MIT Academy of Engineering

An Autonomous Institute Affiliated to Savitribai Phule Pune University

CURRICULUM FRAMEWORK

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**	**19**	**11.58**
4.	Discipline Core	**12**	**48**	**29.26**
5.	Department Elective	**2**	**6**	**3.66**
6.	Open Elective	**4**	**16**	**9.76**
7.	Humanities and Social Science	**8/9**	**17**	**10.36**
8.	Skill Development and Project	**10/9**	**24**	**14.64**
TOTAL		**49**	**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	3	3	1	1	**12**
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**	**6**	**7**	**7**	**5**	**49**

CREDIT DISTRIBUTION: SEMESTER WISE										
1 Lecture hour = 1 Credit 2 Lab Hours = 1 Credit 1 Tutorial Hour = 1 Credit										
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			11	8					**19**
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		3	2	3	3	2	**17**
8.	Skill Development & Project	2	2	2	2	2	2	8	4	**24**
TOTAL		**21**	**21**	**21**	**21**	**20**	**21**	**22**	**17**	**164**

MIT Academy of Engineering (An Autonomous Institute Affiliated to SPPU)	COURSE STRUCTURE (2018 - 2022)		
SCHOOL OF CHEMICAL ENGINEERING	W.E.F	:	2018-19
FIRST YEAR BACHELOR OF TECHNOLOGY	RELEASE DATE	:	1/06/2018
	REVISION NO.	:	1.0

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	Experimental 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 / Experimental Tools & Techniques	---	4	2
TOTAL				**13**	**15**	**21**

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

MIT Academy of Engineering (An Autonomous Institute Affiliated to SPPU)	COURSE STRUCTURE (2018 - 2022)		
SCHOOL OF CHEMICAL ENGINEERING	W.E.F	:	2017-18
SECOND YEAR BACHELOR OF TECHNOLOGY CHEMICAL ENGINEEERING	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	AS201	Applied Mathematics	3	2	4
3.	PC3	ET201	System Engineering	3	2	4
4.	DC1	CH202	Material and Energy Balance	3	2	4
5.	DC2	CH203	Chemical Engineering Operations	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	CH211	Momentum Transfer	3	2	4
5.	DC4	CH212	Advanced Chemistry	3	2	4
6.	SDP4	CH213	Minor Project	---	4	2
TOTAL				**15**	**12**	**21**

L: Lecture, P: Practical

MIT Academy of Engineering (An Autonomous Institute Affiliated to SPPU)	CURRICULUM STRUCTURE (2018 - 2022)		
SCHOOL OF CHEMICAL ENGINEERING	W.E.F	:	2018-19
THIRD YEAR BACHELOR OF TECHNOLOGY CHEMICAL ENGINEEERING	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	CH301	Chemical Engineering Thermodynamics	3	2	4
2.	DC6	CH302	Heat Transfer	3	2	4
3.	DC7	CH303	Mass Transfer	3	2	4
4.	OE1	CH31#	Open Elective - Refer Annexure.	3	2	4
5.	HSS4	HP302	Professional Skills	0	4	2
6.	SDP5	CH304	Skill Development Lab	---	4	2
TOTAL				**12**	**16**	**20**

SEMESTER:VI

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC8	CH 321	Separation Process	3	2	4
2.	DC9	CH 322	Chemical Reaction Engineering	3	2	4
3.	DC10	CH 323	Chemical Equipment Design	2	4	4
4.	OE2	CH 33#	Open Elective - Refer Annexure.	3	2	4
5.	HSS5	HP301	Project Management	1	2	2
6.	HSS6	HP303	Basics of Entrepreneurship	---	2	1
7.	SDP6	CH324	Mini Project	---	4	2
TOTAL				**12**	**18**	**21**

L: Lecture, P: Practical

MIT Academy of Engineering (An Autonomous Institute Affiliated to SPPU)	CURRICULUM STRUCTURE (2018 - 2022)		
SCHOOL OF CHEMICAL ENGINEERING	W.E.F	:	2019-20 (PART A)
FINAL YEAR BACHELOR OF TECHNOLOGY CHEMICAL ENGINEEERING	RELEASE DATE	:	1/12/2018
	REVISION NO.	:	0.0

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC11	CH401	Process Dynamics, Control & Instrumentation	3	2	4
2.	DE1	CH41#	Dept. Elective - Refer Annexure.	3	0	3
3.	OE3	CH42#	Open Elective - Refer Annexure.	3	2	4
4.	HSS7	HP402	Sociology	2	---	2
5.	HSS8/ SDP7	HP403/ CH402	Business Strategies / Skill Development Lab 2	---	2	1
6.	SDP8	CH403	Project - I	---	8	4
7.	SDP9	CH404	Summer Internship	---	---	4
TOTAL				**11**	**14**	**22**

SEMESTER: VIII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC12	CH431	Chemical Process Technology	3	2	4
2.	DE2	CH44#	Dept. Elective - Refer Annexure.	3	0	3
3.	OE4	CH45#	Open Elective - Refer Annexure.	3	2	4
4.	HSS9	HP401	Engineering Economics	2	---	2
5.	SDP10	CH432	Project - II	---	8	4
TOTAL				**11**	**12**	**17**

L: Lecture, P: Practical

CREDITS				
1 Lecture hour = 1 Credit		2 Lab Hours = 1 Credit		1 Tutorial Hour = 1 Credit
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	28	30	**58**
4.	Final Year	25	23	**48**
TOTAL				**217**

ANNEXURE

Natural Science (NSC) : 4 Courses		
Sl. No.	**Course Code**	**Course**
1.	AS101	Mathematics – 1
2.	AS102	Mathematics – 2
3.	AS103	Physics
4.	AS104	Chemistry

Engineering Science (ESC) : 4 Courses		
Sl. No.	**Course Code**	**Course**
1	EX101	Electrical and Electronic Engineering
2	CV101	Applied Mechanics
3	ME101	Engineering Graphics
4	IT101	Computer Programming

Program Core (PC) :5 Courses		
Sl. No.	**Course Code**	**Course**
1.	CH201	Environmental Science
2.	AS201	Applied Mathematics
3.	ET201	System Engineering
4.	IT201	Engineering Informatics
5.	ME201	Material Engineering

Discipline Core (DC) : 12 Courses		
Sl. No.	**Course Code**	**Course**
1.	CH202	Material and Energy Balance
2.	CH203	Chemical Engineering Operations
3	CH211	Momentum Transfer
4	CH212	Advanced Chemistry
5	CH301	Chemical Engineering Thermodynamics
6	CH302	Heat Transfer
7	CH303	Mass Transfer
8	CH321	Separation Process
9	CH322	Chemical Reaction Engineering
10	CH323	Chemical Equipment Design
11	CH401	Process Dynamics, Control & Instrumentation
12	CH431	Chemical Process Technology

Department Elective (DE) : 2 Courses		
Sl. No.	**Course Code**	**Course**
1	CH411	Introduction to Paint Technology
2	CH441	Paint Manufacturing Process
3	CH412	Energy Engineering
4	CH442	Energy Management and Audit
5	CH413	Petroleum Refining Technology
6	CH443	Petrochemical Engineering
7	CH414	Biochemical Engineering
8	CH444	Bioprocess Technology
9	CH415	Environment Engineering
10	CH445	Chemical Process Safety

Open Elective (OE) : 4 Courses		
Sl. No.	**Course Code**	**Course**
1	CH311	Process Modeling and Simulation.
2	CH331	Process Engineering.
3	CH421	Process Synthesis, Design and Optimization
4	CH451	Process Intensification and Integration
5	CH312	Piping Engineering
6	CH332	Piping Layout
7	CH422	Piping Design and Engineering
8	CH452	Pipeline Engineering

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 & Neural Network
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	Visualization & Information Exchange
Computer		
4	CS331	Data Science-I
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 Synthesis, Design and Optimization
2	CH422	Piping Design & Engineering
Civil		
3	CV421	Financial Management
Computer		
4	CS421	Data Science-II
5	CS422	Pattern Recognition
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 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	Operation Research
Computer		
4	CS451	Practitioner's approach for Data analytics
5	CS452	Reinforcement Learning
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	Cyber Forensics
Mechanical		
10	ME451	Advanced Engineering Analysis
11	ME452	Robotic Actuators
12	ME453	Supply Chain Management

Humanities and Social Science (HSS) :9 Courses		
Sl. No.	**Course Code**	**Course**
1.	HP101	Language & Communication – 1
2.	HP102	Language & Communication – 2
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

Skill Development and Project (SDP) : 10 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	Skill development Lab 2
8.	CH403	Project - I
9.	CH404	Summer Internship
10.	CH432	Project - II