MIT Academy of Engineering

An Autonomous Institute Affiliated to Savitribai Phule Pune University

CURRICULUM FRAMEWORK COMPUTER ENGINERING

The B. Tech Program shall be based on the following type of courses

SL. NO.	TYPE OF COURSE	ABBREVIATION
1.	Natural Science	NSC
2.	Engineering Science	ESC
3.	Program Core	PC
4.	Discipline Core	DC
5.	Department Elective	DE
6.	Open Elective	OE
7.	Humanities and Social Science	HSS
8.	Skill Development and Project	SDP

The Course and Credit Distribution shall be as under,

SL. NO.	TYPE OF COURSE	NO. OF COURSES	TOTAL CREDITS	
			NO.	%
1.	Natural Science	**4**	**18**	**10.98**
2.	Engineering Science	**4**	**16**	**9.76**
3.	Program Core	**5**	**20**	**12.20**
4.	Discipline Core	**13**	**48**	**30.36**
5.	Department Elective	**2**	**6**	**3.66**
6.	Open Elective	**4**	**16**	**9.76**
7.	Humanities and Social Science	**8/9**	**16**	**9.76**
8.	Skill Development and Project	**10/9**	**24**	**14.62**
TOTAL		**50**	**164**	**100**

COURSE DISTRIBUTION: SEMESTER WISE										
SL. NO.	TYPE OF COURSE	NO. OF COURSES/SEMESTER								TOTAL
		1	2	3	4	5	6	7	8	
1.	Natural Science	2	2							**4**
2.	Engineering Science	2	2							**4**
3.	Program Core			3	2					**5**
4.	Discipline Core			2	2	4	3	1	1	**13**
5.	Department Elective							1	1	**2**
6.	Open Elective					1	1	1	1	**4**
7.	Humanities & Social Science	1	1		1	1	2	1/2	1	**8/9**
8.	Skill Development & Project	1	1	1	1	1	1	3/2	1	**10/9**
TOTAL		**6**	**6**	**6**	**6**	**7**	**7**	**7**	**5**	**50**

CREDIT DISTRIBUTION: SEMESTER WISE										
1 Lecture hour =1Credit **2 Lab Hours =1 Credit** **1 Tutorial Hour = 1Credit**										
SL. NO.	TYPE OF COURSE	NO. OF CREDITS/SEMESTER								TOTAL
		1	2	3	4	5	6	7	8	
1.	Natural Science	9	9							**18**
2.	Engineering Science	8	8							**16**
3.	Program Core			12	8					**20**
4.	Discipline Core			8	8	12	12	4	4	**48**
5.	Department Elective							3	3	**6**
6.	Open Elective					4	4	4	4	**16**
7.	Humanities & Social Science	2	2		2	2	3	3	2	**16**
8.	Skill Development & Project	2	2	2	2	2	2	8	4	**24**
TOTAL		**21**	**21**	**22**	**20**	**20**	**21**	**22**	**17**	**164**

MIT Academy of Engineering (An Autonomous Institute Affiliated to SPPU)	COURSE STRUCTURE (2016 - 2020)		
SCHOOLOF COMPUTER ENGINEERING AND TECHNOLOGY	W.E.F	:	2016-17
FIRST YEAR BACHELOR OF TECHNOLOGY COMPUTER ENGINEERING	RELEASE DATE	:	1/06/2016
	REVISION NO.	:	0.0

SEMESTER: I

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	NSC1	AS101	Mathematics – 1	4	1	5
2.	NSC2	AS102 / AS103	Physics / Chemistry	3	2	4
3.	ESC1	EX101 / CV101	Electrical & Electronics Engg. / Applied Mechanics	3	2	4
4.	ESC2	ME101 / IT101	Engineering Graphics/Computer Programming	2	4	4
5.	HSS1	HP101	Language & Communication – 1	1	2	2
6.	SDP1	ME102 / ME103	Engineering Tools & Techniques / Design Thinking	---	4	2
TOTAL				**13**	**15**	**21**

SEMESTER: II

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	NSC3	AS104	Mathematics – 2	4	1	5
2.	NSC4	AS103 / AS102	Chemistry / Physics	3	2	4
3.	ESC3	CV101 / EX101	Applied Mechanics / Electrical& Electronics Engg.	3	2	4
4.	ESC4	IT101 / ME101 /	Computer Programming / Engineering Graphics	2	4	4
5.	HSS2	HP102	Language & Communication – 2	1	2	2
6.	SDP2	ME103 / ME102	Design Thinking / Engineering Tools & Techniques	---	4	2
TOTAL				**13**	**15**	**21**

L: Lecture, P: Practical, T: Tutorial; *Applicable for FY B. Tech

MIT | Academy of Engineering (An Autonomous Institute)	COURSE STRUCTURE (2017 - 2021)		
SCHOOLOF COMPUTER ENGINEERING AND TECHNOLOGY	W.E.F	:	2018-19
SECOND YEAR BACHELOR OF TECHNOLOGY COMPUTER ENGINEERING	RELEASE DATE	:	1/06/2017
	REVISION NO.	:	0.0

SEMESTER: III

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	PC1	CH201	Environmental Science	2	2	3
2.	PC2	AS202	Applied Mathematics	3	2	4
3.	PC3	ET201	System Engineering	3	2	4
4.	DC1	CS201	Data and File Structures	3	2	4
5.	DC2	CS202	Digital Electronics and Microprocessors	3	2	4
6.	SDP3	ET206	Prototyping	--	4	2
TOTAL				**14**	**14**	**21**

SEMESTER:IV

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	HSS3	HP201	Psychology	3	--	3
2.	PC4	IT201	Engineering Informatics	3	2	4
3.	PC5	ME201	Material Engineering	3	2	4
4.	DC3	CS211	Discrete Structure and Graph Theory	3	2	4
5.	DC4	CS212	Database Management Systems	3	2	4
6.	SDP4	CS213	Minor Project	--	4	2
TOTAL				**15**	**12**	**21**

Note: L: Lecture, P: Practical, T: Tutorial; **Applicable for FY BTech*

MIT | Academy of Engineering (An Autonomous Institute)	CURRICULUM STRUCTURE (2017 - 2021)		
SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY	W.E.F	:	2019-20
THIRD YEAR BACHELOR OF TECHNOLOGY COMPUTER ENGINEERING	RELEASE DATE	:	1/12/2017
	REVISION NO.	:	0.0

SEMESTER: V

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC5	CS301	Operating System	3	2	4
2.	DC6	CS302	Computer Organization & Architecture	3	--	3
3.	DC7	CS303	Theory of Computation	3	--	3
4.	DC8	CS304	Computer Graphics & Gaming	--	4	2
5.	OE1	IT 311 CS311 CS312	Open Elective - Refer Annexure.	3	2	4
6.	HSS4	HP301	Project Management	1	2	2
7.	SDP5	CS30#	Skill Development Lab	--	4	2
TOTAL				**13**	**14**	**20**

SEMESTER:VI

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC9	CS321	Design and Analysis of Algorithm	3	2	4
2.	DC10	CS322	Compiler Design	3	2	4
3.	DC11	CS323	Computer Networks	3	2	4
4.	OE2	IT 331 CS331 CS332	Open Elective - Refer Annexure.	3	2	4
5.	HSS5	HP302	Professional Skills	1	2	2
6.	HSS6	HP303	Basics of Entrepreneurship	--	2	1
7.	SDP6	CS324	Mini Project	--	4	2
TOTAL				**13**	**16**	**21**

MIT | Academy of Engineering (An Autonomous Institute)	CURRICULUM STRUCTURE (2016 - 2020)		
SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY	W.E.F	:	2019-20
FINAL YEAR BACHELOR OF TECHNOLOGY COMPUTER ENGINEERING	RELEASE DATE	:	1/12/2017
	REVISION NO.	:	0.0

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC 12	CS401	Software Engineering, Testing and Quality Assurance.	3	2	4
2.	DE 1	CS41#	Department (Program) elective - Refer Annexure	3	0	3
3.	OE 3	CS42#	Open Elective – Refer Annexure	3	2	4
4.	HSS 6	HP402	Sociology	2	--	2
5.	HSS7/SDP7	HP403/CS40#	Business Strategies/ Advance skill development lab(Adv. Java/R Programming/Python with kali Linux)	---	2	1
6.	SDP 8	CS405	Project - I	--	8	4
7.	SDP9	CS406	Summer Internship	--	--	4
TOTAL				**11**	**14**	**22**

SEMESTER:VIII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC 13	CS431	Human Computer Engineering	3	2	4
2.	DE 2	CS44#	Department (Program) elective - Refer Annexure	3	0	3
3.	OE 4	CS45#	Open Elective – Refer Annexure	3	2	4
4.	HSS8	HP401	Engineering Economics	2	---	2
5.	SDP10	CS432	Project - II	---	8	4
TOTAL				**11**	**12**	**17**

		CREDITS		
		1 Lecture hour = 1 Credit	2 Lab Hours = 1 Credit	1 Tutorial H
SL. NO.	YEAR	SEMESTER		TOTAL
		1	2	
1.	First Year	21	21	**42**
2.	Second Year	21	21	**42**
3.	Third Year	20	21	**41**
4.	Final Year	22	17	**39**
TOTAL				**164**

CONTACT HOURS				
SL. NO.	YEAR	SEMESTER		TOTAL
		1	2	
1.	First Year	28	28	**56**
2.	Second Year	28	27	**55**
3.	Third Year	27	29	**56**
4.	Final Year	25	23	**48**
TOTAL				**215**

ANNEXURE

Natural Science (NSC) : 4 Courses		
1.	AS101	Mathematics – 1
2.	AS102	Mathematics – 2
3.	AS103	Physics
4.	AS104	Chemistry

Engineering Science (ESC) : 6 Courses		
1	EX101	Electrical and Electronic Engineering
2	CV101	Applied Mechanics
3	ME101	Engineering Graphics
4	IT101	Computer Programming

Program Core (PC) : 5 Courses		
1.	CH201	Environmental Science
2.	AS201	Applied Mathematics
3.	ET201	System Engineering
4.	IT201	Engineering Informatics
5.	ME201	Material Engineering

Discipline Core (DC) : 13 Courses	
CS201	Data and File Structures
CS202	Digital Electronics and Microprocessors
CS211	Discrete Structure and Graph Theory
CS212	Database Management Systems
CS301	Operating System
CS302	Computer Organization & Architecture
CS303	Theory of Computation
CS304	Computer Graphics & Gaming
CS321	Design and Analysis of Algorithm
CS322	Compiler Design
CS323	Computer Networks
CS401	Software Testing
CS431	Human Computer Interaction

Department Elective (DE) : 6 Courses	
CS411	Operating System Design
CS412	Wireless and Mobile Network
CS413	Information Retrieval
CS441	Distributed System
CS442	Ubiquitous Systems
CS443	Cloud & Virtualization

Open Elective (OE) : 4 Courses		
Sl. No.	**Course Code**	**Course**
1	IT311	Cryptography and System Security
2	IT331	Cyber Security
3	IT421	Ethical Hacking & Cyber Laws
4	IT451	Digital Forensics
5	CS311	Descriptive Analytics
6	CS331	Predictive Analytics
7	CS421	Big Data Analytics
8	CS451	Practitioner's approach for Data Analytics
9	CS312	Artificial Intelligence and Neural Networks
10	CS332	Machine Learning
11	CS422	Deep Learning
12	CS452	Pattern Recognition

Open Elective (OE) :Term - I (List of courses for Academic Year 2018-19)		
Chemical		
1	CH311	Process Modeling and Simulation.
2	CH312	Piping Engineering
Civil		
3	CV311	Construction Planning & Management
Computer		
4	CS311	Descriptive Analytics
5	CS312	Artificial Intelligence and Neural Networks
Electronics		
6	EX311	Fundamentals of Robotics
E & TC		
7	ET311	Embedded System Programming (ESP)
8	ET312	IoT Architecture and Sensors
IT		
9	IT311	Cryptography & System Security
Mechanical		
10	ME311	Geometric Modeling & Design
11	ME312	Fundamentals of Robotics
12	ME313	Work Process Assessment

Open Elective (OE) :Term - II (List of courses for Academic Year 2018-19)		
Chemical		
1	CH331	Process Engineering.
2	CH332	Piping Layout
Civil		
3	CV331	Operation Research
Computer		
4	CS331	Predictive Analysis
5	CS332	Machine Learning
Electronics		
6	EX331	Kinematics and Dynamics of Robotics
E & TC		
7	ET331	Embedded Processor
8	ET332	IoT Networks & Protocols
IT		
9	IT331	Cyber Security
Mechanical		
10	ME331	Finite Element Analysis
11	ME332	Kinematics & Dynamics of Robots
12	ME333	Facility Planning & Design

Open Elective (OE) :Term - I (List of courses for Academic Year 2019-20)		
Chemical		
1	CH421	Process Optimization
2	CH422	Piping Design & Engineering
Civil		
3	CV421	Financial Management
Computer		
4	CS421	Big Data Analytics
5	CS422	Deep Learning
Electronics		
6	EX421	Robotics Vision and Control
E & TC		
7	ET421	Low-Power SoC Architecture & Applications (SoC&A)
8	ET422	Privacy and Security in IoT
IT		
9	IT421	Ethical Hacking & Cyber Laws
Mechanical		
10	ME421	Computational Fluid Dynamics
11	ME422	Robotics Vision and Control
12	ME423	Operations Management

Open Elective (OE) :Term - II (List of courses for Academic Year 2019-20)		
Chemical		
1	CH451	Process Intensification & Integration
2	CH452	Pipeline Engineering
Civil		
3	CV451	Visualization and Information Exchange
Computer		
4	CS451	Practitioner's approach for Data analytics
5	CS452	Pattern Recognition
Electronics		
6	EX451	Intelligent and High-Performance Robotics
E & TC		
7	ET451	Real-Time Embedded System (RES)
8	ET452	Energy Management for IoT Devices
IT		
9	IT451	Digital Forensics
Mechanical		
10	ME451	Advanced Analysis
11	ME452	Intelligent and High Performance Robotics
12	ME453	Supply Chain Management

Humanities and Social Science (HSS) : 9 Courses		
Sl. No.	**Course**	
1.	HP101	Language & Communication – I
2.	HP102	Language & Communication – II
3.	HP201	Psychology
4.	HP301	Project Management
5.	HP302	Professional Skills
6.	HP303	Basics of Entrepreneurship
7.	HP401	Engineering Economics
8	HP402	Sociology
9	HP403	Business Strategies / Programming in Java

Skill Development and Project (SDP) : 9 Courses		
Sl. No.	**Course Code**	**Course**
1.	ME102	Engineering Tools and Techniques
2.	ME103	Design Thinking
3.	ET206	Prototyping
4.	CH213	Minor Project
5.	CH304	Skill development Lab.
6.	CH324	Mini Project
7.	CH402	Adv Skill development Lab
8.	CH403	Project - I
9.	CH432	Project - II