

Course Structure
for
4-Years B. Tech. in Mechanical Engineering

Effective from 2018-2019 Academic Session



Department of Mechanical Engineering
National Institute of Technology Sikkim
South Sikkim - 737 139

Distribution of Total Credits and Contact Hours in all Semesters			
Sl. No.	Semester Number	Credits/Semester	Contact hours/week
1	I	22	27
2	II	24	30
3	III	24	30
4	IV	22	28
5	V	20	26
6	VI	22	28
7	VII	21	22
8	VIII	17	17
Total		172	208

1st Year

1 st Semester				
Sl. No.	Subject Code	Subject Name	L-T-P	Credit
Theory Subjects				
1	MA11101	Mathematics I	3-1-0	4
2	CY11101	Engineering Chemistry	3-0-0	3
3	CY11102	Health, Safety and Environment	2-0-0	2
4	CS11101	Computer Programming and Problem Solving	2-0-0	2
5	CS11102	Introduction to Computer Systems	2-0-0	2
6	HS11101	English Language and Literature	2-1-0	3
Practical and Sessional				
7	CS11201	Computer Programming Laboratory	0-0-4	2
8	CY11201	Engineering Chemistry Laboratory	0-0-2	1
9	ME11202	Engineering Graphics	0-0-3	2
10	ME11203	Mechanical Workshop	0-0-2	1
Total Credits			14-2-11	22

2 nd Semester				
Sl. No.	Subject Code	Subject Name	L-T-P	Credit
Theory Subjects				
1	MA12101	Mathematics II	3-1-0	4
2	PH12101	Engineering Physics	3-0-0	3
3	ME12101	Engineering Mechanics	3-0-0	3
4	CS12101	Foundation of Computing	3-0-0	3
5	EE12101	Principles of Electrical Engineering	3-0-0	3
6	HS12101	Human Values and Effective Communication	1-2-0	3
Practical and Sessional				
7	PH12201	Engineering Physics Laboratory	0-0-2	1
8	CS12201	Computing Laboratory	0-0-2	1
9	ME12201	Workshop Practice	0-0-3	2
10	EE12201	Electrical Workshop	0-0-2	1
11	ZZ12201	Professional Practice I	0-0-2	Audit
12	ZZ12202	Behavior and Discipline	-	Audit
Total Credits			16-3-11	24

2nd Year

3 rd Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	ME13101	Fluid Mechanics	3-0-0	3
2	ME13102	Elements of Solid Mechanics	3-0-0	3
3	ME13103	Thermodynamics	3-0-0	3
4	ME13104	Materials Science and Metallurgy	3-0-0	3
5	ME13105	Mathematics III	3-1-0	4
6	EE13106	Electrical Machines and Measurements	3-0-0	3
Practical and Sessional				
7	ME13201	Fluid Mechanics Laboratory	0-0-2	1
8	ME13202	Elements of Solid Mechanics Laboratory	0-0-2	1
9	ME13203	Machine Drawing	0-0-3	2
10	EE13205	Electrical Machines and Measurements Laboratory	0-0-2	1
11	ZZ13201	Professional Practice II	0-0-2	Audit
Total Credits			18-1-11	24

4 th Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	ME14101	Fluid Machinery	3-0-0	3
2	ME14102	Kinematics of Machinery	3-0-0	3
3	ME14103	Heat Transfer	3-0-0	3
4	ME14104	Casting, Welding and Forming	3-0-0	3
5	ME14105	Industrial Engineering	3-0-0	3
6	ME14106	Metrology and Instrumentation	3-0-0	3
Practical and Sessional				
7	ME14201	Fluid Machinery Laboratory	0-0-2	1
8	ME14202	Heat Transfer Laboratory	0-0-2	1
9	ME14203	Casting, Welding and Forming Laboratory	0-0-2	1
10	ME14204	Computer Graphics Laboratory	0-0-2	1
11	ZZ14201	Professional Practice III	0-0-2	Audit
12	ZZ14202	Behavior and Discipline	-	Audit
Total Credits			18-0-10	22

3rd Year

5 th Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	HS15101	Engineering Economics	2-0-0	2
2	ME15101	Dynamics of Machinery	3-0-0	3
3	ME15102	Thermal Energy Conversion	3-0-0	3
4	ME15103	Machining Science	3-0-0	3
5	ME15104	Machine Design I	3-0-0	3
6	ME15105	Control Theory and Applications	2-0-0	2
Practical and Sessional				
7	ME15201	Kinematics and Dynamics of Machinery Laboratory	0-0-2	1
8	ME15202	IC Engine Laboratory	0-0-2	1
9	ME15203	Machining Science laboratory	0-0-2	1
10	ME15204	Metrology and Instrumentation Laboratory	0-0-2	1
11	ZZ15201	Professional Practice IV	0-0-2	Audit
Total Credits			16-0-10	20

6 th Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	HS16101	Principles of Management	2-0-0	2
2	ME16101	Machine Design II	3-0-0	3
3	ME16102	Theory of Metal Cutting	3-0-0	3
4	ME16103	Production and Operations Management	3-0-0	3
5	ME16104	Refrigeration and Air-Conditioning	3-0-0	3
6	ME16105	Elective I	3-0-0	3
Practical and Sessional				
7	ME16201	Metal Cutting Laboratory	0-0-2	1
8	ME16202	Energy Conversion Laboratory	0-0-2	1
9	ME16203	Machine Design Laboratory	0-0-3	2
10	ME16204	Refrigeration and Air-Conditioning Laboratory	0-0-2	1
11	ZZ16201	Professional Practice V	0-0-2	Audit
12	ZZ16202	Behavior and Discipline	-	Audit
Total Credits			17-0-11	22

4th Year

7 th Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	ME17101	Elective II (Project Related Subject)	3-0-0	3
2	ME17102	Elective III	3-0-0	3
3	ME17103	Elective IV	3-0-0	3
4	ME17104	Elective V	3-0-0	3
Practical and Sessional				
5	ME17201	Advanced Manufacturing Processes Laboratory	0-0-2	1
6	ME17202	Design and Analysis Laboratory	0-0-2	1
7	ME17203	Elective Laboratory	0-0-2	1
8	ME17204	Practical Training Evaluation	0-0-2	2
9	ME17205	Major Project Part I	0-0-8	4
Total Credits			12-0-16	21

8 th Semester				
Sl. No.	Code	Subjects	L-T-P	Credit
Theory Subjects				
1	ME18101	Elective VI (Project Related Subject)	3-0-0	3
2	ME18102	Elective VII	3-0-0	3
3	ME18103	Elective VIII	3-0-0	3
Practical and Sessional				
4	ME18201	CAM Laboratory	0-0-2	1
5	ME18202	Computational Thermo-Fluid Analysis	0-0-2	1
6	ME18203	Major Project Part II	0-0-12	6
7	ZZ18201	Behavior and Discipline	-	Audit
Total Credits			9-0-16	17

List of Electives			
Code	Subjects	L-T-P	Credit
ME1*111	Manufacturing System Design	3-0-0	3
ME 1*112	Advanced Material Science	3-0-0	3
ME 1*113	Supply Chain Management	3-0-0	3
ME 1*114	Lean Manufacturing	3-0-0	3
ME 1*115	Advanced Manufacturing Process	3-0-0	3
ME 1*116	Industry 4.0	3-0-0	3
ME1*117	Operations Research	3-0-0	3
ME 1*118	Introduction to Robotics	3-0-0	3
ME1*119	Mechatronics	3-0-0	3
ME1*120	CAM and Automation	3-0-0	3
ME1*121	CAD	3-0-0	3
ME1*122	Theory of Vibrations	3-0-0	3
ME1*123	FEM	3-0-0	3
ME1*124	Composite Materials	3-0-0	3
ME1*125	Fracture Mechanics	3-0-0	3
ME1*126	Multibody System and Dynamics	3-0-0	3
ME1*127	Optimization Methods	3-0-0	3
ME1*128	Power Plant Engineering	3-0-0	3
ME1*129	Renewable Energy Systems	3-0-0	3
ME1*130	Fluid Power Controls	3-0-0	3
ME1*131	Computational Fluid Dynamics	3-0-0	3
ME1*132	Automobile Engineering	3-0-0	3
ME1*133	Gas Dynamics	3-0-0	3
ME1*134	Product Design and Development	3-0-0	3

* The semester number in which the subject is offered.

NOTE

- Any one elective subject may be offered as open elective (for specific departments).
- For all electives except Elective I and Elective V, the course can be selected from the approved list of elective/open elective courses. Students who are doing internship outside the institute will be permitted to opt these courses in online mode, if available. Otherwise, they may select the equivalent subject from the subjects available on the online platform with the permission of the department.
- For Elective II and Elective VI, the supervisor has to assign course and also the course contents. The same should bear the approval of the departmental committee constituted by the Head. The committee must consist of minimum three faculty members. The examination and evaluation will be done by the supervisor. It is desirable that the concern supervisor selects the courses available on the online platform as approved by the department.
- Elective Laboratory will be assigned in accordance to the elective subjects offered in that semester or may be related to some advanced software/hardware tools/techniques as decided by the department.
- Practical Training shall be carried out after completion of the sixth semester and during the summer vacation. The evaluation of the same will be done in the seventh semester. This includes internship carried out at industries/ R&D organizations/ reputed academic institutions. Any practical training/internship done before the sixth semester shall not be counted against the above.