

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

**(I-VIII SEMESTER)**

**SCHEME OF EXAMINATION & SYLLABUS**



**FACULTY OF ENGINEERING AND TECHNOLOGY  
GURUKULA KANGRI DEEMED TO BE UNIVERSITY,  
HARIDWAR**

**Session: 2024-25 (*ODD&EVEN Semester*)**

(Batch 2024-2028)  
**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	4
BEM-C102	Engineering Mathematics– I	3	1	0	20	10	30	70	100	4
BCE-C102/ BCE-C202	Programming for Problem Solving	3	1	0	20	10	30	70	100	4
BME-C103	Basic Mechanical Engineering	3	0	0	20	10	30	70	100	3
BEN-A103	Environmental Studies	2	0	0	20	10	30	70	100	0
	<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	1
BCE-C151 BCE-C251	Programming for Problem Solving Lab	0	0	2	10	5	15	35	50	1
BME-C153/ BME-C253	Engineering Graphics and Design Lab	1	0	2	10	5	15	35	50	2
BEG-A151/ BEG-A251	Technical Communication	0	0	2	10	5	15	35	50	1
	<b>TOTAL</b>	14	4	8	140	70	210	490	700	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
C	: Discipline Specific Courses	A	: Ability Enhancement Compulsory Courses	S	: Skill Enhancement Courses
E	: Discipline Elective Courses			ESE	: End Semester Examination

L- LECTURE; T- TUTORIAL; P- PRACTICAL; CT- CUMULATIVE TEST;  
 TA- TEACHER ASSESSMENT; ESE–ENDSEMESTER EXAMINATION

(Batch 2024-2028)  
**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 - II**

Subject code	Subject	Periods			Evaluation Scheme				Total marks	Credit
					Continuous Internal Assessment		CIA Total	ESE		
		L	T	P	CT	TA				
<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
C : Discipline Specific Courses	A : Ability Enhancement Compulsory Courses	S : Skill Enhancement Courses
E : Discipline Elective Courses		ESE : End Semester Examination

L- LECTURE; T- TUTORIAL; P- PRACTICAL; CT- CUMULATIVE TEST;  
 TA- TEACHER ASSESSMENT; ESE- END SEMESTER EXAMINATION

Revised Syllabus (Effective for the session..... )  
**Gurukula Kangri Vishwavidyalaya, Haridwar**  
 Faculty of Engineering & Technology  
**Mechanical Engineering**

**B. Tech. II Year**

**(Semester – III)**

S.N O.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
				L	T	P	SESSIONAL EXAM.			EXAM. ESE		
							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	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-10 Lab	Fluid Mechanics Lab	0	0	2	10	5	15	35	1	50
9	BME-C370		Project-I	0	0	2	0	5	15	35	1	50
<b>TOTAL</b>				<b>12</b>	<b>2</b>	<b>8</b>	<b>130</b>	<b>70</b>	<b>210</b>	<b>490</b>	<b>21</b>	<b>700</b>

**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 Average)= **6**; **C**(Average)= **5**; **P**(Pass)= **4**; **F**(Fail)= **0**; **Ab**(Absent)= **0**

Revised Syllabus (Effective from the session 2020-21)

## Gurukula Kangri Vishwavidyalaya, Haridwar

Faculty of Engineering & Technology

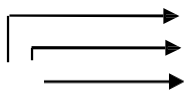
### Mechanical Engineering

#### B. Tech. II Year

(Semester – IV)

S.N O.	COURS E CODE	COURS E OPTED	SUBJEC T	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM .ESE		
				L	T	P	CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>												
1	BME-C411	ESC-16	Fluid Machines	3	1	0	20	10	30	70	4	100
2	BME-C407	ESC-11	Manufacturing Science and Process	3	1	0	20	10	30	70	4	100
3	BME-C409	ESC-13	Strength of Materials	3	1	0	20	10	30	70	4	100
4	BKT-A403	HSMC-2	Indian Knowledge Tradition	2	0	0	20	10	30	70	0	100
5	BME-O441	ESC-14	MOOCS-II	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
6	BME-C4511	ESC-16 Lab	Fluid Machines Lab	0	0	2	10	5	15	35	1	50
7	BME-C457	ESC-11 Lab	Manufacturing Science and Process Lab	0	0	2	10	5	15	35	1	50
8	BME-C459	ESC-15 Lab	Machine Drawing Lab	0	0	2	10	5	15	35	1	50
9	BME-C470		Project-II	0	0	2	10	5	15	35	1	50
<b>TOTAL</b>				<b>14</b>	<b>2</b>	<b>8</b>	<b>140</b>	<b>70</b>	<b>210</b>	<b>490</b>	<b>19</b>	<b>700</b>

**L**-Lecture; **T**-Tutorial; **P**-Practical; **CT**-Cumulative Test; **TA**- Teacher Assessment; **ESE** End Semester Examination; **PCC**- Program Core Course; **PEC**-Program Elective Course; **OEC**-Open Elective Course; **SEC**- Skill Enhancement Course; **AECC**- Ability Enhancement Compulsory Course; **HSMC**-Humanities, Social  
**Grading & Grade Points: O**(Outstanding)= **10**; **A<sup>+</sup>**(Excellent)= **9**; **A** (Good) = **8**; **B<sup>+</sup>**(Good) = **7**; **B** Average) = **6**; **C**(Average)= **5**; **P**(Pass)= **4**; **F**(Fail)= **0**;  
**Ab**(Absent)= **0**

**BME-**  Paper

**Revised Syllabus (Effective from the session 2021-2022)**  
**Gurukula Kangri (Deemed to be University), Haridwar**  
**Faculty of Engineering & Technology**  
**Mechanical Engineering**

**B. Tech. III Year**

(Semester – V)

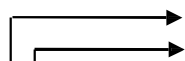
S.NO.	COURSE CODE	COURSE OPTED	Course Name	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
				L	T	P	SESSIONAL EXAM.			EXAM. ESE		
							CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>												
1	BME-C511	PCC	Heat Transfer	3	1	0	20	10	30	70	4	100
2	BME-C512	PCC	Measurement & Metrology	3	0	0	20	10	30	70	3	100
3	BME-C513	PCC	Solid Mechanics	3	1	0	20	10	30	70	4	100
4	BME-P5XX	PEC	Program Elective-I	3	0	0	20	10	30	70	3	100
5	BME-O5XX	OEC	Open Elective-I	3	0	0	20	10	30	70	3	100
6	BME-M001	HSMC	Universal Human Values	3	0	0	20	10	30	70	0	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
7	BME-C561	PCC Lab	Heat Transfer Lab	0	0	2	10	05	15	35	1	50
8	BME-C562	PCC Lab	Measurement & Metrology Lab	0	0	2	10	05	15	35	1	50
9	BME-C570	PCC Lab	Project-I (Summer Training)	0	0	2	10	05	15	35	1	50
<b>TOTAL</b>				<b>18</b>	<b>4</b>	<b>6</b>	<b>150</b>	<b>75</b>	<b>225</b>	<b>525</b>	<b>20</b>	<b>750</b>

- ❖ 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 skill enhancement course

**L**-Lecture; **T**-Tutorial; **P**-Practical; **CT**-Cumulative Test; **TA**- Teacher Assessment; **ESE**-End Semester Examination; **PCC**- Program Core Course; **PEC**-Program Elective Course; **OEC**-Open 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 Average) = 6; **C**(Average)= 5; **P**(Pass)= 4; **F**(Fail)= 0; **Ab**(Absent)= 0

Semester



1, 6 & 7 stands for theory, Practical & Seminar /Project respectively

**BME-C511**

Paper Code

### Program Elective -I (Fifth semester)

BME-P521	Manufacturing System Design
BME-P522	Soft Computing
BME-P523	Advanced Thermodynamics
BME-P524	Machine Tool Design

### Open Elective -I (Fifth semester)

BME-O531	Engineering Economy
BME-O532/BCE-C514	Cloud Computing
BME-O533	Automatic Control System
BME-O534	Composite Materials
BME-O535	Machine Learning

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**BME-C511** → Semester  
1, 6 & 7 stands for theory, Practical & Seminar /Project respectively  
→ Paper Code

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**Gurukula Kangri (Deemed to be University), Haridwar**  
**Faculty of Engineering & Technology**  
**Mechanical Engineering**

**B. Tech. III Year**

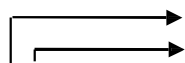
(Semester – VI)

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
				L	T	P	SESSIONAL EXAM.			EXAM. ESE		
							CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>												
1	BME-C611	PCC	Design of Machine Elements	3	1	0	20	10	30	70	4	100
2	BME-C612	PCC	Internal Combustion Engines	3	1	0	20	10	30	70	4	100
3	BME-P62X	PEC	Program Elective-II	3	0	0	20	10	30	70	3	100
4	BME-P62X	PEC	Program Elective-III	3	0	0	20	10	30	70	3	100
5	BME-O63X	OEC	Open Elective-II	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
6	BME-C661	PCC	Mechanical Engineering Design Lab	0	0	2	10	05	15	35	1	50
7	BME-C662	PCC	Internal Combustion Engines Lab	0	0	2	10	05	15	35	1	50
8	BME-C670	PCC	Project-II	0	0	2	10	05	15	35	1	50
<b>TOTAL</b>				<b>15</b>	<b>4</b>	<b>6</b>	<b>130</b>	<b>65</b>	<b>95</b>	<b>455</b>	<b>20</b>	<b>650</b>

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

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Semester



1, 6 & 7 stands for theory, Practical & Seminar /Project respectively

**BME-C511**

Paper Code



### Program Elective -II & III (Sixth semester)

BME-P621	Smart Materials & Structures
BME-P622	Vibration & Noise Control
BME-P623	Mechatronics
BME-P625	Product Design & Development
BME-P626	Computational Fluid Dynamics
BME-P627	Environmental Pollution and Abatement
BME-P628	Integrated Design and Manufacturing

### Open Elective -II (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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Semester

1, 6 & 7 stands for theory, Practical & Seminar /Project respectively

**BME-C511** → Paper Code

**Revised Syllabus (Effective from the session 2022-2023)**  
**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.			EXAM. ESE		
							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 Management	3	0	0	20	10	30	70	3	100
3	BME-P72X	PEC	Program Elective-IV	3	0	0	20	10	30	70	3	100
4	BME-P72X	PEC	Program Elective-V	3	0	0	20	10	30	70	3	100
5	BME-O73X	OEC	Open Elective-III	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
6	BME-C761	PCC	Refrigeration & Air Conditioning Lab	0	0	2	10	05	15	35	1	50
8	BME-C770	PCC	Project-III	0	0	8	40	20	60	140	4	200
TOTAL				15	0	10	150	75	225	525	20	750

**NOTE:** Electives will be offered depending upon the availability of teaching staff and minimum thirty students should opt for a particular elective.

**L**-Lecture; **T**-Tutorial; **P**-Practical; **CT**-Cumulative Test; **TA**- Teacher Assessment; **ESE**-End Semester Examination; **PCC**- Program Core Course; **PEC**-Program Elective Course; **OEC**-Open Elective Course; **SEC**-Skill Enhancement Course; **AEEC**- 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 Average) = 6; **C** (Average) = 5; **P** (Pass) = 4; **F** (Fail) = 0; **Ab**(Absent)= 0

### Program Elective -IV & V (Seventh semester)

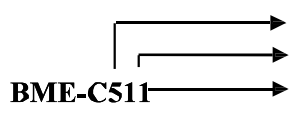
BME-P721	Computer Aided Design
BME-P722	Advanced Machining Processes
BME-P723	Advanced Welding Processes
BME-P724	Non-Traditional & Computer Aided Manufacturing
BME-P725	Power Plant Engineering
BME-P726	Simulation of Mechanical Systems
BME-P727	Additive Manufacturing
BME-P728	Finite Element Methods
BME-P729	Automobile Engineering

### Open Elective -III (Seventh semester)

BME-O731	Nanotechnology and Nano computing
BME-O732	Artificial Intelligence and Robotics
BME-O733	Energy Resources and Management
BME-O734	Engineering System Design Optimization

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**BME-CS11** → Semester  
1, 6 & 7 stands for theory, Practical & Seminar /Project respectively  
Paper Code

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**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		
							CT	TA	TOTAL			
<b>THEORY SUBJECTS</b>												
1	BME-C805	ESC	Manufacturing Automation	3	0	0	20	10	30	70	3	100
2	BME-C806	ESC	Entrepreneurship Essentials	3	0	0	20	10	30	70	3	100
3	BME-O841	PEC	MOOC-I	3	0	0	20	10	30	70	3	100
4	BME-O843	PEC	MOOC-II	3	0	0	20	10	30	70	3	100
<b>PRACTICAL / TRAINING / PROJECT</b>												
5	BME-C870	PCC	Project-IV	0	0	16	80	40	120	280	08	400
TOTAL				12	0	16	160	80	240	560	20	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.

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

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