

B.Tech.(IT) Curriculum-2018 Admission Batch Onwards (JISCE-NIT-GNIT)

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REVISED CURRICULUM - REGULATION 2018

B.TECH in MECHANICAL ENGINEERING

(Effective from 2018-19 admission batch)

Under Autonomy (GR A: ECE, EE, EIE, BME; GR B: CSE, IT, ME, CE, FT)

1 st Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	PH 101	Physics - I	3	0	0	3	3
3	ES	EC 101	Basic Electronics Engineering	3	0	0	3	3
4	HU	HU 101	English	2	0	0	2	2
Total of Theory							12	12
B. PRACTICAL								
5	BS	PH 191	Physics-I Lab	0	0	3	3	1.5
6	ES	EC 191	Basic Electronics Engineering Lab	0	0	3	3	1.5
7	ES	ME 192	Workshop/Manufacturing Practices	0	0	3	3	1.5
Total of Practical							9	4.5
C. SESSIONAL								
8	PW	XC 181	Extra Curricular Activity	0	0	0	0	2 units
D. PROJECT*								
9		Project Code	Project Name	Contact Hours /Week				Credit Points
	PW	M 151	Mathematics Project	1				0.5
	PW	HU 151	English Project	1				0.5
	PW	PH 151	Physics Project	1				0.5
	PW	EC 151	Basic Electronics Project	1				0.5
Total of Theory, Practical, Sessional & Project				23				16.5+1

*** Student need to select any two projects (Total Credit: 0.5+0.5=1)**

2 nd Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201	Chemistry-I	3	0	0	3	3
3	ES	EE 201	Basic Electrical Engineering	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							16	16
B. PRACTICAL								
6	ES	CS 291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291	Chemistry I Lab	0	0	3	3	1.5
8	ES	EE 291	Basic Electrical Engineering Lab	0	0	3	3	1.5
9	ES	ME 191	Engineering Graphics & Design	0	0	3	3	1.5
10	HU	HU 291	Language Lab and Seminar Presentation	0	0	2	2	1
Total of Practical							14	7
C. SESSIONAL								
11	PW	XC 281	Extra Curricular Activity	0	0	0	0	2 Units
D. PROJECT*								
12		Project Code	Project Name	Contact Hours /Week				Credit Points
	PW	M 251	Mathematics Project	1				0.5
	PW	CH 251	Chemistry Project	1				0.5
	PW	EE 251	Basic Electrical Project	1				0.5
	PW	CS 251	Programming for Problem Solving Project	1				0.5
	PW	ME 251	Mechanics Project	1				0.5
Total of Theory, Practical, Sessional & Project				32				23+1

*** Student need to select any two projects (Total Credit: 0.5+0.5=1)**

3 rd Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME 301	Engineering Thermodynamics	3	0	0	3	3
2	PC	ME 302	Strength of Material	3	0	0	3	3
3	PC	ME 303	Fluid Mechanics-I	3	0	0	3	3
4	PC	ME 304	Materials Engineering	3	0	0	3	3
5	BS	M 301	Mathematics -III	3	1	0	4	4
6	BS	PH(ME) 301	Physics - II	3	0	0	3	3
Total of Theory							19	19
B. PRACTICAL								
7	ES	ME 391	Material Testing Lab	0	0	3	3	1.5
8	ES	ME 392	Machine Drawing	0	0	3	3	1.5
9	BS	PH(ME) 391	Physics - II Lab	0	0	2	2	1
Total of Practical							9	4
C. SESSIONAL								
10	MC	MC 381	Environmental Science	2	0	0	2	2 UNITS
							30	23
D. PROJECT*								
11		Project Code	Project Name	Credit Hours /Week				Credit Points
	PW	ME 351	Eng. Thermodynamics Project	1				0.5
	PW	ME 352	Strength of Material Project	1				0.5
	PW	ME 353	Fluid Mechanics-I Project	1				0.5
	PW	ME 354	Materials Engineering Project	1				0.5
	PW	M 351	Mathematics -III Project	1				0.5
	PW	PH(ME) 351	Physics - II Project	1				0.5
Total of Theory, Practical, Sessional & Project				34				23+2

*** Student need to select any four projects (Total Credit: 0.5+0.5+0.5+0.5=2)**

4 th Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME 401	Applied Thermodynamics	3	0	0	3	3
2	PC	ME 402	Fluid Mechanics-II	3	0	0	3	3
3	PC	ME 403	Manufacturing Processes	3	0	0	3	3
4	PC	ME 404	Measurement & Instrumentation	2	0	0	2	2
5	ES	M(ME)401	Numerical Methods & Statistics	3	1	0	4	4
Total of Theory							15	15
B. PRACTICAL								
6	PC	ME 491	Fluid Mechanics & Fluid Machines Lab	0	0	3	3	1.5
7	PC	ME 492	Manufacturing Process Lab	0	0	2	2	1
8	ES	M(ME) 491	Numerical Methods Lab	0	0	3	3	1.5
Total of Practical							8	4
C. SESSIONAL								
9	MC	MC 481	Foreign language	2	0	0	2	2 units
D. PROJECT*								
10		Project Code	Project Name	Credit Hours /Week				Credit Points
	PW	ME 451	Applied Thermodynamics Project	1				0.5
	PW	ME 452	Fluid Mechanics-II Project	1				0.5
	PW	ME 453	Manufacturing Processes Project	1				0.5
	PW	ME 454	Measurement & Instrumentation Project	1				0.5
	PW	M(ME) 451	Numerical Methods Project	1				0.5
Total of Theory, Practical, Sessional & Project				29				19+2

*** Student need to select any four projects (Total Credit: 0.5+0.5+0.5+0.5=2)**

5 th Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME501	Heat Transfer	3	0	0	3	3
2	PC	ME502	Design of Machine Elements	3	1	0	4	4
3	PC	ME503	Kinematics & Dynamics of Machines	3	1	0	4	4
4	PC	ME504	Refrigeration and Air Conditioning	3	0	0	3	3
5	PE	ME505A	Mechatronics Systems	3	0	0	3	3
	PE	ME505B	Finite Element Analysis					
	PE	ME505C	Computer Aided Design					
Total of Theory							17	17
B. PRACTICAL								
6	PC	ME591	Thermal Engineering Lab-I	0	0	3	3	1.5
7	PC	ME592	Dynamics of Machine Lab	0	0	3	3	1.5
8	PC	ME593	Metal Cutting & Measurement Lab	0	0	3	3	1.5
Total of Practical							9	4.5
C. SESSIONAL								
9	PW	ME581	Seminar	0	0	3	3	1.5
D. PROJECT*								
10		Project Code	Project Name	Credit Hours /Week				Credit Points
	PW	ME551	Heat Transfer project	1				0.5
	PW	ME552	Machine Design project	1				0.5
	PW	ME553	Theory of Machines project	1				0.5
	PW	ME554	Refrigeration and Air Cond. project	1				0.5
	PW	ME555A	Mechatronics project	1				0.5
	PW	ME555B	Finite Element Analysis Project					
	PW	ME555C	Computer Aided Design project					
Total of Theory, Practical, Sessional & Project				33				23+2

*** Student need to select any four projects (Total Credit: 0.5+0.5+0.5+0.5=2)**

6 th Semester								
Sl No	Paper Type	Paper Code	Theory	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME601	Principle of Machining and Machine Tools	3	0	0	3	3
2	PC	ME602	Power Plant Engineering	3	0	0	3	3
3	PC	ME603	Internal Combustion Engine and Gas Turbine	3	0	0	3	3
4	PE	ME604A	Design of Transmission Systems	3	0	0	3	3
	PE	ME604B	Composite Materials					
	PE	ME604C	Computational Fluid Dynamics					
5	OE	EE(ME)605A	Electrical Machines	3	0	0	3	3
	OE	CS(ME)605B	Data Base Management System					
	OE	ECE(ME)605C	Industrial Instrumentation					
6	HU	HU602	Values & Ethics in Profession	3	0	0	3	3
Total of Theory							18	18
B. PRACTICAL								
7	PC	ME691	Thermal Engineering Lab-II	0	0	3	3	1.5
8	PC	ME692	Part Modeling & Simulation Lab	0	0	3	3	1.5
Total of Practical							6	3
C. SESSIONAL								
9	PW	ME681	Group Discussion	0	0	2	2	1
D. PROJECT *								
10		Project Code	Project Name	Credit Hours /Week				CreditPoints
	PW	ME651	I C Engine and Gas Turbine Project	1				0.5
	PW	ME652	Power Plant Engineering	1				0.5
	PW	ME653	I C Engine and Gas Turbine Project					
	PW	ME654A	Design of Transmission Systems Project	1				0.5
		ME654B	Composite Material Project					
		ME654C	Computational Fluid Dynamics Project					
	PW	ME655A	Electrical Machines Project	1				0.5
		ME655B	Data Base Management System Project					
		ME655C	Industrial Instrumentation Project					
	PW	HU652	Values & Ethics in Profession-Project	1				0.5
Total of Theory, Practical, Sessional & Project				30				22+2

*** Student need to select any four projects (Total Credit: 0.5+0.5+0.5+0.5=2)**

7th Semester

Sl No	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME701	Automation in Manufacturing	3	0	0	3	3
2	PE	ME702A	Materials Handling	3	0	0	3	3
	PE	ME702B	Tribology					
	PE	ME702C	3D Printing and Design					
3	PE	ME703A	Renewable Energy Systems	3	0	0	3	3
	PE	ME703B	Total Quality Management					
	PE	ME703C	Reliability & Maintenance					
4	OE	M(ME)704A	Operations Research	3	0	0	3	3
	OE	PH(ME)704B	Nanotechnology, Science and Applications					
	OE	BME(ME)704C	Biomechanics & Biomaterials					
Total of Theory							12	12
B. PRACTICAL								
5	PC	ME 791	CNC Machine & Robotics Lab	0	0	3	3	1.5
Total of Practical							3	1.5
C. SESSIONAL								
6	PW	ME 781	Project: Part - I	0	0	8	8	4
7	PW	ME 782	Design of a Mechanical System	0	0	2	2	1
8	PW	ME 783	Viva Voce on Industrial Training/internship	0	0	0	0	1
Total of Theory, Practical & Sessional							25	19.5

8 th Semester								
Sl No.	Paper Type	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PE	ME801A	Automobile Engineering	3	0	0	3	3
	PE	ME801B	Turbomachinery					
	PE	ME801C	Nuclear Power Generation & Supply					
2	PE	ME802A	Robotics: Mechanics and Control	2	0	0	2	2
	PE	ME802B	Gas Dynamics & Jet Propulsion					
	PE	ME802C	Turbulent Combustion: Theory and Modelling					
3	OE	ECE(ME)803A	Microprocessors in Automation	3	0	0	3	3
	OE	M(ME)803B	Safety & Occupational Health					
	OE	CS(ME)803C	Fundamentals of Artificial Intelligence					
4	HU	HU805	Industrial & Financial Management	3	0	0	3	3
Total of Theory							11	11
B. PRACTICAL								
Total of Practical								0
C. SESSIONAL								
5	PW	ME881	Project: Part - II	0	0	12	12	6
6	PW	ME882	Comprehensive Viva	0	0	0	0	2
Total of Theory, Practical & Sessional							23	19

Total Credit:

Mandatory Credit Point 165 (16.5+23+23+19+23+22+19.5+19) + Project Based Learning (10)

For Honors additional 10 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Listed by AICTE / MAKAUT) is to be submitted to CoE office prior to 8th Semester Examination and the Credit earned through MOOCs courses will be reflected in their DGPA.

Credit Distribution Ratio:

Basic Sciences (Common for all streams under)

15 to 20%

[Physics-I, Physics-II, Chemistry-I*, Math-I, Math-II, Math-III]

Sl.No.	Subject Code	Credit Point	Total	Credit (%)
1.	PH 101	3	25	15.15
2.	PH 191/CH 191	1.5		
3.	M 101	4		
4.	CH 201	3		
5.	PH 291/CH 291	1.5		
6.	M 201	4		
7.	PH(ME) 301	3		
8.	PH(ME) 391	1		
9.	M 301	4		

Humanities & Social Sciences (Common for all streams)

5 to 10%

[1-Eng, 1-Mgt, 1-Vaues & Ethics, 1-Eng. Economics]

Sl.No.	Subject Code	Credit Point	Total	Credit (%)
1.	HU 101	2	9	5.45
2.	HU 291	1		
3.	HU 602	3		
4.	HU 805	3		

Engineering Sciences and Skills (Common for all streams)

15 to 20%

[1-Basic EE, 1-Basic Electronics, 1-Eng Mechanics, 1-Programming for Problem Solving,

1-Numerical Methods, 1-Circuit theory/ relevant paper in non ckt stream, Engg. Graphics & Design, 1-Workshop/Manufacturing Practice]

Sl.No.	Subject Code	Credit Point	Total	Credit (%)
1.	EE 101/EC 101	3	25	15.15
2.	EE 191/EC191	1.5		
3.	ME 191/ME 192	1.5		
4.	EE201/EC 201	3		

5.	CS 201	3		
6.	ME 201	3		
7.	CS 291	1.5		
8.	EE291/EC 291	1.5		
9.	ME 291/ME292	1.5		
10.	M(ME) 401	4		
11.	M(ME) 491	1.5		

Professional Core (stream specific) 30 to 40%

[Selection should be in line with respective PEO & PSO]

Sl.No.	Subject Code	Credit Point	Total	Credit (%)
1.	ME 301	3	63.5	39.09
2.	ME 302	3		
3.	ME 303	3		
4.	ME 304	3		
5.	ME 391	1.5		
6.	ME 392	1.5		
7.	ME 401	3		
8.	ME 402	3		
9.	ME 403	3		
10.	ME 404	2		
11.	ME 491	1.5		
12.	ME 492	1		
13.	ME 501	3		
14.	ME 502	4		
15.	ME 503	4		
16.	ME 504	3		
17.	ME 591	1.5		
18.	ME 592	1.5		
19.	ME 593	1.5		
20.	ME 601	3		

21.	ME 602	3		
22.	ME 602	3		
23.	ME 691	1.5		
24.	ME 692	1.5		
25.	ME 701	3		
26.	ME 791	1.5		

Professional Electives (stream specific)

10 to 15%

[Selection should be in line with respective PEO & PSO]

Sl. No.	Subject Code	Credit Point	Total	Credit (%)
1.	ME 505(A/B/C)	3	18	11.25
2.	ME 604(A/B/C)	3		
3.	ME 702(A/B/C)	3		
4.	ME 703(A/B/C)	3		
5.	ME 801(A/B/C)	3		
6.	ME 802(A/B/C)	3		

Open Elective (free elective/institutional elective)

5 to 10%

[To be selected from the list of all electives offered by the Institute]

Sl. No.	Subject Code	Credit Point	Total	Credit (%)
1.	ME 605(A/B/C)	3	9	5.55
2.	ME 704(A/B/C)	3		
3.	ME 803(A/B/C)	3		

Project work, seminar, and internship

10 to 15%

[Project work, Seminar-1, Internship-2, GD-1, Design-2, Grand Viva - 2]

Sl. No.	Subject Code	Credit Point	Total	Credit (%)
1.	ME 581	1.5	16.5	10.00
3	ME 681	1		
5.	ME 781	4		
6.	ME 782	1		
7.	ME 783	1		

8.	ME 881	6		
9.	ME 882	2		

Environmental Science, Co & extracurricular activities

100 units

[Environment studies, Foreign language, NCC/NSS, SLC]

Total Credit: 160 to 165 (4 years UG) +20 [10 through MOOCS +10 through mandatory project]

***Chemistry II for FT instead of Physics II**

Credit Distribution Ratio:

Category	Credit Allocation as per AICTE
Basic Sciences	15 to 20%
Humanities & Social Sciences	5 to 10%
Engineering Sciences and Skills	15 to 20%
Professional Core	30 to 40%
Professional Electives	10 to 15%
Open Elective	5 to 10%
Project work, seminar, internship	10 to 15%
Environmental Science, Co & extracurricular activities	Non-credited

Implementation Scheme of Mandatory Project Work:

Semester	Credit	Number of papers to be assessed under mandatory project
1 st	1	Two (0.5 Credit per paper)
2 nd	2	Two (0.5 Credit per paper)
3 rd	2	Four (0.5 Credit per paper)
4 th	2	Four (0.5 Credit per paper)
5 th	2	Four (0.5 Credit per paper)
6 th	2	Four (0.5 Credit per paper)
Total	10	

Mandatory Project Work

For B.Tech Students from AY 2018-19 (1st semester to 6th Semester)

- Each Project Work will carry 0.5 Credit Point
- In the 1st and 2nd semester, students will do project work on any two subjects. The Choice of the subject on which a student wants to carry out his/her project work solely depends on the student. A Student can choose any 2 subjects of his/her own choice.
- In upper semesters like 3rd, 4th, 5th and 6th, the total credit allocation is 2 for each semester. Hence, a student will have to carry out 4 project works to score 2 credits
- In 7th and 8th Semester, there will be no separate project work like previous semesters, since they have Major Project Work with high credit point
- Each Project will have total 100 marks
- Below given Table shows the allocation of credit and marks:

Semester	Total Credit Point	No. of Project to be carried out (Choice Based)	Marks allocation in each project	Total Marks allocated in Project Works
1st Year				
1 st Semester	0.5+0.5=1.0	2	100	200
2 nd Semester	0.5+0.5=1.0	2	100	200
2nd Year				
3 rd Semester	1.0+1.0=2.0	4	100	400
4 th Semester	1.0+1.0=2.0	4	100	400
3rd Year				
5 th Semester	1.0+1.0=2.0	4	100	400
6 th Semester	1.0+1.0=2.0	4	100	400
Total Credit	10			

Format for Project Work Evaluation (B.Tech)

College Name :

Department :

Paper Name :

Paper Code :

STREAM :

Semester :

University Roll No.	Name of the Student	Title of the Project	Semester Examination										
			Project Report (10)	Development of Prototype/ Model (20)	Power point presentation (15)	Viva-Voce (15)	Usage of Modern Tool/ Technology	Innovative-ness (10)	Individual contribution (10)	Group activity (10)	Total (100)		

(Signature of the Project Supervisor(s))

(Signature of the HoD)

Guidelines for execution of mandatory Project Work

1. Student will carry out project work on any two of the relevant papers in each semester of 1st year and any four of the relevant papers in each semester of 2nd and 3rd year.
2. Number of students under a given project would be decided by the Head of Dept. However, maximum number of students under a given project should not cross five.
3. Within one month of the commencement of the new semester, each student will identify and confirm the selection of subjects under which project works will be carried out and accordingly, continuous project work evaluation will be carried out by the respective supervisor
4. Credit point allocation on each project is 0.5
5. A 'Digital Repository' would be created about project work/presentation of a given student and same has to be maintained for all 4 years, so that the student can realize his/her gradual development with semesters.
6. In a semester, there would be at least two interim evaluation about the progress of project work (should be carried out along with Unit Tests I and II) followed by final assessment in the end semester examination.

7. 50% of the project will be evaluated by project guide and rest of 50% will be evaluated by external expert.(average value will be taken)

Assessment Guideline of Power Point Presentation (15):

i) Body language (5 marks) ii) Communication Skills (5 marks) iii) Content of the power point presentation (5 marks)

MOOCs Courses For B.Tech Students for AY 2018-19(1st Semester to 8th Semester)

Total Credit for MOOCs Subjects will be 10.

List of websites which offers online certification Courses

1. Swayam- <https://swayam.gov.in/>
2. NPTEL- <https://onlinecourses.nptel.ac.in/>
3. Mooc- <http://mooc.org/>
4. Edx - <https://www.edx.org/>
5. Coursera- <https://www.coursera.org/>
6. Udacity - <https://in.udacity.com/>
7. Udemy - <https://www.udemy.com/>
8. Khanacademy - <https://www.khanacademy.org/>
9. Skillsahre - <https://www.skillshare.com/>
10. Harvard University - <https://online-learning.harvard.edu/>
11. Ted - <https://ed.ted.com/>
12. Alison - <https://alison.com/>
- 13.Futurelearn - <https://www.futurelearn.com/>
- 14.Web Development - <https://digitaldefynd.com/best-free-web-development-courses-tutorials-certification/>
- 15.Digital Marketing - <https://digitaldefynd.com/best-free-digital-marketing-certifications/>
- 16.ios app development - <https://digitaldefynd.com/best-ios-app-development-course-tutorial/>
- 17.Open Learn - <http://www.open.edu/openlearn/>
18. Future Learn - <https://www.futurelearn.com/>
19. Tuts Plus - <https://tutsplus.com/>
20. Open Culture - <http://www.openculture.com/>