

**Department of Mechanical  
Engineering  
School of Engineering and  
Technology**

**Criteria 1**

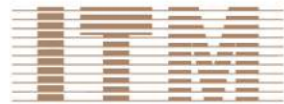
**Sub Criteria 1.3.3**

**Percentage of students undertaking field  
projects/research projects/internships**

**Academic Year**

**2023-2024**

  
Dr. Omveer Singh  
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Gwalior (M.P.)



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"CELEBRATING DREAMS"

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**Total Number of Research Projects in UG and PG**

Research Projects	Program	Total Number of students Involved in research projects
	B.Tech-ME	09

**Total Number of Industrial Trainings in UG**

Industrial Trainings	Program	Total Number of students Involved in industrial trainings
	B.Tech-ME	09

**Total Number of Field Project/Industry Visits in UG**

Industry visits	Program	Total Number of students involved in Industrial visits
	B.Tech	31


  
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**EXAMINATION SCHEME**  
**Program Name: B. Tech. Batch 2023-27**  
**Branch: Mechanical Engineering (Specialization in Manufacturing Technology)**  
**SEMESTER III**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Credits Allotted (Subject Wise)			Total Credits	Remarks	
			Theory Slot			Practical Slot				Total Marks	Period Per Week				
			End Sem. Exam	Mid Sem. Exam (Two Tests' Average)	Class Participation	End Sem. Exam	Progressive Evaluation	Internal Viva	L		T	P			
1	MEL0305	Basic Thermodynamics	40	30	30	40	30	30	200	2	1	2	4		
2	MEL 0308	Measurement and Metrology	40	30	30	40	30	30	200	2	1	2	4		
3	MEL 0310	Mechanics of Solids	40	30	30	40	30	30	200	2	1	2	4		
4	MEL 0341	Manufacturing Technology –II	40	30	30	40	30	30	200	2	1	2	4		
5	MAL0308	Engineering Mathematics	40	30	30	-	-	-	100	2	1	0	3		
6	MEP0302	Machine drawing	-	-	-	40	30	30	100	0	0	4	2		
7	MED0301	Evaluation of Industrial Training-I	-	-	-	40	30	30	100	0	0	4	2		
Total marks ---1100												23			
Total Credits															

8	Swayam MOOC Course(Optional)	Solar Energy Conversion	2 Credits
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**EXAMINATION SCHEME**

**Program Name: B. Tech. Batch 2023-27**

**Branch: Mechanical Engineering (Specialization in Manufacturing Technology)**

**SEMESTER V**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Credits Allotted (Subject Wise)			Total Credits	Remarks	
			Theory Slot			Practical Slot				Total Marks	Period Per Week				
			End Sem. Exam	Mid Sem. Exam (Two Tests' Average)	Class Participation	End Sem. Exam	Progressive Evaluation	Internal Viva	L		T	P			
1	MEL0518	Dynamics of Machines	40	30	30	40	30	30	200	2	1	2	4		
2	MEL0515	Machine Design-I	40	30	30	40	30	30	200	2	1	2	4		
3	MEL0516	IC Engines	40	30	30	40	30	30	200	2	1	2	4		
4	MEL0521	Fluid Machinery	40	30	30	40	30	30	200	2	1	2	4		
5	MEL0522	Advanced Manufacturing	40	30	30	---	-----	-----	100	2	1	0	3		
6	MEL0523	Industrial Automation & Control	40	30	30	---	-----	-----	100	2	1	0	3		
7	MED0502	Evaluation of Industrial Training-2	-	-	-	40	30	30	100	0	0	4	2		
<b>Total marks-1100</b>												<b>24</b>			
<b>Total Credits</b>															

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**EXAMINATION SCHEME**

**Program Name: B. Tech. Batch 2023-27**

**Branch: Mechanical Engineering (Specialization in Manufacturing Technology)**

**SEMESTER VI**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Credits Allotted (Subject Wise)			Total Credits	Remarks	
			Theory Slot			Practical Slot				Period Per Week					
			End Sem. Exam	Mid Sem. Exam (Two Tests' Average)	Class Participation	End Sem. Exam	Progressive Evaluation	Internal Viva	Total Marks	L	T	P			
1	MEL0617	Machine Design-II	40	30	30	40	30	30	200	2	1	2	4		
2	MEL0619	Heat & Mass Transfer	40	30	30	40	30	30	200	2	1	2	4		
3	Listed	Elective-1	40	30	30	-	-	-	100	2	1	0	3		
4	MEL0626	Operations Research	40	30	30	-	-	-	100	2	1	0	3		
5	MEL0627	Additive Manufacturing	40	30	30	40	30	30	200	2	1	2	4		
6	MED0603	Minor Project	-	-	-	40	30	30	100	0	0	4	2		
<b>Total marks=900</b>											<b>Total Credits</b>			<b>20</b>	

**Elective-1**

1. MEE0621- Robotic Process Automation
2. MEE0622- Electric Vehicle Engineering
3. MEE0623- Tribology Engineering

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**EXAMINATION SCHEME**

Program Name: B. Tech.

Batch 2023-27

Branch: Mechanical Engineering (Specialization in Manufacturing Technology)

**SEMESTER VII**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Credits Allotted (Subject Wise)			Total Credits	Remarks	
			Theory Slot			Practical Slot				Total Marks	Period Per Week				
			End Sem. Exam	Mid Sem. Exam (Two Tests' Average)	Class Participation	End Sem. Exam	Progressive Evaluation	Internal Viva	L		T	P			
1	MEL0722	Computer Aided Design	40	30	30	40	30	30	200	2	1	2	4		
2	MEL0723	Refrigeration and Air Conditioning	40	30	30	40	30	30	200	2	1	2	4		
3	MEL0727	Total Quality Management	40	30	30	-----	-----	-----	100	2	1	0	3		
4	Listed	Elective 2	40	30	30	-----	-----	-----	100	2	1	0	3		
5	Listed	Elective 3	40	30	30	-----	-----	-----	100	2	1	0	3		
6	MEC0701	Training Report	-----	-----	-----	40	30	30	100	0	0	4	2		
7	MED0702	Major Project	-----	-----	-----	40	30	30	100	0	0	4	2		
<b>Total marks ---900</b>									<b>Total Credits</b>			<b>21</b>			

**ELECTIVE – 2:**

- (1) MEE0717- Theory of Production process
- (2) MEE0709-Industrial Robotics
- (3) MEE0703- Product Design and Development
- (4) MEE0710-Alternative fuels and emission control

**ELECTIVE – 3:**

- (1) MEE0705- Non Conventional Energy Resources
- (2) MEE0706- Optimization Methods
- (3) MEE0707- Introduction to Computational Fluid Dynamics
- (4) MEE0711- Sensors, Actuators and Signal Conditioning

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**EXAMINATION SCHEME**

**Program Name: B. Tech.**

**Batch 2023-27**

**Branch: Mechanical Engineering (Specialization in Manufacturing Technology)**

**SEMESTER VIII**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Credits Allotted (Subject Wise)			Total Credits	Remarks	
			Theory Slot			Practical Slot				Total Marks	Period Per Week				
			End Sem. Exam	Mid Sem. Exam (Two Tests' Average)	Class Participation	End Sem. Exam	Progressive Evaluation	Internal Viva	L		T	P			
1	MEL0825	Automobile Engineering	40	30	30	40	30	30	200	2	1	2	4		
2	MEL0827	CNC & Flexible Manufacturing Systems	40	30	30	40	30	30	200	2	1	2	4		
3	Listed	Elective 4	40	30	30	----	-----	-----	100	2	1	0	3		
4	Listed	Elective 5	40	30	30	----	-----	-----	100	2	1	0	3		
5	<b>MED0803</b>	<b>Major Project</b>	----	-----	-----	120	90	90	300	0	0	16	8		
<b>Total marks ---900</b>									<b>Total Credits</b>			<b>22</b>			

**ELECTIVE-4:**

- (1)MEE 809- Vibration and Noise- Measurement and Control
- (2)MEE 0817- Simulation and Modeling
- (3)MEE 0818- Project Management
- (4) MEE 0814- Non Destructive Testing

**ELECTIVE-5:**

- (1)MEE0813- Computer Integrated Manufacturing
- (2)MEE0819-Production and Operation Management
- (3)MEE0820- Machine Learning for Robotics
- (4) MEE 0816- Finite Element Method

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## Syllabus


<b>Title of the Course</b>	Evaluation of Industrial Training-1
<b>Course Code</b>	MED0301[P]

### Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C	
					0	0	2	2	
<b>Course Type</b>	Lab only								
<b>Course Category</b>	Projects and Internship								
<b>Pre-Requisite/s</b>	subject knowledge of first and second semester .			<b>Co-Requisite/s</b>					
<b>Course Outcomes &amp; Bloom's Level</b>	<p><b>CO1-</b> Understand themselves in relation to their community and develop among themselves sense of social and civic and responsibility. <b>(BL2-Understand)</b></p> <p><b>CO2-</b> Identify the needs and problem of the community and involve them in problem solving. <b>(BL2-Understand)</b></p> <p><b>CO3-</b> Utilize their knowledge in finding practical solution to individual and community problem. <b>(BL3-Apply)</b></p> <p><b>CO4-</b> Develop the confidence require for group living and sharing of responsibilities of acquire leadership qualities and democratic attitudes. <b>(BL4-Analyze)</b></p> <p><b>CO5-</b> Develop the capacity to meet emergencies and natural disasters and practice national integration and social harmony <b>(BL5-Evaluate)</b></p>								
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		<b>SDG (Goals)</b>	SDG4(Quality education) SDG9(Industry Innovation and Infrastructure)					

### Part B

Modules	Contents	Pedagogy	Hours
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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Industrial training has its own importance in a career of a student who is pursuing a professional degree. It is considered as a part of college curriculum. The objective of an industrial training is to provide us an insight regarding internal working of companies. We understand that theoretical knowledge is not enough for a successful professional career. With an aim to go beyond academics, industrial visit provides students a practical perspective of the workplace. Industrial trainings provide an opportunity to learn practically through interaction, working methods and employment practices.	Field work	BL3-Apply	40 hrs
Module-II	It gives students an exposure to current work practices as opposed to possibly theoretical knowledge being taught at college. Industrial visits provide an excellent opportunity to interact with industries and know more about industrial environment. Industrial trainings are arranged by TAP cell with an objective of providing us an opportunity to explore different sectors like IT, Manufacturing services, finance and marketing. Industrial visit helps to combine theoretical knowledge with practical knowledge. Industrial realities are opened to the students through industrial visits/trainings.	Field work	BL4-Analyze	40 hrs

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
	50				
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	0	40	20	60	

  
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"CELEBRATING DREAMS"

Part E

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Syllabus


<b>Title of the Course</b>	Evaluation of Industrial Training-2
<b>Course Code</b>	MED0502[P]

### Part A

Year	3rd	Semester	5th	Credits	L	T	P	C	
					0	0	2	2	
<b>Course Type</b>	Lab only								
<b>Course Category</b>	Projects and Internship								
<b>Pre-Requisite/s</b>	subject knowledge of Mechanical Engineering			<b>Co-Requisite/s</b>					
<b>Course Outcomes &amp; Bloom's Level</b>	<p><b>CO1-</b> Understand themselves in relation to their community and develop among themselves sense of social and civic and responsibility. <b>(BL2-Understand)</b></p> <p><b>CO2-</b> Identify the needs and problem of the community and involve them in problem solving. <b>(BL2-Understand)</b></p> <p><b>CO3-</b> Utilize their knowledge in finding practical solution to individual and community problem. <b>(BL3-Apply)</b></p> <p><b>CO4-</b> Develop the confidence require for group living and sharing of responsibilities of acquire leadership qualities and democratic attitudes. <b>(BL4-Analyze)</b></p> <p><b>CO5-</b> Develop the capacity to meet emergencies and natural disasters and practice national integration and social harmony <b>(BL5-Evaluate)</b></p>								
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		<b>SDG (Goals)</b>	SDG9(Industry Innovation and Infrastructure)					

### Part B

Modules	Contents	Pedagogy	Hours
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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Industrial training has its own importance in a career of a student who is pursuing a professional degree. It is considered as a part of college curriculum. The objective of an industrial training is to provide us an insight regarding internal working of companies. We understand that theoretical knowledge is not enough for a successful professional career. With an aim to go beyond academics, industrial visit provides students a practical perspective of the workplace. Industrial trainings provide an opportunity to learn practically through interaction, working methods and employment practices.	Field work	BL4-Analyze	40 hrs
Module-II	It gives students an exposure to current work practices as opposed to possibly theoretical knowledge being taught at college. Industrial visits provide an excellent opportunity to interact with industries and know more about industrial environment. Industrial trainings are arranged by TAP cell with an objective of providing us an opportunity to explore different sectors like IT, Manufacturing services, finance and marketing. Industrial visit helps to combine theoretical knowledge with practical knowledge. Industrial realities are opened to the students through industrial visits/trainings.	Field work	BL5-Evaluate	40 hrs

Part D (Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
	50				
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	0	40	20	60	

  
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Part E

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

Course  
Articulation  
Matrix

<b>COs</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Syllabus

<b>Title of the Course</b>	Minor Project
<b>Course Code</b>	MED0603[P]

### Part A

<b>Year</b>	3rd	<b>Semester</b>	6th	<b>Credits</b>	L	T	P	C
					0	0	2	2
<b>Course Type</b>	Project							
<b>Course Category</b>	Projects and Internship							
<b>Pre-Requisite/s</b>	Knowledge of Mechanical engineering and interdisciplinary subjects.			<b>Co-Requisite/s</b>				
<b>Course Outcomes &amp; Bloom's Level</b>	<b>CO1-</b> To enhance writing skills and knowledge.( <b>BL2-Understand</b> ) <b>CO2-</b> To increase their mental ability.( <b>BL3-Apply</b> ) <b>CO3-</b> To inculcate the ability to express innovative opinion and thoughts( <b>BL4-Analyze</b> ) <b>CO4-</b> To have Dissertation works as skills development in students.( <b>BL5-Evaluate</b> )							
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗			<b>SDG (Goals)</b>	SDG9(Industry Innovation and Infrastructure)			

### Part B

Modules	Contents	Pedagogy	Hours
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### Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Identification of a problem and formulation of a topic of project/thesis	PBL	BL3-Apply	15 hrs
Module-III	Dissertation and Viva-voci	PBL	BL5-Evaluate	20 hrs

  
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**Part D(Marks Distribution)**

<b>Theory</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
	50				
<b>Practical</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
100	50	40	20	60	

**Part  
E**

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

**Course Articulation Matrix**

<b>COs</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Syllabus

<b>Title of the Course</b>	Training Report
<b>Course Code</b>	MEC0701[P]

### Part A

Year	4th	Semester	7th	Credits	L	T	P	C
					0	0	2	2
<b>Course Type</b>	Lab only							
<b>Course Category</b>	Projects and Internship							
<b>Pre-Requisite/s</b>	subject knowledge of Mechanical Engineering			<b>Co-Requisite/s</b>				
<b>Course Outcomes &amp; Bloom's Level</b>	<p><b>CO1-</b> Understand themselves in relation to their community and develop among themselves sense of social and civic and responsibility. <b>(BL2-Understand)</b></p> <p><b>CO2-</b> Identify the needs and problem of the community and involve them in problem solving. <b>(BL2-Understand)</b></p> <p><b>CO3-</b> Utilize their knowledge in finding practical solution to individual and community problem. <b>(BL3-Apply)</b></p> <p><b>CO4-</b> Develop the confidence require for group living and sharing of responsibilities of acquire leader ship qualities and democratic attitudes. <b>(BL4-Analyze)</b></p> <p><b>CO5-</b> Develop the capacity to meet emergencies and natural disasters and practice national integration and social harmony<b>(BL5-Evaluate)</b></p>							
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		<b>SDG (Goals)</b>	SDG9(Industry Innovation and Infrastructure)				

### Part B

Modules	Contents	Pedagogy	Hours
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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Industrial training has its own importance in a career of a student who is pursuing a professional degree. It is considered as a part of college curriculum. The objective of an industrial training is to provide us an insight regarding internal working of companies. We understand that theoretical knowledge is not enough for a successful professional career. With an aim to go beyond academics, industrial visit provides students a practical perspective of the workplace. Industrial trainings provide an opportunity to learn practically through interaction, working methods and employment practices.	Field work	BL4-Analyze	40 hrs
Module-II	It gives students an exposure to current work practices as opposed to possibly theoretical knowledge being taught at college. Industrial visits provide an excellent opportunity to interact with industries and know more about industrial environment. Industrial trainings are arranged by TAP cell with an objective of providing us an opportunity to explore different sectors like IT, Manufacturing services, finance and marketing. Industrial visit helps to combine theoretical knowledge with practical knowledge. Industrial realities are opened to the students through industrial visits/trainings.	Field work	BL5-Evaluate	40 hrs

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
	50				
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	0	40	20	60	

  
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Part E

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

Course  
Articulation  
Matrix

<b>COs</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Syllabus

<b>Title of the Course</b>	Major Project
<b>Course Code</b>	MED0702[P]

### Part A

<b>Year</b>	4th	<b>Semester</b>	7th	<b>Credits</b>	L	T	P	C
					0	0	2	2
<b>Course Type</b>	Lab only							
<b>Course Category</b>	Projects and Internship							
<b>Pre-Requisite/s</b>	Knowledge of Mechanical engineering and interdisciplinary subjects.			<b>Co-Requisite/s</b>				
<b>Course Outcomes &amp; Bloom's Level</b>	<b>CO1-</b> To enhance writing skills and knowledge.( <b>BL2-Understand</b> ) <b>CO2-</b> To increase their mental ability.( <b>BL3-Apply</b> ) <b>CO3-</b> To inculcate the ability to express innovative opinion and thoughts.( <b>BL4-Analyze</b> ) <b>CO4-</b> To have Dissertation works as skills development in students. ( <b>BL5-Evaluate</b> )							
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗			<b>SDG (Goals)</b>	SDG9(Industry Innovation and Infrastructure)			

### Part B

Modules	Contents	Pedagogy	Hours
Module-I			

### Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Identification of a problem and formulation of a topic of project/thesis	PBL	BL3-Apply	48 hrs
Module-III	Dissertation and Viva-voci	PBL	BL5-Evaluate	

  
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**Part D(Marks Distribution)**

<b>Theory</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
	50				
<b>Practical</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
100	50	40	20	60	

**Part  
E**

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

**Course Articulation Matrix**

<b>COs</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Syllabus

<b>Title of the Course</b>	Major Project
<b>Course Code</b>	MED0803[P]

### Part

#### A

Year	4th	Semester	8th	Credits	L	T	P	C
					0	0	8	8
<b>Course Type</b>	Lab only							
<b>Course Category</b>	Projects and Internship							
<b>Pre-Requisite/s</b>	Knowledge of Mechanical engineering and interdisciplinary subjects.			<b>Co-Requisite/s</b>				
<b>Course Outcomes &amp; Bloom's Level</b>	<b>CO1-</b> To enhance writing skills and knowledge.(BL2-Understand) <b>CO2-</b> To increase their mental ability.(BL3-Apply) <b>CO3-</b> To inculcate the ability to express innovative opinion and thoughts.(BL4-Analyze)CO4- To have Dissertation works as skills development in students.(BL5-Evaluate)							
<b>Course Elements</b>	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		<b>SDG (Goals)</b>	SDG9(Industry Innovation and Infrastructure)				

### Part

#### B

Modules	Contents	Pedagogy	Hours
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### Part

#### C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Identification of a problem and formulation of a topic of project/thesis	PBL	BL3-Apply	15 hrs
Module-II	To have field work and data collection through a chosen methodology	PBL	BL4-Analyze	15 hrs
Module-III	Dissertation and Viva-voci	PBL	BL5-Evaluate	20 hrs

**Part D(Marks Distribution)**

<b>Theory</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
	150				
<b>Practical</b>					
<b>Total Marks</b>	<b>Minimum Passing Marks</b>	<b>External Evaluation</b>	<b>Min. External Evaluation</b>	<b>Internal Evaluation</b>	<b>Min. Internal Evaluation</b>
300	0	120	60	180	

**Part E**

<b>Books</b>	
<b>Articles</b>	
<b>References Books</b>	
<b>MOOC Courses</b>	
<b>Videos</b>	

**Course Articulation Matrix**

<b>COs</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	2
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	-	1	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

  
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## Details of UG research projects

**Name of the School: School of Engineering and Technology**  
**Name of the Course and Branch: B.Tech-ME (Batch 2020-24)**  
**Session: 2023-24**  
**Total No. of Students enrolled:09**

S. No.	Specialization	Name of the student	Roll no.	Title of the project	Duration	Name of the Guide
1.	B.Tech-ME	Deepika Bhadoriya	BETN1ME20001	CONVEX SURFACE MILLING MACHINE	06 months	Mr. Jai Kumar
		Kuldeep Yadav	BETN1ME20002			
		Suraj Kumar	BETN1ME20005			
		Yogesh Kashyap	BETN1ME20007			
		Krishna Chaudhary	BETN1ME20011			
2.	B.Tech-ME	Aniket Dwivedi	BETN1ME20008	Development and Analysis of an Electric Bike	06 months	Mr. Arun Kushwah
		Harsh Vishwakarma	BETN1ME20009			
3	B.Tech-ME	Dube Absolute MJ	BETN1ME20010	TRANSIENT STRUCTURAL ANALYSIS OF FLAT BELT PULLEY USING ANSYS	06 months	Mr. Jai Kumar

Head   
 Department of Mechanical Engineering

  
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**Development and Analysis of an Electric Bike**

A MAJOR PROJECT

*Submitted in partial fulfillment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

IN

**Mechanical Engineering**



*Submitted by*

Harsh Vishwakarma

(BETN1ME20009)

Under the Guidance of

Arun Singh Kushwah

Assistant Professor

Department of Mechanical Engineering

ITM University, Gwalior

May, 2024

  
Dean  
School of Engg. & Techn  
ITM University  
Gwalior

  
Dr. Omveer Singh  
REGISTRAR  
ITM University  
Gwalior (M.P.)

**TRANSIENT STRUCTURAL ANALYSIS OF FLAT BELT  
PULLEY USING ANSYS**

Submitted in partial fulfillment of the  
Requirements for the award of  
**Degree of Bachelor of Technology in Mechanical Engineering**



Submitted By  
**ABSOLUTE MCGREGOR JASPER DUBE**  
Roll No: BETN1ME20010

Under the guidance of  
**Jai Kumar**  
Assistant Professor

Department of Mechanical Engineering  
School of Engineering and Technology,  
ITM University Gwalior  
May, 2024

  
Dean  
School of Engg. & Techn  
ITM University  
Gwalior

  
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## Total Number of Industrial Trainings in UG

Industrial Trainings	Program	Total Number of students Involved in research projects
	B.Tech-ME	09



**NAV  
BHARAT**  
ENGINEERING WORKS

C-233, B.S. ROAD, INDL. AREA, SITE-1, GHAZIABAD (U.P) INDIA  
Phone : (0120) 4759600-13, Direct : 4562294  
Resi : 0120-4104071  
E-mail : bhisham@gearroll.com  
          bkmakkad@yahoo.com  
Web Site : www.gearroll.com

Date: 29.06.2023


### INTERNSHIP CERTIFICATE

We are glad to inform you that **Mr. Harsh Vishwakarma**, pursuing **B. Tech. Mechanical Engineering** from **ITM University, Gwalior** has successfully completed his unpaid internship at **Nav Bharat Engineering Works, Ghaziabad** from 29<sup>th</sup> May to 29<sup>th</sup> June 2023.

During his internship, he was exposed to "**Design, Quality Control, Production and Assembly Division**".

We found him extremely inquisitive and hard working. He was very much interested to learn the functions of our core division and designing also willing to put his best efforts and get in to the depth of the subject to understand it better.

Thanking you

  
Raghav Makkar,  
Director  
Nav Bharat Engineering Works,  
C-233, B. S. Road Indl. Area, Site-1,  
GHAZIABAD, U. P.



Subject to Ghaziabad Jurisdiction

MFG.. ROLLING MILLS, STEEL MILL, GEAR BOXES (SUGAR MILL & INDUSTRIAL)



Jamna Auto Industries Ltd.

REF: JAI:MLN:HR:2023  
DATE : 7.8.2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Kuldeep Yadav** a student of **B.Tech** 7<sup>th</sup> semester from **ITM, Gwalior** has undergone Industrial Training in our organization from 3<sup>rd</sup> July 2023 to 5<sup>th</sup> August 2023. His performance during the training was good.

We wish him all success in his future endeavor.

**For JAMNA AUTO INDUSTRIES LIMITED**

  
**(N.M.Q. Shamsi)**  
**G M -HR & Admin**

U-25-28, 31 & 32, Malanpur Industrial Area, P.O. Malanpur, Near Gwalior, Distt. Bhind, M.P. - 477117 (INDIA)  
Tel : 07539-283395, 409117, 409118 | Fax : 07539-283395 | e-mail : jamalanpur@jaispring.com | CIN : L35911HR1965PLC004485  
Corporate Office : Vatika Mind Scapes, Tower-B, 4th Floor, 12/3 Sector 27-D, Faridabad - 121003 (Haryana)  
Phone: 0129 - 4066885 | www.jaispring.com  
Regd Office: Jai Spring Road, Yamuna Nagar (Haryana) - 135 001, India | Tel : 91-1732-251810 | Fax : 91-1732-251820  
YAMUNA NAGAR | MALANPUR | CHENNAI | JAMSHEDPUR | RANTNAGAR | HOSUR

  
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**REGISTRAR**  
**ITM University**  
**Gwalior (M.P.)**

Industrial Visits	
Industry	Date
Industrial Visit- J B Mangaram Foods Pvt. Ltd., Gwalior	19 Jan 2024
Industrial Visit- Gwalior Dugdh Sangh Sanchi, Gwalior	6 Oct 2023

**Industrial Visits to J B Mangaram Foods Pvt. Ltd., Gwalior on 19 Jan 2024:**



1. **General:** Industrial visit for students of Mechanical was organized on 19 January 2024. The students were taken J B Mangharam Foods Private Limited , Gola Ka Mandir Gwalior.

2. **Participation:** Following faculty members and students visited the plant

(a) Mr.Arun Singh Kushwah, Mr.Prabhu Dayal Arya, Mr.Vinod Rathore Assistant Professor Mechanical Department, Mrs. Anshu Tiwari Assistant Professor Civil Department Mr. Aman Kushwah Lab Technician Civil Department.

(b) Students of 2nd semester Mechanical Engineering,05 in number

(c) Students of 4th semester Mechanical Engineering,08 in number

(d) Students of 6th semester Mechanical Engineering,05 in number

  
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3. Visit was arranged by Mr. Neeraj Pathak Manager-HR.

4. **Objective of the visit:**

- (a) To make students familiar with the modern Food processing unit and equipment used in the Making Biscuit of Britannia in J B Mangharam Gwalior.
- (b) To understand the importance of quality control.
- (c) To learn about waste management:
- (d) To show students, the similarity & difference between theoretical and practical concepts.

5. **Learning Outcomes:**

- (a) They will be able to describe the various stages and equipment involved in Making Biscuit for Britannia Company production. The biscuit making process is elaborate and continuous. The ingredients are combined to form dough, which is kneaded and rolled to a uniform thickness. It is cut into biscuit shapes and placed in a travelling oven.
- (b) They will be able to apply the concepts of quality control and waste management in dairy processing and understand their importance for food safety and environmental protection.
- (c) They will be able to analyze the challenges and opportunities faced by the dairy industry in terms of market demand, competition, innovation, and sustainability.
- (d) They will be able to evaluate the performance and efficiency of different biscuit making processing methods and technologies and suggest possible improvements or alternatives.
- (e) They will be able to demonstrate practical skills and knowledge by participating in various aspects of dairy processing, such as operating machines, conducting tests, and handling products.

6. **Feedback from students:**


Students gave positive feedback to words practical exposé of modern Food Industry (biscuit making process Industry).

  
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**List of present students during Industrial visit-**

S.no.	NAME	branch	semester
01.	Krishna Baghel	ME	2nd SEM
02.	Ramu Savita	ME	2nd SEM
03.	Sparsh Jain	ME	2nd SEM
04.	Utkaesh Patil	ME	2nd SEM
05.	Kunal George	ME	2nd SEM
06.	Sujal Gupta	ME	4 <sup>th</sup> SEM
07.	Alpesh Tomar	ME	4 <sup>th</sup> SEM
08.	Jagal Rawat	ME	4 <sup>th</sup> SEM
09.	Sanjay singh	ME	4 <sup>th</sup> SEM
10.	Druv Verma	ME	4 <sup>th</sup> SEM
11.	Yash Vardhan Singh	ME	4 <sup>th</sup> SEM
12.	Aniket Kaurav	ME	4 <sup>th</sup> SEM
13.	Nishant Sharma	ME	4 <sup>th</sup> SEM
14.	Babu Ali	ME	6 <sup>th</sup> SEM
15.	Bavandeep	ME	6 <sup>th</sup> SEM
16.	Divyansh Pannani	ME	6 <sup>th</sup> SEM
17.	Vijay Sharma	ME	6 <sup>th</sup> SEM
18.	Krishna Gupta	ME	6 <sup>th</sup> SEM

  
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## Industrial Visits to Sanchi Dairy Sanyantra, Banmore on 06 Oct 2023:



7. **General:** Industrial visits for students of Mechanical was organized on 06 Oct 2023. The students were taken Sanchi Dairy Sanyantra in Banmore, Morena.

### 8. Participation:

Following faculty members and students visited the plant

- (a) Dr. Dr. Shashikant Pandey, Mr. Shateesh kumar, Assistant Professor ME department and Mr. Nikhil Nandwani, Assistant Professor Civil department
- (b) Students of 7<sup>th</sup> semester Mechanical Engineering, 04 in number
- (c) Students of 5<sup>th</sup> semester Mechanical Engineering, 03 in number
- (d) Students of 3<sup>rd</sup> semester Mechanical Engineering, 06 in number

9. Visit was arranged by Narendra Gautam, Sanchi Dairy Sanyantra, Banmor.

  
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**10. Objective of the visit**

- (a) To make students familiar with the modern milk processing unit and equipment used in the milk processing.
- (b) To understand the importance of quality control.
- (c) To learn about waste management:
- (d) To show students, the similarity and difference between theoretical and practical concepts.

**11. Learning Outcomes:**

- (a) They will be able to describe the various stages and equipment involved in milk production, such as pasteurization, homogenization, and packaging.
- (b) They will be able to apply the concepts of quality control and waste management in dairy processing and understand their importance for food safety and environmental protection.
- (c) They will be able to analyze the challenges and opportunities faced by the dairy industry in terms of market demand, competition, innovation, and sustainability.
- (d) They will be able to evaluate the performance and efficiency of different dairy processing methods and technologies and suggest possible improvements or alternatives.
- (e) They will be able to demonstrate practical skills and knowledge by participating in various aspects of dairy processing, such as operating machines, conducting tests, and handling products.

**12. Feedback from students:**

Students gave positive feedback to words practical exposé of modern dairy plant.

List of present students during Industrial visit-

S.No.	Name	Branch	Semester
1.	DeepikaBhadoriya	ME	7 <sup>th</sup> SEM
2.	Suraj kumar	ME	7 <sup>th</sup> SEM
3.	Anikethdiwedi	ME	7 <sup>th</sup> SEM
4.	Berthefedal	ME	7 <sup>th</sup> SEM
5.	Divyansh Pamnani	ME	5 <sup>th</sup> SEM
6.	BavandeepSinghChauhan	ME	5 <sup>th</sup> SEM
7.	KrishnaGupta	ME	5 <sup>th</sup> SEM
8.	AniketKaurav	ME	3 <sup>th</sup> SEM
9.	SanjaySingh	ME	3 <sup>th</sup> SEM
10.	AlpeshTomar	ME	3 <sup>th</sup> SEM
11.	SujalGupta	ME	3 <sup>th</sup> SEM
12.	JugalRawat	ME	3 <sup>th</sup> SEM
13.	DhruvVerma	ME	3 <sup>th</sup> SEM

Head  
Department of Mechanical Engineering

  
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