MIT Academy of Engineering

An autonomous institute affiliated to Savitribai Phule Pune University

<u>CURRICULUM FRAMEWORK- (CIVIL ENGINEERING)</u>

The B. Tech Program shall be based on the following types 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**

CURRICULUM STRUCTURE (2016 - 2020)

MIT | Academy of Engineering
(An Autonomous Institute)

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	**W. E. F** : 2016-17
FIRST YEAR BACHELOR OF TECHNOLOGY	**RELEASE DATE** : 01/06/2016
DEPARTMENT OF CIVIL ENGINEERING	**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*

CURRICULUM STRUCTURE (2016 - 2020)

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	W. E. F	:	2017-18
SECOND YEAR BACHELOR OF TECHNOLOGY	RELEASE DATE	:	01/06/2017
DEPARTMENT OF CIVIL EGG	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	CV201	Continuum Mechanics of Solids	3	2	4
5.	DC2	CV202	Geospatial Engineering Technology	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.	PC4	IT201	Engineering Informatics	3	2	4
2.	PC5	ME201	Materials Engineering	3	2	4
3.	DC3	CV211	Building Design & Construction	3	2	4
4.	DC4	CV212	Geotechnical Engineering	3	2	4
5.	HSS3	HP201	Psychology	3	--	3
6.	SDP4	CV213	Minor Project	--	4	2
TOTAL				15	12	21

L: Lecture, P: Practical

	CURRICULUM STRUCTURE (2016 - 2020)
MIT Academy of Engineering (An Autonomous Institute)	**CURRICULUM STRUCTURE (2016 - 2020)**

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	W. E. F	:	2018-19
THIRD YEAR BACHELOR OF TECHNOLOGY	RELEASE DATE	:	01/06/2018
DEPARTMENT OF CIVIL EGG	REVISION NO.	:	0.0

SEMESTER: V

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC5	CV301	Mechanics of Fluids	3	2	4
2.	DC6	CV302	Structural Analysis	3	2	4
3.	DC7	CV303	Concrete Technology	3	2	4
4.	OE1	CV31#	Open Elective - Refer Annexure.	3	2	4
5.	HSS4	HP301	Project Management	1	2	2
6.	SDP5	CV30#	Skill Development Lab - Refer Annexure	--	4	2
			TOTAL	13	14	20

SEMESTER:VI

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC8	CV321	Design of Structures	3	2	4
2.	DC9	CV322	Transportation Engineering	3	2	4
3.	DC10	CV323	Water Resources Engineering	3	2	4
4.	OE2	CV33#	Open Elective - Refer Annexure.	3	2	4
5.	HSS5	HP302	Professional Skills	--	4	2
6.	HSS6	HP303	Basics of Entrepreneurship	--	2	1
7.	SDP6	CV324	Mini Project	--	4	2
			TOTAL	12	18	21

L: Lecture, P: Practical

			CURRICULUM STRUCTURE (2016 - 2020)

MIT | Academy of Engineering
(An Autonomous Institute)

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	W. E. F : 2019-20
FINAL YEAR BACHELOR OF TECHNOLOGY	RELEASE DATE : 01/06/2019
DEPARTMENT OF CIVIL EGG	REVISION NO. : 0.0

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC11	CV401	Drinking Water & Sanitary Engineering	3	2	4
2.	DE1	CV41#	Discipline Elective - Refer Annexure.	3	--	3
3.	OE3	CV42#	Open Elective - Refer Annexure.	3	2	4
4.	HSS7	HP401	Engineering Economics	2	--	2
5.	HSS9/ SDP7	HP403/ CV403	Business Strategies / Urban & Town Planning	--	2	1
6.	SDP8	CV402	Project - I	--	8	4
7.	SDP9	CV404	Summer Internship	--	--	4
			TOTAL	11	14	22

SEMESTER: VIII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC12	CV431	Estimation & Costing	3	2	4
2.	DE2	CV44#	Discipline Elective - Refer Annexure	3	--	3
3.	OE4	CV45#	Open Elective - Refer Annexure	3	2	4
4.	HSS8	HP402	Sociology	2	--	2
5.	SDP10	CV432	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.	CV201	Continuum Mechanics of Solids
2.	CV202	Geospatial Engineering
3.	CV211	Buildings Design and Construction
4.	CV212	Geotechnical Engineering
5.	CV301	Mechanics of Fluids
6.	CV302	Structural Analysis
7.	CV303	Concrete Technology
8.	CV321	Design of Structures
9.	CV322	Transportation Engineering
10.	CV323	Water Resources Engineering
11.	CV401	Drinking Water & Sanitary Engineering
12.	CV431	Estimation & Costing

Department Elective (DE): 2 Courses

	Course Code	Name of Course
1.	CV411	Building Services
	CV412	Advanced Design of Structures
	CV413	Railway Engineering
	CV414	Hydro Power Engineering
2.	CV441	Foundation Engineering
	CV442	Engineering Geology

	CV443	Design of Hydraulic Structures
	CV444	Air & Noise Pollution and Control measures
	CV445	Advances in Geospatial Engineering

Open Elective (OE): 4 Courses

Construction Project Management	Sl. No.	Course Code	Name of Course
	1.	CV311	Construction Planning & Management
	2.	CV331	Operation Research
	3.	CV421	Financial Management
	4.	CV451	Statistical Methods in Construction

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.	CV213	Minor Project
5.	CV304	ETABS (Extended Three-Dimensional analysis of building system)
6.	CV403	Urban & Town Planning
7.	CV324	Mini Project
8.	CV402	Project - I
9.	CV404	Summer Internship
10.	CV432	Project - II

1. ELIGIBILITY:

   I.   No live backlogs

  II.   CGPA of 8.50 and above

 III.   If Recruiter/s (MNCs) have asked for semester long internship to the selected student/s (before joining the organization after his / her graduation), then in special case recruited students can apply for the same. (Only criteria-I should be satisfied by the student)

Only students satisfying the above criteria can be permitted for semester-long internship in any MNCs / R&D laboratories such as DRDO, NCL, NEERI, CDAC and Institutions like IITs/ NITs / International institutes of repute.

2. DEADLINES:

For the current batch, the applications must be submitted by 30, November 2019 by all students desired to go for the semester long internship.

3. APPLICATION PROCEDURE:

The student must submit a proposal of the semester-long internship including details of the organization along with the details of the project in brief, copy of their CV and copies of mark sheet to the respective school Corporate Relations (CR) coordinator. The application must be as per the format given below.

Application for Internship Program

Sr. No.	Particulars	
1	Name of the applicant (in bold letters)	
2	Gender	
3	School	
4	Date of Birth & Age (as on date)	
5	Roll Number & PRN	
6	Address for correspondence with mobile / telephone number and email-id	
7	Name & address of the Institute / Industry	
8	Core Domain of Institute / Industry	
9	Contact details Supervisor / HR Mobile / Telephone number and email-id	
10	Period of internship	24-26 weeks
11	Details of the Project proposed	

Signatures

Student	**School Internship Coordinator**
Approved by:	
No. of credits proposed	6 / 10
Dean – School of _____ Engineering	MIT AOE Seal
Date:	

4. **RULES AND CONDITIONS:**

   I.   Sponsored project should be along the same track of the minor (Open Elective) chosen by the student. (desirable)

   II.   Semester long internship is applicable only in the 8th semester. The distribution of credits for the VIII semester is as follows

DC	Department Core	4 Credits
DE	Department Elective	3 Credits
OE	Open Elective	4 Credits
HSS	Humanities & Social science	2 Credits
SDP	Skill development and Project	4 Credits

   III. For a student who are opting for a semester long internship, 10 credits (OE, HSS and SDP) will be awarded if OE is part of the internship otherwise 6 credits will be awarded.

   IV.   The equivalence courses for the DC, DE and OE are floated by the Schools.

   V.   The credits of DC, DE and OE should be earned through MOOC courses.

   VI.   If a student is not able to successfully earn the credits of the DC / DE / OE within the stipulated time, they will not be eligible for graduation in the same academic year.

5. **ASSESSMENT METHOD:**

Credits for the semester-long internship need to be earned by the students by the following assessment in front of the panel.

   I.   The Panel for the evaluation should be 3 members (if 3 credits) or 4 members (if 5 credits). The composition of the team would be as follows.

   a. Dean, Respective School
   b. Project Guide
   c. CR Coordinator / Project Coordinator
   d. Project Guide (Industry)
   e. The domain expert (In case of 5 credits, as per the minor specialization)

   II.   Presentation I at the end of 45th day and presentation II at the end of 90th day from the start of the project combined to a total weightage of 5 credits **(3 credits if OE is exempted).** It can be possible to do through Skype, if acceptable to the panel. **In Grade card it will be mentioned as SLIP – Project Design.**

   III. Presentation at the end of the Internship Work and Final Internship Report after the completion of the Internship Work combined for a total weightage of 5 credits **(3 credits if OE is exempted)** and should be as per the template). **In Grade card it will be mentioned as SLIP – Project Implementation.**

5.2 ASSESSMENT METHOD FOR OTHER COURSES RUN THROUGH INSTITUTE LMS:

Credits for the courses run through Go-Webinar will be assessed using the following methods.

I. There will be SIX assignments (one per unit) to be submitted through the moodle. This will have a weightage of 30% of the total score. This contributes to the IA for the course.

II. There will be SIX quizzes (one per unit) to be conducted through moodle. This will have a weightage of 30% of the total score. This contributes to the ISE for the course.

III. One FINAL presentation to be done at the end and evaluated by a team of THREE members including the Course Champion, Instructor and any other nominated member by the respective School Dean. This will have a weightage of 40% of the total score. This contributed for the ESE of the course.

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	W. E. F	:	2019-20 (PART B)
FINAL YEAR BACHELOR OF TECHNOLOGY CIVIL ENGINEERING	RELEASE DATE	:	01/12/2018
	REVISION NO.	:	0.0

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC11	CV401	Drinking Water & Sanitary Engineering	3	2	4
2.	DE1	CV41#	Discipline Elective - Refer Annexure.	3	--	3
3.	OE3	CV42#	Open Elective - Refer Annexure.	3	2	4
4.	HSS7	HP401	Engineering Economics	2	--	2
5.	HSS9/ SDP7	HP403/ CV403	Business Strategies / Urban & Town Planning	--	2	1
6.	SDP8	CV402	Project - I	--	8	4
7.	SDP9	CV404	Summer Internship	--	--	4
TOTAL				11	14	22

SEMESTER: VIII (SLIP not Online with the Open elective)

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC12	CV431	Estimation & Costing	3	2	4
2.	DE2	CV44#	Discipline Elective - Refer Annexure	3	--	3
3.	OE4	CV45#	Open Elective - Refer Annexure	3	2	4
4.	SEMESTER LONG INTERNSHIP – Project Design			--	6	3
5.	SEMESTER LONG INTERNSHIP – Project Implementation			--	6	3
TOTAL				7	20	17

L: Lecture, P: Practical

CURRICULUM STRUCTURE
(2016 - 2020)

SCHOOL OF MECHANICAL & CIVIL ENGINEERING	W. E. F	:	2019-20 (PART C)
FINAL YEAR BACHELOR OF TECHNOLOGY CIVIL ENGINEERING	RELEASE DATE	:	01/12/2018
	REVISION NO.	:	0.0

SEMESTER: VII

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC11	CV401	Drinking Water & Sanitary Engineering	3	2	4
2.	DE1	CV41#	Discipline Elective - Refer Annexure.	3	--	3
3.	OE3	CV42#	Open Elective - Refer Annexure.	3	2	4
4.	HSS7	HP401	Engineering Economics	2	--	2
5.	HSS9/ SDP7	HP403/ CV403	Business Strategies / Urban & Town Planning	--	2	1
6.	SDP8	CV402	Project - I	--	8	4
7.	SDP9	CV404	Summer Internship	--	--	4
			TOTAL	11	14	22

SEMESTER: VIII (SLIP not Online with the Open elective)

SL. No.	COURSE TYPE	COURSE CODE	COURSE	TEACHING SCHEME		
				L	P	CREDIT
1.	DC12	CV431	Estimation & Costing	3	2	4
2.	DE2	CV44#	Discipline Elective - Refer Annexure	3	--	3
3.	SEMESTER LONG INTERNSHIP – Project Design				--	10	5
4.	SEMESTER LONG INTERNSHIP – Project Implementation				--	10	5
			TOTAL	6	22	17

L: Lecture, P: Practical

@ - Courses run through institute LMS.

DEPARTMENT ELECTIVE ON MOOCS PLATFORM			
SR. NO.	COURSE DETAILS	MOOC DETAILS	NO. OF WEEKS
1.	Geotechnical Engineering II Foundation EngineeringBy Prof. Dilip Kumar Baidya, IIT KGP	SWAYAM	12
2.	Maintenance and Repair of Concrete Structuresby Prof. Radhakrishna G. Pillai, IIT Madras	SWAYAM	12
3.	Plastic Waste Managementby Prof. Brajesh Kumar Dubey, IIT KGP	SWAYAM	8
4.	Higher Surveying by Prof. Ajay Dashora, Behdad, IITG	COURSERA	12