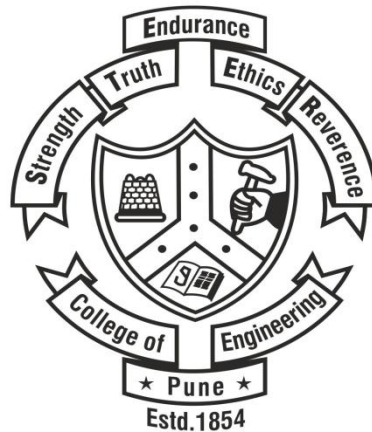


# COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Govt. of Maharashtra)

## DEPARTMENT OF PRODUCTION ENGINEERING AND INDUSTRIAL MANAGEMENT



### CURRICULUM STRUCTURE

**B. Tech. ( Manufacturing Science and Engineering)**  
(Proposed to start from AY 2020-2021)

## UG Program Structure of B. Tech. (Manufacturing Science and Engineering)

### List of Abbreviations:

Abbreviation	Title	No of courses	Credits	% of Credits
BSC	Basic Science Course	9	27	16.26
ESC	Engineering Science Course	5	18	10.89
MLC	Mandatory Learning Course	4	0	0
SLC	Self Learning Course	2	5	3.02
HSMC	Humanities/Social Sciences/Management Course	7	9	5.4
LLC	Liberal Learning Course	1	1	0.6
SBC	Skill Based Course	7	17	10.24
<b>IFC</b>	<b>Interdisciplinary Foundation Course</b>	2	4	2.40
<b>IOC</b>	<b>Interdisciplinary Open Course</b>	3	6	3.61
DEC	Department Elective Course	2	6	3.61
PCC	Program Core Course	19	56	33.73
LC	Laboratory Course	17	17	10.24
		<b>78</b>	<b>166</b>	<b>100</b>

## UG Program Structure [B.Tech.] Manufacturing Science and Engineering

### Semester I [M-Group]

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	BSC		Linear Algebra	2	1	0	3
2	BSC		Optics and Modern Physics	3	0	0	3
3	ESC		Basic Electrical Engineering	3	0	0	3
4	ESC		Engineering Graphics and Design	2	0	4	4
5	ESC		Engineering Mechanics	3	1	0	4
6	SBC		Mechanical Fab Shop	0	0	2	1
7	LC		Optics and Modern Physics Laboratory	0	0	2	1
8	LC		Basic Electrical Engineering Laboratory	0	0	2	1
9	LC		Engineering Mechanics Laboratory	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>13</b>	<b>2</b>	<b>12</b>	<b>21</b>

### Semester II [M-Group]

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	BSC		Uni-variate Calculus	2	1	0	3
2	BSC		Solid State Physics and Statistical Thermodynamics	3	0	0	3
3	BSC		Applied Chemistry	3	0	0	3
4	ESC		Basic Electronics Engineering	3	0	0	3
5	ESC		Programming for Problem Solving	3	0	2	4
6	HSMC		Design Thinking	0	1	0	1
7	HSMC		Effective Communication Skills	0	0	2	1
8	SBC		Electronics and Computer Workshop	0	0	2	1
9	LC		Solid State Physics and Statistical Thermodynamics Laboratory	0	0	2	1
10	LC		Applied Chemistry Laboratory	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>14</b>	<b>2</b>	<b>10</b>	<b>21</b>

### Semester III [M-Group]

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	BSC		Ordinary Differential Equations and Multivariate Calculus	2	1	0	3
2	BSC		Biology for Engineers	3	0	0	3
3	IFC		Industrial Electronics and Electrical Drives	2	0	0	2
4	SBC		Product and System Graphics Lab	0	0	2	1
5	PCC		Theory of Machines	2	1	0	3
6	PCC		Strength of Material	2	0	0	2
	PCC		Basic Manufacturing and Science	3	0	0	3
7	PCC		Material Science and Engineering	2	0	0	2
8	LC		Conventional Manufacturing Lab	0	0	2	1
9	LC		Material Science and Engineering Lab	0	0	2	1
10	LC		Theory of Machines Lab	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>16</b>	<b>02</b>	<b>08</b>	<b>22</b>

#### For other department

Interdisciplinary Foundation Course-I							
1	IFC		Machining Systems Technology	2	0	0	2

### Semester IV [M-Group]

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	BSC		Vector Calculus and Partial Differential Equations	2	1	0	3
2	MLC		Professional Laws, Ethics and Values	1	0	0	0
3	HSMC		Innovation and Creativity	1	0	0	1
4	IFC		Microprocessors and Sensors	1	0	2	2
5	SBC		Rapid Prototyping Practice (an "I-D-P: Ideate-Develop- Prototype" team Micro-project)	0	0	2	1
6	PCC		Thermal Aspects In Engineering	3	0	0	3
7	PCC		Fluid Power	2	1	0	3
8	PCC		Machine Design	3	0	0	3
9	PCC		Non Conventional Manufacturing Processes	3	0	0	3
11	LC		Industrial Electronics and Electrical Drives Lab	0	0	2	1
12	LC		Engineering Thermodynamics and Heat Transfer Lab	0	0	2	1
13	LC		Fluid Power Lab	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>17</b>	<b>02</b>	<b>8</b>	<b>22</b>

#### For other department

Interdisciplinary Foundation Course-II							
1	IFC		Industrial Engineering	2	0	0	2

**Semester V [M-Group]**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	BSC		Probability and Statistics for Engineers	2	1	0	3
2	MLC		Environmental Studies	1	0	0	0
3	IOC		Interdisciplinary Open Course-I	2	0	0	2
4	HSMC		Humanities Open Course - I <ul style="list-style-type: none"> <li>• English Language Proficiency-I</li> <li>• Finance for Engineers-I</li> <li>• Engineering Economics-I</li> <li>• Industrial Psychology-I</li> <li>• Japanese Language-I</li> <li>• German Language-I</li> </ul>	2	0	0	2
5	SBC		Non Conventional Manufacturing Lab	0	0	2	1
6	PCC		Metrology and Production Control	3	0	0	3
7	PCC		Machine Tools and Manufacturing	2	1	0	3
8	PCC		Industrial Engineering and Management	2	0	0	2
9	PCC		Product Design and Ergonomics	3	0	0	3
10	PCC		Operations Research	3	0	0	3
11	LC		Process Planning and Tool Selection Lab	0	0	2	1
12	LC		Metrology and Production Control Lab	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>19</b>	<b>2</b>	<b>8</b>	<b>24</b>

**Semester VI [M-Group]**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	MLC		Constitution of India	1	0	0	0
2	HSMC		Humanities Open Course - II <ul style="list-style-type: none"> <li>• English Language Proficiency-II</li> <li>• Finance for Engineers-II</li> <li>• Engineering Economics-II</li> <li>• Industrial Psychology-II</li> <li>• Japanese Language-II</li> <li>• German Language-II</li> </ul>	2	0	0	2
3	HSMC		Entrepreneurship Principles and Process	1	0	0	1
4	SBC		Mini project ["D-S-P-T: Design-Simulate-Prototype-Test"]	0	0	4	2
5	IOC		Interdisciplinary Open Course-II	2	0	0	2
6	DEC		Department Elective -I/Industry floated Course/Co-Taught Course	3	0	0	3
7	PCC		Tool and Die Design	2	1	0	3
8	PCC		Material Forming and Joining Technologies	3	0	0	3
9	PCC		Kinematics and Dynamics of Machines	2	1	0	3
10	PCC		Manufacturing Automation	3	0	0	3
11	LC		Manufacturing Automation Lab	0	0	2	1
12	LC		Kinematics and Dynamics of Machines Lab	0	0	2	1
<b>Total Academic Engagement and Credits</b>				<b>18</b>	<b>2</b>	<b>10</b>	<b>24</b>

**Department Elective-I**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	DEC		Supply chain and Logistics Management	3	0	0	3
2	DEC		Reliability and Terotechnology	3	0	0	3
3	DEC		Facility Planning and Design	3	0	0	3
4	DEC		Micro and Nano Manufacturing	3	0	0	3
5	DEC		Hybrid Manufacturing Systems	3	0	0	3
6	DEC		Design of Experiments and Optimization	3	0	0	3

**Semester VII [M-Group]: Scheme B**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	MLC		Intellectual Property Rights	1	0	0	0
2	LLC		Liberal Learning Course	1	0	0	1
3	IOC		Interdisciplinary Open Course-III	2	0	0	2
4	DEC		Department Elective-II	3	0	0	3
5	SLC		Massive Open Online Course -I Design for Manufacture and Assembly	3	0	0	3
6	SLC		Massive Open Online Course -II Internet of Things	2	0	0	2
7	PCC		CAD/CAM/CIM	2	1	0	3
8	PCC		Additive Manufacturing	2	1	0	3
9	PCC		Robotics and Intelligent Manufacturing	3	0	0	3
10	LC		CAD/CAM/CIM Lab	0	0	2	1
11	LC		Additive Manufacturing Lab	0	0	2	1
			<b>Total Academic Engagement and Credits</b>	<b>19</b>	<b>2</b>	<b>4</b>	<b>22</b>

**Department Elective-II [Option among minimum 3 courses]**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	DEC		Precision Engineering	3	0	0	3
2	DEC		Total Quality Management and Six Sigma	3	0	0	3
3	DEC		Material Handling Equipments Design	3	0	0	3
4	DEC		Tribology in Design and Manufacturing	3	0	0	3
5	DEC		Mechatronics	3	0	0	3
6	DEC		Manufacturing Control Systems	3	0	0	3

**Semester VIII [M-Group]: B Scheme**

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1	SBC		Major Project with Industry/Corporate/Academia	0	0	20	10
			<b>Total Academic Engagement and Credits</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>10</b>