

# MIT Academy of Engineering

An autonomous institute affiliated to Savitribai Phule Pune University

## CURRICULUM FRAMEWORK (COMPUTER ENGINEERING)

The BTECH 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	11.25
2.	Engineering Science	6	16	10.00
3.	Program Core	5	19	11.86
4.	Discipline Core	13	48	30.00
5.	Department Elective	2	6	03.75
6.	Open Elective	4	16	10.00
7.	Humanities and Social Science	9	17	10.63
8.	Skill Development and Project	9	24	12.50
<b>TOTAL</b>		<b>52</b>	<b>164</b>	<b>100</b>

<b>COURSE DISTRIBUTION : SEMESTER WISE</b>										
<b>SL. NO.</b>	<b>TYPE OF COURSE</b>	<b>NO. OF COURSES/SEMESTER</b>								<b>TOTAL</b>
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
1.	Natural Science	2	2							<b>4</b>
2.	Engineering Science	3	3							<b>6</b>
3.	Program Core			3	2					<b>5</b>
4.	Discipline Core			2	2	4	3	1	1	<b>13</b>
5.	Department Elective							1	1	<b>2</b>
6.	Open Elective					1	1	1	1	<b>4</b>
7.	Humanities & Social Science	1	1		1	1	2	2	1	<b>9</b>
8.	Skill Development & Project	1	1	1	1	1	1	1	1	<b>8</b>
<b>TOTAL</b>		<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>52</b>

<b>CREDIT DISTRIBUTION : SEMESTER WISE</b>										
<b>1 Lecture hour = 1 Credit    2 Lab Hours = 1 Credit    1 Tutorial Hour = 1 Credit</b>										
<b>SL. NO.</b>	<b>TYPE OF COURSE</b>	<b>NO. OF CREDITS/SEMESTER</b>								<b>TOTAL</b>
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
1.	Natural Science	9	9							<b>18</b>
2.	Engineering Science	8	8							<b>16</b>
3.	Program Core			11	8					<b>19</b>
4.	Discipline Core			8	8	12	12	4	4	<b>48</b>
5.	Department Elective							3	3	<b>6</b>
6.	Open Elective					4	4	4	4	<b>16</b>
7.	Humanities & Social Science	2	2		3	2	3	2	3	<b>17</b>
8.	Skill Development & Project	2	2	2	2	2	2	4	4	<b>20</b>
9.	Internship						4			<b>4</b>
<b>TOTAL</b>		<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>20</b>	<b>25</b>	<b>17</b>	<b>18</b>	<b>164</b>


<b>SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY</b>	<b>W.E.F</b>	:	<b>2018-19</b>
<b>FY BTECH- COMPUTER ENGINEERING</b>	<b>RELEASE DATE</b>	:	<b>1/06/2018</b>
	<b>REVISION NO.</b>	:	<b>0.0</b>

**SEMESTER: I**

SL. No	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	NSC – 1	AS101	Mathematics – 1	3	2	4
2.	NSC – 2	AS102/ AS103	Physics / Chemistry	3	2	4
3.	ESC – 1	EX101/ CV101	Electrical & Electronics Engg. / Applied Mechanics	3	2	4
4.	ESC – 2	IT101	Computer programming	-	4	2
5	ESC – 3	ME101/	Engineering Graphics /Science of nature or model making	1	4	3
6	HSS – 1	HP101	Language & Communication-1	1	2	2
7	SDP – 1	ME102/ ME103	Engineering Tools & Techniques / Design Thinking	---	4	2
<b>TOTAL</b>				<b>11</b>	<b>20</b>	<b>21</b>

**SEMESTER:II**

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	NSC – 1	AS104	Mathematics – 2	3	2	4
2.	NSC – 2	AS103 / AS102	Chemistry / Physics	3	2	4
3.	ESC – 1	CV101 / EX101	Applied Mechanics / Electrical & Electronics Engg.	3	2	4
4	ESC-2	CS101	Logic design	-	4	2
5	ESC – 3	ME101	Science of nature or model making /Engineering Graphics	1	4	3
6	HSS – 1	HP101	Language & Communication-2	1	2	2
7	SDP – 1	ME103 / ME102	Design Thinking / Engineering Tools & Techniques	---	4	2
<b>TOTAL</b>				<b>11</b>	<b>20</b>	<b>21</b>

				<b>COURSE STRUCTURE (2018 - 2022)</b>		
<b>SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY</b>				<b>W.E.F</b>	<b>:</b>	<b>2019-20</b>
<b>SY BTECH- COMPUTER ENGINEERING</b>				<b>RELEASE DATE</b>	<b>:</b>	<b>1/06/2019</b>
				<b>REVISION NO.</b>	<b>:</b>	<b>0.0</b>
<b>SEMESTER: III</b>						
<b>SL. No.</b>	<b>COURSE TYPE</b>	<b>COURSE CODE</b>	<b>COURSE</b>	<b>TEACHING SCHEME</b>		
				<b>L</b>	<b>P</b>	<b>CREDIT</b>
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
<b>TOTAL</b>				<b>14</b>	<b>14</b>	<b>21</b>
<b>SEMESTER:IV</b>						
<b>SL. No.</b>	<b>COURSE TYPE</b>	<b>COURSE CODE</b>	<b>COURSE</b>	<b>TEACHING SCHEME</b>		
				<b>L</b>	<b>P</b>	<b>CREDIT</b>
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
<b>TOTAL</b>				<b>15</b>	<b>12</b>	<b>21</b>

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

<b>SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY</b>	<b>W.E.F</b>	<b>:</b>	<b>2020-21</b>
<b>TY BTECH- COMPUTER ENGINEERING</b>	<b>RELEASE DATE</b>	<b>:</b>	
	<b>REVISION NO.</b>	<b>:</b>	<b>0.0</b>

**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	IT 303	Web Technology	--	4	2
5.	OE1	IT 311 CS311 CS312	Cryptography & system security/Descriptive Analytics/ Artificial Intelligence	3	2	4
6.	HSS4	HP301	Project Management	1	2	2
7.	SDP5	CS30#	Skill Development Lab	--	4	2
<b>TOTAL</b>				<b>13</b>	<b>14</b>	<b>20</b>

**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	Cyber Security/ Predictive Analytics/ Machine Learning.	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
<b>TOTAL</b>				<b>13</b>	<b>16</b>	<b>21</b>

**SCHOOL OF COMPUTER ENGINEERING  
AND TECHNOLOGY**

**W.E.F : 2021-22**

**BTECH- COMPUTER ENGINEERING**

**RELEASE DATE :**

**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	IT421/CS421/CS422	Ethical hacking & cyber laws/ Big data Analytics/ Deep Learning	3	2	4
4.	HSS 6	HP402	Sociology	2	--	2
5.	HSS7/SD P7	HP403/CS40#	Business Strategies/ Advance skill development lab(Adv. Java/R Programming/Python with kali Linux)	---	2	1
6.	SDP 8	CS402	Project - I	--	8	4
7.	SDP9	CS403	Summer Internship	--	--	4
<b>TOTAL</b>				<b>11</b>	<b>14</b>	<b>22</b>

**SEMESTER:VIII**

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC 13	CS431	Digital Enterprise Management	3	2	4
2.	DE 2	CS44#	Department (Program) elective - Refer Annexure	3	0	3
3.	OE 4	IT451/CS451/CS452	Digital forensics/ Practitioner's approach for data analytics/ Pattern Recognition	3	2	4
4.	HSS8	HP401	Engineering Economics	2	---	2
5.	SDP10	CS432	Project - II	---	8	4

<b>TOTAL</b>	<b>11</b>	<b>12</b>	<b>17</b>
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<b>CREDITS</b>				
<b>SL. NO.</b>	<b>YEAR</b>	<b>1 Lecture hour = 1 Credit    2 Lab Hours = 1 Credit</b>		<b>TOTAL</b>
		<b>SEMESTER</b>		
		<b>1</b>	<b>2</b>	
1.	First Year	21	21	<b>42</b>
2.	Second Year	21	21	<b>42</b>
3.	Third Year	20	21	<b>41</b>
4.	Final Year	22	17	<b>39</b>
<b>TOTAL</b>				<b>164</b>

<b>CONTACT HOURS</b>				
<b>SL. NO.</b>	<b>YEAR</b>	<b>SEMESTER</b>		<b>TOTAL</b>
		<b>1</b>	<b>2</b>	
1.	First Year	31	31	<b>62</b>
2.	Second Year	27	27	<b>54</b>
3.	Third Year	27	29	<b>56</b>
4.	Final Year	25	23	<b>48</b>
<b>TOTAL</b>				<b>220</b>

## ANNEXURE

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

<b>Engineering Science (ESC) : 6 Courses</b>		
1	EX101	Electrical and Electronic Engineering
2	CV101	Applied Mechanics
3	ME101	Engineering Graphics-I
4	IT101	Computer Programming
5	ME104	Engineering Graphics- II
6	CS 101	Logic Development

<b>Program Core (PC) : 5 Courses</b>		
1.	CH201	Environmental Science
2.	AS202	Applied Mathematics
3.	ET201	System Engineering
4.	IT201	Engineering Informatics
5.	ME201	Material Engineering



<b>Discipline Core (DC) : 13 Courses</b>	
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	Digital Enterprise Management

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

<b>Open Elective (OE) : 4 Courses</b>		
<b>Sl. No.</b>	<b>Course Code</b>	<b>Course</b>
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
10	CS332	Machine Learning
11	CS422	Deep Learning
12	CS452	Pattern Recognition

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

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

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

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

<b>Humanities and Social Science (HSS) : 9 Courses</b>		
<b>Sl. No.</b>	<b>Course</b>	
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

<b>Skill Development and Project (SDP) : 9 Courses</b>		
<b>Sl. No.</b>	<b>Course Code</b>	<b>Course</b>
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	Skill development Lab 2
8.	CH403	Project - I
9.	CH432	Project - II