtual Machines
75	DT 108 for (HCI)	Advanced Interface Design/HCI (new)
76	HSS 104B	E-Governance Application Design
77	GEN 505	IT Project and Product Management
78	ITS 712	Smart Cities
79	DT 213/ ITS 711	Social Media Communication
80	DT 214	Advanced Quantitative Methods/ Data Manipulation
81	DS 707	Data Analytics



82	CS/DS 612	Machine Learning
83		Advanced Quantitative Methods/ Data Manipulation
84	DT 305	Political Economy of Location