MIT Academy of Engineering

An autonomous institute affiliated to Savitribai Phule Pune University

CURRICULUM FRAMEWORK- (MECHANICAL ENGINEERING)

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**	**10.96**
2.	Engineering Science	**4**	**16**	**9.76**
3.	Program Core	**5**	**19**	**11.59**
4.	Discipline Core	**12**	**48**	**29.27**
5.	Department Elective	**2**	**6**	**3.66**
6.	Open Elective	**4**	**16**	**9.76**
7.	Humanities and Social Science	**8/9**	**17**	**10.37**
8.	Skill Development and Project	**10/9**	**24**	**14.63**
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	2	**8/9**
8.	Skill Development & Project	1	1	1	1	1	1	2/3	1	**9/10**
TOTAL		**6**	**6**	**6**	**6**	**6**	**7**	**5**	**6**	**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	2	3	**17**
8.	Skill Development & Project	2	2	2	2	2	2	8	4	**24**
TOTAL		**21**	**21**	**21**	**21**	**20**	**21**	**22**	**18**	**164**

MIT | Academy of Engineering (An Autonomous Institute)	CURRICULUM STRUCTURE (2017 - 2021)		
SCHOOL OF MECHANICAL & CIVIL ENGINEERING	**W. E. F**	**:**	**2017-18**
FY BTECH	**RELEASE DATE**	**:**	**01/06/2016**
DEPARTMENT OF MECHANICAL EGG	**REVISION NO.**	**:**	**0.0**

SEMESTER: I

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P/T*	CREDIT
1.	NSC1	AS101	Mathematics – I	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 – I	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/T	CREDIT
1.	NSC3	AS101	Mathematics – II	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	HP101	Language & Communication – II	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)	CURRICULUM STRUCTURE (2017 - 2021)		
SCHOOL OF MECHANICAL & CIVIL ENGINEERING	**W. E. F**	**:**	**2018-19**
S Y B TECH	**RELEASE DATE**	**:**	**01/06/2017**
DEPARTMENT OF MECHANICAL EGG	**REVISION NO.**	**:**	**0.0**

SEMESTER: I

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	ME202	Thermal Engineering	3	2	4
5.	DC2	ME203	Solid Mechanics	3	2	4
6.	SDP3	ET206	Prototyping	--	4	2
TOTAL				14	14	21

SEMESTER: II

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	PC4	IT201	Engineering Informatics	3	2	4
2.	PC5	ME201	Materials Engineering	3	2	4
3.	DC3	ME211	Fluid Mechanics	3	2	4
4.	DC4	ME212	Manufacturing Technology	3	2	4
5.	HSS3	HP201	Psychology	3	--	3
6.	SDP4	ME213	Minor Project	--	4	2
TOTAL				15	12	21

L: Lecture, P: Practical

MIT | Academy of Engineering (An Autonomous Institute)	CURRICULUM STRUCTURE (2017 - 2021)		
SCHOOL OF MECHANICAL & CIVIL ENGINEERING	**W. E. F**	**:**	**2019-20**
T Y B TECH	**RELEASE DATE**	**:**	**01/12/2017**
DEPARTMENT OF MECHANICAL EGG	**REVISION NO.**	**:**	**0.0**

SEMESTER: V

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC5	ME301	Machine Design	3	2	4
2.	DC6	ME302	Machines & Mechanisms	3	2	4
3.	DC7	ME303	Heat Transfer	3	2	4
4.	OE1	ME31#	Open Elective - Refer Annexure.	3	2	4
5.	HSS5	HP302	Professional Skills	--	4	2
6.	SDP5	ME30#	Skill Development Lab - Refer Annexure	--	4	2
TOTAL				12	16	20

SEMESTER:VI

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC8	ME321	Turbomachines	3	2	4
2.	DC9	ME322	Quality Assurance	3	2	4
3.	DC10	ME323	Operations Research	3	2	4
4.	OE2	ME33#	Open Elective - Refer Annexure.	3	2	4
5.	HSS6	HP303	Basics of Entrepreneurship	--	2	1
6.	HSS4	HP301	Project Management	1	2	2
7.	SDP6	ME324	Mini Project	--	4	2
TOTAL				13	16	21

L: Lecture, P: Practical

MIT | Academy of Engineering (An Autonomous Institute)	CURRICULUM STRUCTURE (2017 - 2021)		
SCHOOL OF MECHANICAL & CIVIL ENGINEERING	**W. E. F**	**:**	**2020-21**
B TECH	**RELEASE DATE**	**:**	**01/12/2018**
DEPARTMENT OF MECHANICAL EGG	**REVISION NO.**	**:**	**0.0**

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC11	ME401	Heating Ventilation & Air Conditioning	3	2	4
2.	DE1	ME41#	Discipline Elective - Refer Annexure.	3	--	3
3.	OE3	ME42#	Open Elective - Refer Annexure.	3	2	4
4.	HSS7	HP402	Sociology	2	--	2
5.	HSS8/ SDP7	HP403/ ME40#	Business Strategies / Piping Design/ Six Sigma/ Energy Audit	--	2	1
6.	SDP8	ME402	Project - I	--	8	4
7.	SDP9	ME404	Summer Internship	--	--	4
TOTAL				11	14	22

SEMESTER: VIII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC12	ME431	Noise Vibration & Harshness	3	2	4
2.	DE2	ME44#	Discipline Elective - Refer Annexure	3	--	3
3.	OE4	ME45#	Open Elective - Refer Annexure	3	2	4
4.	HSS9	HP401	Engineering Economics	2	--	2
5.	SDP10	ME432	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	29	**57**
4.	Final Year	25	23	**48**
TOTAL				**216**

ANNEXURE

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

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

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

Discipline Core (DC): 12 Courses		
Sl. No.	**Course Code**	**Name of Course**
1.	ME202	Thermal Engineering
2.	ME203	Solid Mechanics
3.	ME211	Fluid Mechanics
4.	ME212	Manufacturing Technology
5.	ME301	Machine Design
6.	ME302	Machines & Mechanisms
7.	ME303	Heat Transfer
8.	ME321	Turbomachines
9.	ME322	Quality Assurance
10.	ME323	Operations Research
11.	ME401	Heating Ventilation & Air Conditioning
12.	ME431	Noise Vibration & Harshness

Department Elective (DE): 2 Courses		
	Course Code	**Name of Course**
1.	ME411	Mechatronics
	ME412	Pressure Vessel Design
	ME413	Power Plant Engineering
	ME414	Product Lifecycle Management
2.	ME441	Hydraulics & Pneumatics
	ME442	Mechanical System Design
	ME443	Non-Conventional Machining
	ME444	Enterprise Resource Planning

Open Elective (OE): 4 Courses			
Computer Aided Engineering	**Sl. No.**	**Course Code**	**Name of Course**
	1.	ME311	Geometric Modeling & Design
	2.	ME331	Finite Element Analysis
	3.	ME421	Computational Fluid Dynamics
	4.	ME451	Advanced Engineering Analysis
Robotics & Automation	1.	ME312	Fundamentals of Robotics
	2.	ME332	Kinematics & Dynamics of Robots
	3.	ME422	Robotics Vision and Control
	4.	ME452	Intelligent and High Performance Robotics
Industrial Engineering & Management	1.	ME313	Work Process Assessment
	2.	ME333	Facility Planning & Design
	3.	ME423	Operations Management
	4.	ME452	Supply Chain Management

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	IT311	Cryptography & System Security
5	CS311	Descriptive Analytics
6	CS312	Artificial Intelligence & Neural Network
Electronics		
7	EX311	Fundamentals of Robotics
E & TC		
8	ET311	Embedded System Programming (ESP)
9	ET312	IoT Architecture and Protocols
IT		
10	IT311	Cryptography & System Security
11	CS311	Descriptive Analytics
12	CS312	Artificial Intelligence & Neural Network
Mechanical		
13	ME311	Geometric Modeling & Design
14	ME312	Fundamentals of Robotics
15	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	IT331	Cyber Security
5	CS331	Data Science-I
6	CS332	Machine Learning
Electronics		
7	EX331	Kinematics and Dynamics of Robotics
E & TC		
8	ET331	Embedded Processor
9	ET332	IoT Network & Protocols
IT		
10	IT331	Cyber Security
11	CS331	Data Science-I
12	CS332	Machine Learning
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	IT421	Ethical Hacking & Cyber Laws
5	CS421	Data Science-II
6	CS422	Pattern Recognition
Electronics		
7	EX421	Robotics Vision and Control
E & TC		
8	ET421	Low-Power SoC Architecture & Applications (SoC&A)
9	ET422	Privacy and Security in IoT
IT		
10	IT421	Ethical Hacking & Cyber Laws
11	CS421	Data Science-II
12	CS422	Pattern Recognition
Mechanical		
13	ME421	Computational Fluid Dynamics
14	ME422	Robotics Vision and Control
15	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 & Information Exchange
Computer		
4	IT451	Cyber Forensics
5	CS451	Practitioner's approach for Data analytics
6	CS452	Reinforcement Learning
Electronics		
7	EX451	Intelligent and High-Performance Robotics
E & TC		
8	ET451	Real-Time Embedded System (RES)
9	ET452	Energy Management for IoT Devices
IT		
10	IT451	Cyber Forensics
11	CS451	Practitioner's approach for Data analytics
12	CS452	Reinforcement Learning
Mechanical		
13	ME451	Advanced Analysis
14	ME452	Intelligent and High-Performance Robotics
15	ME453	Supply Chain Management

Humanities and Social Science (HSS): 9 Courses		
Sl. No.	**Course Code**	**Name of 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

Skill Development and Project (SDP): 10 Courses		
Sl. No.	**Course Code**	**Name of Course**
1.	ME102	Engineering Tools and Techniques
2.	ME103	Design Thinking
3.	ET206	Prototyping
4.	ME213	Minor Project
5.	ME304	Skill Development Lab (Autodesk Inventor)
	ME305	Skill Development Lab (CATIA)
6.	ME403	Piping Design
	ME404	Six Sigma
	ME405	Energy Audit
7.	ME324	Mini Project
8.	ME402	Project - I
9.	ME406	Summer Internship
10.	ME432	Project - II