CHOICE BASED CREDIT SYSTEM
EVALUATION SCHEME
AND
COURSE OF STUDY
(According to AICTE Model Curriculum)

B. TECH.
IN
MECHANICAL ENGINEERING

BATCH: 2020 - 2024

FACULTY OF ENGINEERING AND TECHNOLOGY

GURUKULA KANGRI (DEEMED TO UNIVERISTY), HARIDWAR

Revised Syllabus (Effective from the session 2019-20)

Gurukula Kangri Vishwavidyalaya, Haridwar

Faculty of Engineering & Technology

Mechanical Engineering

B. Tech. I Year

(Semester – I)

S.NO.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BAC-C102	BSC-1	Engineering Chemistry	3	1	0	20	10	30	70	4	100
2	BEM-C102	BSC-2	Engineering Mathematics–I	3	1	0	20	10	30	70	4	100
3	BME-C103	ESC-1	Basic Mechanical Engineering	3	1	0	20	10	30	70	4	100
4	BCE-C102	ESC-2	Programming for Problem Solving	3	0	0	20	10	30	70	3	100
5	BEN-A 103	HSMC-1	Environment Studies	2	0	0	20	10	30	70	0	100
6		Induction Programme		Three weeks duration								
PRACTICAL / TRAINING / PROJECT												
7	BAC-C151	BSC-1 Lab	Engineering Chemistry Lab	0	0	2	10	5	15	35	1	50
8	BME-C153	ESC-1 Lab	Engineering Graphics and Design Lab	1	0	2	10	5	15	35	2	50
9	BCE-C151	ESC-2 Lab	Programming for Problem Solving Lab	0	0	2	10	5	15	35	1	50
10	BEG-A151	HSMC Lab	Technical Communication Lab	0	0	2	10	5	15	35	1	50
			TOTAL	15	3	8	140	70	210	490	20	700

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^{+}(**Excellent**)= 9; A(**Very Good**)= 8; B^{+}(**Good**)= 7; B(**Above Average**)= 6; C(**Average**)= 5; P(**Pass**)= 4; F(**Fail**)= 0; Ab(**Absent**)= 0**

BME C101 → Paper Code

→ 0, 5 & 6 stands for theory, Practical & Seminar /Project respectively

→ Semester

Revised Syllabus (Effective from the session 2019-2020)

Gurukula Kangri Vishwavidyalaya, Haridwar

Faculty of Engineering & Technology

Mechanical Engineering

B. Tech. I Year

(Semester – II)

S.NO.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BAP-C202	BSC-3	Engineering Physics	3	1	0	20	10	30	70	4	100
2	BEM-C202	BSC-4	Engineering Mathematics-II	3	1	0	20	10	30	70	4	100
3	BEE-C202	ESC-3	Basic Electrical Engineering	3	1	0	20	10	30	70	4	100
4	BET-C 202	ESC-4	Electronics Devices	3	1	0	20	10	30	70	4	100
5	BHU-S202	SEC-1	Vedic Science and Engineering	2	0	0	20	10	30	70	0	100
PRACTICAL / TRAINING / PROJECT												
6	BAP-C251	BSC-3 Lab	Engineering Physics Lab	0	0	2	10	5	15	35	1	50
7	BEE-C251	ESC-3 Lab	Basic Electrical Engineering Lab	0	0	2	10	5	15	35	1	50
8	BET-C251	ESC-4 Lab	Electronic Devices lab	0	0	2	10	5	15	35	1	50
9	BME-C252	ESC-5 Lab	Workshop Practice	0	0	2	10	5	15	35	1	50
10	BSP-S251	SEC-2 Lab	Physical Training and Yoga	0	0	2	10	5	15	35	0	50
			TOTAL	14	4	10	150	75	225	525	20	750

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→ Semester

Revised Syllabus (Effective from the session 2020-21)

Gurukula Kangri Vishwavidyalaya, Haridwar

Faculty of Engineering & Technology

Mechanical Engineering

B. Tech. II Year

(Semester – III)

S.NO.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
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-C307	ESC-7	Applied Thermodynamics	3	1	0	20	10	30	70	4	100
4	BME-C308	ESC-8	Engineering Mechanics	3	0	0	20	10	30	70	3	100
5	BEE-C306	ESC-9	Electrical Machines	3	1	0	20	10	30	70	4	100
PRACTICAL / TRAINING / PROJECT												
6	BME-C356	ESC-6 Lab	Materials Engineering Lab	0	0	2	10	5	15	35	1	50
7	BME-C357	ESC-7 Lab	Applied Thermodynamics Lab	0	0	2	10	5	15	35	1	50
8	BME-C358	ESC-8 Lab	Engineering Mechanics Lab	0	0	2	10	5	15	35	1	50
9	BEE-C356	ESC-9 Lab	Electrical Machines Lab	0	0	2	10	5	15	35	1	50
			TOTAL	18	4	8	160	80	240	560	22	700

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BME C101 → Paper Code

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→ Semester

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.NO.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BME-C406	ESC-10	Fluid Mechanics & Fluid Machines	3	1	0	20	10	30	70	4	100
2	BME-C407	ESC-11	Manufacturing Science and Process	3	0	0	20	10	30	70	3	100
3	BME-C408	ESC-12	Kinematics & Dynamics of Machines	3	1	0	20	10	30	70	4	100
4	BME-C409	ESC-13	Strength of Materials	3	1	0	20	10	30	70	4	100
5	BME-C410	ESC-14	Principle and Practices of Management	3	0	0	20	10	30	70	3	100
6	BKT-A401	HSMC-2	Bhartiya Gyan Parampara	2	0	0	20	10	30	70	0	100
PRACTICAL / TRAINING / PROJECT												
7	BME-C456	ESC-10 Lab	Fluid Mechanics & Fluid Machines Lab	0	0	2	10	5	15	35	1	50
8	BME-C457	ESC-11 Lab	Manufacturing Science and Process Lab	0	0	2	10	5	15	35	1	50
9	BME-C458	ESC-12 Lab	Theory of Machine lab	0	0	2	10	5	15	35	1	50
10	BME-C459	ESC-15 Lab	Machine Drawing Lab	0	0	2	10	5	15	35	1	50
			TOTAL	17	5	8	140	80	240	560	22	800

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BME C101 → Paper Code

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→ Semester

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
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BME-C511	PCC	Heat Transfer	3	2	0	20	10	30	70	4	100
2	BME-C512	PCC	Metrology & Quality Assurance	3	0	0	20	10	30	70	3	100
3	BME-C513	PCC	Solid Mechanics	3	2	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 Value	3	0	0	20	10	30	70	0	100
PRACTICAL / TRAINING / PROJECT												
7	BME-C561	PCC Lab	Heat Transfer Lab	0	0	2	10	05	15	35	1	50
8	BME-C562	PCC Lab	Metrology & Quality Assurance 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
			TOTAL	18	4	6	150	75	225	525	20	750

- 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

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

Program Elective -I (Fifth semester)

BME-P521	Manufacturing System Design
BME-P522	Soft Computing Techniques
BME-P523	Advanced Engineering Thermodynamics
BME-P524	Material Removal Processes
BME-P525	Applied Elasticity and Plasticity

Open Elective -I (Fifth semester)

BME-O531	Engineering Economics
BME-O532/BCE-C514	Cloud Computing
BME-O533	Automatic Control System
BME-O534	Composite Materials
BME-O535	Disaster Management

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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BME-C511
- → Semester
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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 – VI)

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BME-C611	PCC	Design of Machine Elements	3	2	0	20	10	30	70	4	100
2	BME-C612	PCC	IC Engines	3	2	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
PRACTICAL / TRAINING / PROJECT												
6	BME-C661	PCC	Machine Design Lab	0	0	2	10	05	15	35	1	50
7	BME-C662	PCC	IC 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
			TOTAL	15	4	6	130	65	95	455	20	650

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BME-C511 → Paper Code

→ Semester

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Program Elective -II & III (Sixth semester)

BME-P621	Smart Materials & Structures
BME-P622	Vibration & Noise Control
BME-P623	Mechatronics
BME-P624	Control Theory & Applications
BME-P625	Product Development & Design
BME-P626	Computational Fluid Dynamics
BME-P627	Environmental Pollution and Abatement
BME-P628	Integrated Design and Manufacturing
BME-P629	Quantity Production Methods

Open Elective -II (Sixth semester)

BME-O631	Numerical Analysis
BME-O632	Industrial Engineering
BME-O633	Operation Research
BME-O634	Concurrent Engineering
BME-O635	Inspection and Product Control

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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BME-C511
- Semester
- 1, 6 & 7 stands for theory, Practical & Seminar /Project respectively
- 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
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BME-C711	PCC	Refrigeration & Air Conditioning	3	0	0	20	10	30	70	3	100
2	BME-C712	PCC	Maintenance Engineering and 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
PRACTICAL / TRAINING / PROJECT												
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.*

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Program Elective -IV & V (Seventh semester)

BME-P721	Computer Aided Design
BME-P722	Unconventional Manufacturing Process
BME-P723	Advanced Welding Process
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 in Engineering
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
BME-O735	Rural Technology & Community Development

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BME-C511
- Semester
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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
							SESSIONAL EXAM.			EXAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BME-P82X	PEC	MOOC-I	3	0	0	20	10	30	70	3	100
2	BME-P82X	PEC	MOOC-II	3	0	0	20	10	30	70	3	100
3	BME-O83X	OEC	MOOC-III	3	0	0	20	10	30	70	3	100
4	BME-O83X	OEC	MOOC-IV	3	0	0	20	10	30	70	3	100
PRACTICAL / TRAINING / PROJECT												
5	BME-C 870	PCC	Project-IV	0	0	16	80	40	120	280	08	400
			TOTAL	12	0	16	160	80	240	560	20	800

List of MOOC courses shall be decided by the departmental committee in each semester depending upon the list from SWAYAM/NPTEL and other recognized online platforms. Students have to study from Online Platform doubt sessions shall be held by Internal teachers and exam shall be taken by university. If a student wishes he can give exam of Online Platform for certification.

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