

**CHOICE BASED CREDIT SYSTEM  
EVALUATION SCHEME  
AND  
COURSE OF STUDY  
IN  
B.TECH.  
MECHANICAL ENGINEERING**

**(I SEMESTER TO VIII SEMESTER)**

**SCHEME OF EXAMINATION & SYLLABUS**



**(Batch 2024-2028)**

**L**-Lecture; **T**-Tutorial; **P**-Practical; **CT**-Cumulative Test; **TA**- Teacher Assessment; **ESE**-End Semester Examination; **BSC**-Basic Science Course; **ESC**- Engineering Science Courses; **PEC**-Program Elective Course; **SEC**- Skill Enhancement Course; **AECC**- Ability Enhancement Compulsory Course; **HSMC**-Humanities, Social Science & Management Course

**Grading & Grade Points:** O(Outstanding)= 10; A<sup>+</sup>(Excellent)= 9; A(Very Good)= 8; B<sup>+</sup>(Good)= 7; B(Above BME) = 6; C(Average)= 5; P(Pass)= 4; F(Fail)= 0; Ab(Absent)= 0

**GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR**  
**Faculty of Engineering & Technology**  
**Mechanical Engineering**  
**B. Tech. First Year**  
**Syllabus in accordance with AICTE Model Curriculum**

**B.Tech. I Year**

**Semester - I**

DSC/ SEC/ AECC	Subject	Periods			Evaluation Scheme			Total Marks	Credits	
					Continuous Internal Assessment		CIA Total	ESE		
L	T	P	CT	TA						
<b>THEORY</b>										
BAC-C102/ BAC-C202	Engineering Chemistry	3	1	0	20	10	30	70	100	
BEM-C102	Engineering Mathematics – I	3	1	0	20	10	30	70	100	
BCE-C102/ BCE-C202	Programming for Problem Solving	3	1	0	20	10	30	70	100	
BME-C103	Basic Mechanical Engineering	3	0	0	20	10	30	70	100	
BEN-A103	Environmental Studies	2	0	0	20	10	30	70	100	
	<b>Induction Program</b>	<b>Only for first 3 weeks</b>								
<b>PRACTICAL</b>										
BAC-C151/ BAC-C251	Engineering Chemistry Lab	0	0	2	10	5	15	35	50	
BCE-C151 BCE-C251	Programming for Problem Solving Lab	0	0	2	10	5	15	35	50	
BME-C153/ BME-C253	Engineering Graphics and Design Lab	1	0	2	10	5	15	35	50	
BEG-A151/ BEG-A251	Technical Communication	0	0	2	10	5	15	35	50	
	<b>TOTAL</b>	1 5	3	8	140	70	210	490	700	
									20	

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 Paper Code → Semester

(Batch 2024-2028)  
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B. Tech. I Year		Semester - II								
Subject code	Subject	Periods			Evaluation Scheme			Total marks	Credit	
		L	T	P	Continuous Internal Assessment	CIA Total	ESE			
<b>THEORY</b>										
BAP-C202	Engineering Physics	3	1	0	20	10	30	70	100	4
BEM-C202	Engineering Mathematics-II	3	1	0	20	10	30	70	100	4
BEE-C202	Basic Electrical Engineering	3	1	0	20	10	30	70	100	4
BET-C202	Electronic Devices	3	1	0	20	10	30	70	100	4
BHU-S202	Vedic Science & Engineering	3	1	0	20	10	30	70	100	0
	Summer Training and Internship	A training or internship is to be pursued after II sem, and the credits will be given in III sem after submitting the training certificate followed by presentation								
<b>PRACTICAL</b>										
BAP-C251	Engineering Physics Lab	0	0	2	10	5	15	35	50	1
BEE-C251	Basic Electrical Engineering Lab	0	0	2	10	5	15	35	50	1
BET-C251	Electronic Devices Lab	0	0	2	10	5	15	35	50	1
BME-C152/ BME-C252	Workshop Practice	0	0	2	10	5	15	35	50	1
BSP-S251	Physical Training & Yoga	0	0	2	0	0	50	0	50	0
	<b>TOTAL</b>	15	5	10	140	70	260	490	750	20

**Coding:**

BME : Mechanical Courses	BET : Electronic Courses	BEM : Mathematics
BEE : Electrical Courses	BHU : Humanities Courses	BCE : Computer Courses
BAC : Applied Chemistry	BAP : Applied Physics	BEN : Environment Science

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 Paper Code → Semester

Revised Syllabus (Effective for the session 2024-2025)  
**GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR**  
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**B. Tech. Second Year**  
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**B. Tech. II Year**

**Semester-III**

S.N O.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME			Credit	Subject TOTAL	
				SESSIONAL EXAM.			EXAM. ESE					
				L	T	P		CT	TA	TOTAL		
<b>THEORY SUBJECTS</b>												
1	BEM-C302	BSC-5	Engineering Mathematics-III	3	1	0	20	10	30	70	4	100
2	BME-C306	ESC-6	Materials Engineering	3	0	0	20	10	30	70	3	100
3	BME-C308	ESC-8	Engineering Mechanics	3	0	0	20	10	30	70	3	100
4	BME-C309	ESC-9	Fluid Mechanics	3	1	0	20	10	30	70	4	100
5	BME-O341	ESC-10	MOOCs-I(Swayam/NPTEL Course)	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
6	BME-C356	ESC-6 Lab	Materials Engineering Lab	0	0	2	10	5	15	35	1	50
7	BME-C358	ESC-8 Lab	Engineering Mechanics Lab	0	0	2	10	5	15	35	1	50
8	BME-C359	ESC-9 Lab	Fluid Mechanics Lab	0	0	2	10	5	15	35	1	50
9	BME-C370	ESC-10 Lab	Project-I	0	0	2	10	5	15	35	1	50
TOTAL				15	2	8	140	70	210	490	21	700

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 Paper Code → Semester

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**B. Tech. II Year**

**(Semester-IV)**

S. N. O.	COURSE CODE	COURSE OPTED	SUBJE CT	Period per week			EVALUATION SCHEME			Credit	Subject TOTAL	
							SESSIONAL EXAM.					
				L	T	P	CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>												
1	BME-C411	ESC-16	Fluid Machines	3	1	0	2 0	10	30	70	4	100
2	BME-C407	ESC-11	Manufacturing Science and Process	3	1	0	2 0	10	30	70	4	100
3	BME-C409	ESC-13	Strength of Materials	3	1	0	2 0	10	30	70	4	100
4	BKT-A403	HSMC- 2	Indian Knowledge Tradition	2	0	0	2 0	10	30	70	0	100
5	BME-O441	ESC- 14	MOOCS-II	3	0	0	2 0	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
6	BME-C451	ESC-16 Lab	Fluid Machines Lab	0	0	2	1 0	5	15	35	1	50
7	BME-C457	ESC-11 Lab	Manufacturing Science and Process Lab	0	0	2	1 0	5	15	35	1	50
8	BME-C459	ESC-15 Lab	Machine Drawing Lab	0	0	2	1 0	5	15	35	1	50
9	BME-C470	ESC-12 Lab	Project-II	0	0	4	1 0	20	30	70	2	100
TOTAL				1 4	3	10	140	85	225	525	20	750

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# Gurukula Kangri (Deemed to be University), Haridwar

Faculty of Engineering & Technology  
Mechanical Engineering

B. Tech. III Year

Semester V

S.NO.	COURSE CODE	COURSE OPTED	Course Name	Period per week			EVALUATION SCHEME			EXAM. ESE	Credit	— Subject TOTAL	
				L	T	P	SESSIONAL EXAM.	CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>													
1	BME-C514	PCC	Heat Transfer & Thermal Machines	3	1	0	20	10	30	70	4	100	
2	BME-C515	PCC	Kinematics and Dynamics of Machines	3	1	0	20	10	30	70	4	100	
3	BME-C512	PCC	Measurement & Metrology	3	0	0	20	10	30	70	3	100	
4	BME-C516	PCC	Machine Element & System Design	3	0	0	20	10	30	70	3	100	
5	BME-M001	HSMC	Universal Human Values	3	0	0	20	10	30	70	0	100	
6	BME-O541	PCC	MOOCs-III (Swayam/NPTEL) Course	3	0	0	20	10	30	70	3	100	
<b>PRACTICAL / TRAINING / PROJECT</b>													
7	BME-C564	PCC Lab	Mechanical Engineering Lab (Heat Transfer & Thermal Analysis)	0	0	2	10	05	15	35	1	50	
8	BME-C565	PCC Lab	Mechanical Engineering Lab (Design)	0	0	2	10	05	15	35	1	50	
9	BME-C562	PCC Lab	Measurement and Metrology Lab	0	0	2	10	05	15	35	1	50	
10	BME-C570	PCC Lab	Project-III (Summer Training Report)	0	0	2	10	05	15	35	1	50	
				TOTAL	18	2	8	160	80	240	560	21	800

➤ For the Summer Training and Internship program done in summer break after IV semester examination, A certificate of completion to be submitted along with the report and presentation in the department. In case a student is unable to do an internship in some company, he may do any one extra online/ offline skill enhancement course.

➤ The MOOC courses shall be studied by the student through SWAYAM/NPTEL. Students have to study from Online Platform doubt sessions shall be held by Internal teachers. Students have to attempt the exams for these MOOC courses conducted by SWAYAM/NPTEL for credit transfer as per university policy

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Revised Syllabus (Effective from the session 2025-26)

# Gurukula Kangri (Deemed to be University), Haridwar

Faculty of Engineering & Technology  
Mechanical Engineering

B. Tech. III Year

Semester VI

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME			Credit	Subject TOTAL	
				L	T	P	SESSIONAL EXAM.	EXAM. ESE				
<b>THEORY SUBJECTS</b>												
1	BME-C611	PCC	Computer Aided Design & Analysis	3	1	0	20	10	30	70	4	100
2	BME-C612	PCC	Product Innovation & Entrepreneurship	3	0	0	20	10	30	70	3	100
3	BME-C613	PCC	Manufacturing Automation	3	0	0	20	10	30	70	3	100
4	BME-P62X	PEC	Program Elective-I	3	0	0	20	10	30	70	3	100
5	BME-O63X	OEC	Open Elective-I	3	0	0	20	10	30	70	3	100
6	BME-O641	OEC	MOOCs-IV (Swayam/NPTEL) Course	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
7	BME-C661	PCC	Mechanical Engineering (Manufacturing) Lab	0	0	2	10	05	15	35	1	50
8	BME-C662	PCC	Computer Aided Design & Analysis Lab	0	0	2	10	05	15	35	1	50
9	BME-C663	PCC	Manufacturing Automation Lab	0	0	2	10	05	15	35	1	50
10	BME-C670	PCC	Project-IV(Seminar/ Synopsis)	0	0	2	10	05	15	35	1	50
TOTAL				18	1	8	160	80	240	560	23	800

➤ The MOOC courses shall be studied by the student through SWAYAM/NPTEL. Students have to study from Online Platform doubt sessions shall be held by Internal teachers. Students have to attempt the exams for these MOOC courses conducted by SWAYAM/NPTEL

For credit transfer as per university policy

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### **Program Elective -I (Sixth semester)**

BME-P621	Smart Materials & Structures
BME-P622	Vibration & Noise Control
BME-P623	Mechatronics Robotics and Control
BME-P626	Computational Fluid Dynamics
BME-P627	Environmental Pollution and Abatement
BME-P628	Integrated Design and Manufacturing
BME-P629	Advanced thermodynamics
BME-P630	Vehicle Technology
BME-P631	Production & Operation Management
BME-P632	Mechatronics Robotics & Control

### **Open Elective -I (Sixth semester)**

BME-O631	Numerical Analysis
BME-O632	Industrial Engineering
BME-O633	Operations Research
BME-O634	Concurrent Engineering
BME-O635	Quality Management

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# Gurukula Kangri (Deemed to be University), Haridwar

Faculty of Engineering & Technology  
Mechanical Engineering

B. Tech. IV Year

Semester VII

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME			Credit	Subject TOTAL	
				L	T	P	SESSIONAL EXAM.	CT	TA	TOTAL		
<b>THEORY SUBJECTS</b>												
1	BME - C711	PCC	Refrigeration & Air Conditioning	3	0	0	20	10	30	70	3	100
2	BME - C712	PCC	Maintenance and Reliability Engineering	3	0	0	20	10	30	70	3	100
3	BME - P72 X	PEC	Program Elective-II	3	0	0	20	10	30	70	3	100
4	BME - O73 X	OEC	Open Elective-II	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
5	BME - C761	PCC	Refrigeration & Air Conditioning Lab	0	0	2	10	05	15	35	1	50
6.	BME- C770	PCC	Project-V( Design & Analysis)	0	0	10	40	20	60	140	5	200
TOTAL				12	0	12	130	65	195	455	18	650

Revised Syllabus (Effective from the session 2026-27)

# **Gurukula Kangri (Deemed to be University), Haridwar**

**Faculty of Engineering & Technology  
Mechanical Engineering**

**B. Tech. IV Year**

**Semester VIII**

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME			Credit	Subject TOTAL
				L	T	P	SESSIONAL EXAM.	EXAM. ESE			
<b>THEORY SUBJECTS</b>											
1	BME-P805	ESC	Program Elective-III	3	0	0	20	10	30	70	3 100
2	BME-P806	ESC	Open Elective-III	3	0	0	20	10	30	70	3 100
<b>PRACTICAL / TRAINING / PROJECT</b>											
5	BME-C 870	PCC	Project-VI (Prototype & Testing)	0	0	16	80	40	120	280	08 400
TOTAL				6	0	16	120	60	180	420	14 600

### Program Elective –II/III (Seventh/ Eighth semester)

BME-P722	Advanced Machining Processes
BME-P723	Advanced Welding Processes
BME-P725	Thermal Power Plant Engineering
BME-P726	Flexible Manufacturing Systems
BME-P727	Additive Manufacturing
BME-P728	Finite Element Methods
BME-P730	Renewable Energy Engineering
BME-P731	3-D Printing
BME-P732	Design for Manufacturing Assembly
BME-P733	Die, Moulds & Tool Engineering

### Open Elective –II/III (Seventh/ Eighth semester)

BME-O731	Nanotechnology and Nano computing
BME-O732	Artificial Intelligence and Machine Learning
BME-O733	Green Energy Technology
BME-O734	Composites Materials
BME-O735	Nuclear Engineering
BME-O736	Bio Medical Engineering