

**MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR**  
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)  
**Department of Mechanical Engineering**

**Summary of Board of studies (ME/AU/PR) meeting held on 30/05/2020**

**Scheme revision**

<b>Program</b>	<b>Code</b>	<b>Year/date of introduction</b>	<b>Year/date of revision</b>	<b>Percentage of content added or replaced</b>	<b>Item no.</b>	<b>Page. No.</b>
Mechanical	12	1957	30/05/2020	11%	11	8
Automobile	19	2015	30/05/2020	11%	11	8
Production	56	2002	30/05/2020	34%	11	9



**Dr. M. K. Gaur**

**HMED**

# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Department of Mechanical Engineering

## MINUTES OF MEETING OF BOARD OF STUDIES (BoS)

A meeting of following members (external and internal) was held on 30<sup>th</sup> May, 2020 at 10:30 AM through online mode (Zoom Link: <https://us02web.zoom.us/j/4294469003?pwd=bU1EMWk2O0picEZlYUdJbTlaTDdRdz09>; Meeting ID: 429 446 9003, Password: bosmech05)

Following members were present:

- |                             |   |
|-----------------------------|---|
| (1) Dr. Manish Kumar Sagar  | Head of the Department and Chairman of the Committee      |
| (2) Prof. A.K.Agrawal       | AC Nominee, Professor, IIT BHU                            |
| (3) Dr. K K Jain            | AC Nominee, Professor, NITTTR, Bhopal                     |
| (4) Dr. Pavan Kumar Kankar  | AC Nominee, Associate Professor, IIT, Indore,             |
| (5) Dr. Prashant Kumar Jain | RGPV Nominee, Associate Prof., IITDM, Jabalpur,           |
| (6) Er. Rajiv Singh Bais    | Industry Expert, Chief Manager R&D, Siemens Ltd. Gurgaon, |
| (7) Dr. Pratesh Jayswal     | Member  |
| (8) Dr. Manoj K Gaur        | Member  |
| (9) Dr. C. S. Malvi         | Member  |
| (10) Mr. Vedansh Chaturvedi | Member  |
| (11) Dr. Jyoti Vimal        | Member  |
| (12) Mr. Sharad Agrawal     | Member  |
| (13) Mr. Vaibhav Shivhare   | Member  |
| (14) Dr. Amit Aherwar       | Member  |
| (15) Mr. Bhupendra K Pandey | Member  |

Following members were absent:

- |                             |  |
|-----------------------------|--|
| (1) Prof. P. M. V. Subbarao | AC Nominee, Professor, IIT, Delhi                        |
| (2) Mr. Rajesh Dixit        | Institute Alumni, Zonal Head, Yuken India Ltd. New Delhi |
| (3) Mr. R. P. Kori          | Member   |

Before starting the meeting, Chairman welcome the external expert members for attending the Board of Studies (BoS) meeting on 30<sup>th</sup> May, 2020 online mode to finalize the Scheme and syllabus of B.Tech (Mechanical Engineering and Automobile Engineering) and M.Tech. (Production Engineering) students.

### Agenda of the BoS

Following agenda's were discussed and deliberated upon:

Item ME 1:	To propose the tentative list of courses which the students can opt from NPTEL platform for <i>Seminar/Self Study Courses in III &amp; V Semester (during 2020-2021)</i>					
	<i>The following courses proposed under this item:</i>					
	Sr. No.	Semester	Course name	Course Start	Course end	Date of Exam
	1.	III	Principles of Vibration Control	20-07-2020	14-08-2020	27-09-2020
	2.	III	Product Design and Development	20-07-2020	14-08-2020	27-09-2020
	3.	III	Foundations of Cognitive Robotics	20-07-2020	14-08-2020	27-09-2020
	4.	V	Selection Of Nano materials For Energy Harvesting And Storage Application	20-07-2020	14-08-2020	27-09-2020
5.	V	Welding of Advanced High Strength Steels for Automotive Applications	20-07-2020	14-08-2020	27-09-2020	
6.	V	Structural Analysis of Nano materials	20-07-2020	14-08-2020	27-09-2020	
<b>ANNEXURE-I</b>						

*[Handwritten signatures and initials]*

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## Department of Mechanical Engineering

<p><b>Item ME 2:</b></p>	<p>To propose the list and syllabi for all <i>Departmental Elective (DE)</i> Courses of <i>VII Semester</i> under the flexible curriculum along with their Cos.</p> <p><i>The following courses proposed under this item:</i></p> <table border="1" data-bbox="271 369 1420 638"> <thead> <tr> <th colspan="3">Automobile Engineering</th> <th colspan="3">Mechanical Engineering</th> </tr> <tr> <th colspan="3">DE-3 (Through Traditional Mode)</th> <th colspan="3">DE-3 (Through Traditional Mode)</th> </tr> <tr> <th>S.No.</th> <th>Subject Code</th> <th>Subject Name</th> <th>S.No.</th> <th>Subject Code</th> <th>Subject Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>190711</td> <td>Vehicle Dynamics</td> <td>1</td> <td>120711</td> <td>Refrigeration and Air-Conditioning</td> </tr> <tr> <td>2</td> <td>190712</td> <td>Theory Of Fuels And Lubricants</td> <td>2</td> <td>120712</td> <td>Basic of Finite Element Analysis</td> </tr> <tr> <td>3</td> <td>190713</td> <td>Hybrid Electric Vehicles</td> <td>3</td> <td>120713</td> <td>Metrology, Measurement and Control</td> </tr> <tr> <td>4</td> <td>190714</td> <td>Two And Three Wheeler Technology</td> <td>4</td> <td>120714</td> <td>Total Quality Management</td> </tr> </tbody> </table> <p><u>ANNEXURE-II</u> <u>ANNEXURE-II(a)</u></p>	Automobile Engineering			Mechanical Engineering			DE-3 (Through Traditional Mode)			DE-3 (Through Traditional Mode)			S.No.	Subject Code	Subject Name	S.No.	Subject Code	Subject Name	1	190711	Vehicle Dynamics	1	120711	Refrigeration and Air-Conditioning	2	190712	Theory Of Fuels And Lubricants	2	120712	Basic of Finite Element Analysis	3	190713	Hybrid Electric Vehicles	3	120713	Metrology, Measurement and Control	4	190714	Two And Three Wheeler Technology	4	120714	Total Quality Management
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4	190714	Two And Three Wheeler Technology	4	120714	Total Quality Management																																						
<p><b>Item ME 3:</b></p>	<p>To propose the list of Courses from SWAYAM/NPTEL/MOOC Platform to be offered in <i>online mode under DE category</i> for credit transfer in the <i>VII Semester</i></p> <p><i>The following courses proposed under this item:</i></p> <table border="1" data-bbox="271 940 1420 1232"> <thead> <tr> <th colspan="3">Automobile Engineering</th> <th colspan="3">Mechanical Engineering</th> </tr> <tr> <th colspan="3">DE-4 (Through SWAYAM/NPTEL/MOOC)</th> <th colspan="3">DE-4 (Through SWAYAM/NPTEL/MOOC)</th> </tr> <tr> <th>S.No.</th> <th>Subject Code</th> <th>Subject Name</th> <th>S.No.</th> <th>Subject Code</th> <th>Subject Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>190751</td> <td>Farm Machinery</td> <td>1</td> <td>120751</td> <td>Foundation of Computational Fluid Dynamics</td> </tr> <tr> <td>2</td> <td>190752</td> <td>Mechanism and Robot Kinematics</td> <td>2</td> <td>120752</td> <td>Introduction to Composites</td> </tr> <tr> <td>3</td> <td>190753</td> <td>Introduction to Mechanical Vibration</td> <td>3</td> <td>120753</td> <td>Advanced Machining Processes</td> </tr> <tr> <td>4</td> <td>190754</td> <td>Industrial Safety Engineering</td> <td>4</td> <td>120754</td> <td>Industrial Safety Engineering</td> </tr> </tbody> </table> <p><u>ANNEXURE-III</u> <u>ANNEXURE-III(a)</u></p>	Automobile Engineering			Mechanical Engineering			DE-4 (Through SWAYAM/NPTEL/MOOC)			DE-4 (Through SWAYAM/NPTEL/MOOC)			S.No.	Subject Code	Subject Name	S.No.	Subject Code	Subject Name	1	190751	Farm Machinery	1	120751	Foundation of Computational Fluid Dynamics	2	190752	Mechanism and Robot Kinematics	2	120752	Introduction to Composites	3	190753	Introduction to Mechanical Vibration	3	120753	Advanced Machining Processes	4	190754	Industrial Safety Engineering	4	120754	Industrial Safety Engineering
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3	190753	Introduction to Mechanical Vibration	3	120753	Advanced Machining Processes																																						
4	190754	Industrial Safety Engineering	4	120754	Industrial Safety Engineering																																						
<p><b>Item ME 4:</b></p>	<p>To propose the Courses &amp; Syllabi to be offered under <i>Open Category(OC)</i> Courses for VII semester students of other departments along with their COs</p> <p><i>The following courses proposed under this item:</i></p> <table border="1" data-bbox="399 1556 1077 1691"> <thead> <tr> <th>S. No.</th> <th>OC-2</th> <th>OC-3</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Industrial Automation</td> <td>Engineering Materials For Industrial Applications</td> </tr> <tr> <td>2.</td> <td>Solar Energy</td> <td>Maintenance Engineering</td> </tr> </tbody> </table> <p><u>ANNEXURE - IV</u></p>	S. No.	OC-2	OC-3	1.	Industrial Automation	Engineering Materials For Industrial Applications	2.	Solar Energy	Maintenance Engineering																																	
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1.	Industrial Automation	Engineering Materials For Industrial Applications																																									
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## Department of Mechanical Engineering

To propose the list of "Additional Courses" which can be opted for getting an

(i) *Honours (for students of the host department)*

(ii) *Minor Specialization (for students of other departments)*

[These will be completed through SWAYAM/NPTEL/MOOC based Platforms during V and VII semester]

The following courses proposed under this item:

S. No.	Honors list	Minors list
1.	Fundamentals of Artificial Intelligence	Mechanical Measurement Systems
2.	Rapid Manufacturing	Principle of Hydraulic Machines and System Design
3.	Heat Exchangers: Fundamentals and Design Analysis	

ANNEXURE - V

Item ME 5:

Item ME 6:

To propose the syllabi of *Mandatory Course (MC)* titled "Intellectual Property Rights" (IPR) of *VII semester* under the flexible curriculum along with their COs

[This will be prepared & recommended by Institution Level Committee/Academic Development Cell]

This will prepare at institute level

To propose the Experiment list/ Lab manual for *Laboratory Courses* to be offered in *VII semester*

The following experiment's proposed under this item:

Automotive maintenance lab	Reliability and Vibration Lab
Study and layout of an automobile repair, service and maintenance shop.	Determination of Critical Speed in Whirling of Shafts.
Study and preparation of different statements/records required for the repair and maintenance works.	Determination of Natural Frequency in Longitudinal Vibrating System.
Cylinder reboring - checking the cylinder bore, Setting the tool and reboring.	Determination of Natural Frequency in Torsional Vibration System.
Valve grinding, valve lapping - Setting the valve angle, grinding and lapping and checking for valve leakage	To verify the relation of compound pendulum & to determine the radius of gyration
Calibration of fuel injection pump	To study the undamped free vibration of spring mass system.
Minor and major tune up of gasoline and diesel engines.	To study the forced vibration of simply supported beam for different damping.
Study and checking of wheel alignment - testing of camber, caster.	Undamped torsional vibrations of single and double rotor system.
Testing kingpin inclination, toe-in and toe-out	To study the damped torsional vibration of single rotor system and to determine the damping coefficient.
Brake adjustment and Brake bleeding.	To study the forced damped vibration of spring mass system.
Simple tinkering, soldering works of body panels, study of door lock and window glass rising mechanisms.	Study the machine fault diagnostic system based on vibration analysis.
Battery testing and maintenance	Measurement of Noise.

ANNEXURE - VII

Item ME 7:

Item ME 8:

To explore and prepare the tentative list of *Departmental Elective (DE)* Courses (along with COs) for *VIII semester* (run through SWAYAM/NPTEL/MOOC based platform)

The following courses proposed under this item:

*[Handwritten signatures and initials]*

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S.No.	VIII Sem Mechanical Engineering (proposed)	VIII Sem Automobile Engineering (proposed)
1	IC Engines and Gas Turbines	IC Engines and Gas Turbines
2	Modelling and Simulation of Dynamic Systems	Design, Technology and Innovation
3	Introduction To Mechanical Micro Machining	Processing of Polymers and Polymer Composites

ANNEXURE - VIII

To explore and prepare the tentative list of courses to be offered under *Open Category(OC)* Courses for *VIII semester* students of other departments

S. No.	Name of Course (OC 5)
1.	Aesthetics And Emission Of Ground Vehicles
2.	Fundamental Of Air Conditioning Systems
3.	Basics of Manufacturing
4.	Production and Operation Management
5.	Principles of Design

ANNEXURE - IX

**Item ME 10:** **Feed back Analysis/suggestions**  
Students feedback and suggestions are taken and may be implement after discussion with faculty members.  
ANNEXURE - X

**Item ME 11:** **M.Tech. Scheme for July-2020 admitted batch**  
ANNEXURE-XI

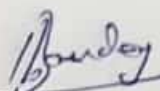
**Item ME 12:** Any other matters

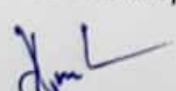
Apart from the above, following suggestions has been discussed and listed below;


1. The subject name of Production-1(taught in M.TECH) shall be changed to some specific name.
2. The subject name of Production-2(taught in M.TECH) shall be changed Advance Unconventional Manufacturing Process.
3. Instead of Production Lab-1 for M.TECH the name shall be Casting and Welding Lab.
4. Instead of Production Lab-2 for M.TECH the name shall be Unconventional Machining Lab.
5. Open Course -2 shall be Additive Manufacturing.
6. In Automobile Engineering the subject Hybrid Vehicles shall be introduced.
7. Subjects related to Modeling and Simulation shall not be kept in Departmental Elective-V.
8. The courses related to Unmanned Vehicle and Electric Vehicles shall be proposed for Open Course in B.TECH Curriculum.
9. The experiments related to study of something shall be removed.


It is decided that, suggestions may be incorporated as it is or with some modifications as per applicability in the syllabus or scheme at the time of finalization.

The meeting was ended with vote of thanks to the chairperson and committee members.

  
Mr. B. K. Pandey  
(BoS Member)

  
Dr. Amit Agrawal  
(BoS Member)

  
Mr. Sharad Agrawal  
(BoS Member)

  
Mr. V. Shivhare  
(BoS Member)

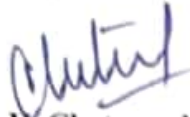
# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Department of Mechanical Engineering



**Dr. Jyoti Vimal**  
(BoS Member)



**Mr. V. Chaturvedi**  
(BoS Member)



**Dr. C. S. Malvi**  
(BoS Member)



**Dr. Manoj K. Gaur**  
(BoS Member)



**Dr. Pratesh Jayaswal**  
(BoS Member)

online present  
**Er. Rajiv Singh Bais**  
(Industry Expert)

online present  
**Dr. Prashant K. Jain**  
(RGPV Nominee)

online present  
**Dr. Pavan K. Kankar**  
(AC Nominee)

online present  
**Dr. K K jain**  
(AC Nominee)

online present  
**Prof. A.K. Agrawal**  
(AC Nominee)



**Dr. Manish K. Sagar**  
(BoS Chairman)



**DEAN (ACADEMICS)**  
**M.I.T.S**  
**GWALIOR**

# Scheme of Examination: Bachelor of Technology (B.Tech.) Mechanical Engineering

**GROUP B: I Semester** *For batches admitted in Session 2019-20*

## B.Tech. I Semester (Mechanical/Automobile Engineering)

S.No	Subject Code	Category Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours per week			Total Credits
				Theory Slot			Practical Slot			L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional					
1.	100101	BSC	Engineering Chemistry (BSC-1)	70	20	10	30	20	150	3	-	2	4
2.	100102	BSC	Engineering Mathematics-I (BSC-2)	70	20	10	-	-	100	3	1	-	4
3.	100103	HSMC	Technical English (HSMC-1)	70	20	10	30	20	150	3	-	2	4
4.	100104	ESC	Basic Electrical & Electronics Engineering (ESC-1)	70	20	10	30	20	150	3	-	2	4
5.	100105	ESC	Engineering Graphics (ESC-2)	70	20	10	30	20	150	3	-	2	4
6.	100106	ESC	Manufacturing Practices (ESC-3)	-	-	-	30	20	50	-	-	2	1
<b>Total</b>				<b>350</b>	<b>100</b>	<b>50</b>	<b>150</b>	<b>100</b>	<b>750</b>	<b>15</b>	<b>1</b>	<b>10</b>	<b>21</b>
<b>NSS/NCC</b>				<b>Qualifier</b>									
<b>Induction programme of first three weeks (MC):Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch &amp; Innovations</b>													

**GROUP A: (Electrical, Electronics, Computer Science& Engineering, Information Technology, Electronics & Telecommunication)**

**GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)**

**01Theory Period=1 Credit; 02 Practical Periods =1 Credit**

**Course of Study and Scheme of Examination**  
**M. Tech. (Production Engineering) (Grading system, w.e.f. July 2017)**

**Semester – I**

S. No.	Subject Code	Subject Name & Title	Maximum Marks Allotted					Credit Allotted Subject wise	Total credit	Remarks				
			Theory Slot			Practical Slot					Total Marks	Period per week		
			End Sem	Mid Sem (Two tests average)	Quiz / assignment	End Sem/ Practical / Viva	Practical Record / Assignment / Quiz/ presentation					L	T	P
1.	560101	Optimization Techniques In Mechanical Engineering	70	20	10	--	--	100	3	1	--	4		
2.	560102	Integrated Manufacturing & Resources Planning	70	20	10	--	--	100	3	1	--	4		
3.	560103	Production Engineering- I	70	20	10	--	--	100	3	1	--	4		
4.	560104	Production & Operation Management	70	20	10	--	--	100	3	1	--	4		
5.	560105 560106 560107 560108	Elective – I	70	20	10	--	--	100	3	1	--	4		
6.	560109	Simulation & Modeling Lab. -I	--	--	--	90	60	150	0	0	6	6		
7.	560110	Production Engineering Lab. – I	--	--	--	90	60	150	0	0	6	6	Grand Total	
		<b>Total</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>180</b>	<b>120</b>	<b>800</b>	<b>15</b>	<b>5</b>	<b>12</b>	<b>32</b>	<b>800</b>	

Elective – I:

560105 Ergonomics and Work Study  
 560106 Project Management

560107 Reliability Availability and Maintainability  
 560108 World-Class Manufacturing



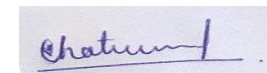
# Scheme of Examination: Bachelor of Technology (B.Tech.) Mechanical Engineering

## GROUP B: I Semester For batches admitted in Session 2020-21

### B.Tech. I Semester (Mechanical/Automobile Engineering)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted							Total Marks	Contact Hours per week			Total Credits	Mode of Teaching (Offline/ Online)	Mode of Exam.
				Theory Slot				Practical Slot				L	T	P			
				End Sem.		Mid Sem. Exam	Quiz/ Assignment	End Sem	Lab Work & Sessional	Skill Based Mini Project							
				End Term Evaluation	\$Proficiency in subject /course												
1.	100011	BSC	Engineering Mathematics-I (BSC-1)	50	10	20	20	-	-	-	100	3	1	-	4	Offline (4/0)	PP
2.	100012	BSC	Engineering Chemistry (BSC-2)	50	10	20	20	60	20	20	200	2	1	2	4	Blended (2/1)	MCQ
3.	100014	ESC	Engineering Graphics (ESC-1)	50	10	20	20	-	-	-	100	1	2	-	3	Offline (3/0)	A+O
4.	100015	HSMC	Energy, Environment, Ecology & Society (HSMC-1)	50	10	20	20	-	-	-	100	3	-	-	3	online (3/0)	MCQ
5.	100016	HSMC	Technical Language (HSMC-2)	50	10	20	20	-	-	-	100	3	-	-	3	Blended (2/1)	PP
6.	100017	HSMC	Language Lab (HSMC-3)	-	-	-	-	60	20	20	100	-	-	2	1	Offline (1/0)	SO
7.	100018	ESC	Engineering Graphics Lab (ESC-2)	-	-	-	-	60	20	20	100	-	-	2	1	Offline (1/0)	SO
<b>Total</b>				<b>250</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>180</b>	<b>60</b>	<b>60</b>	<b>800</b>	<b>12</b>	<b>4</b>	<b>6</b>	<b>19</b>		
<b>Induction programme of three weeks (MC):Physical activity, Creative Arts,Universal Human Values,Literary,ProficiencyModules,Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch &amp; Innovations.</b>																	

Mode of Teaching					Mode of Examination				Total Credits
Theory			Lab	Theory			Lab		
Offline	Online	Blended		Offline	PP	A+O	MCQ	SO	
		Offline	Online						
7	3	4	2	3	7	3	7	2	19
<b>36.84</b>	<b>15.7</b>	<b>21.0</b>	<b>10.5</b>	<b>15.78</b>	<b>36.84</b>	<b>15.78</b>	<b>36.84</b>	<b>10.5</b>	<b>100</b>

# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

COURSE CONTENT: PRODUCTION ENGINEERING

## Master of Technology (Production Engineering) (Semester - I)

**W.E.F JULY 2020**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted							Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot		MOOCs			L	T	P	
			End Sem	Mid Sem	Quiz/Assignment	End Sem	Lab work/sessional	Assignment	Exam					
1.	560111	Computational Techniques	70	20	10	-	-	-	-	100	3	-	-	3
2.	560112	Production Engineering- I	70	20	10	-	-	-	-	100	3	-	-	3
3.	560113	Production and Operations Management	70	20	10	-	-	-	-	100	3	-	-	3
4.	DE-I	Elective-I	70	20	10	-	-	-	-	100	3	-	-	3
5.	OC-I	*Open Category Course -I (OC-1)	70	20	10	-	-	-	-	100	3	-	-	3
6.	560120	Production Engineering Lab-I	-	-	-	90	60	-	-	150	-	-	4	4
7.	560121	\$ Self Learning / Presentation	-	-	-	-	100	-	-	100	-	-	2	2
<b>Total</b>			<b>350</b>	<b>100</b>	<b>50</b>	<b>90</b>	<b>160</b>	<b>-</b>	<b>-</b>	<b>750</b>	<b>15</b>	<b>-</b>	<b>6</b>	<b>21</b>

### Scheme of Examination

\* Open Category course (OC-1) will have to be opted from the pool of open courses (Student can opt from parent department and other department) and based on interdisciplinary aspects.

\*Self learning / presentation through SWAYAM / NPTEL (Registration in a course will be compulsory for students bus assessment will be based on internal seminar presentation)

Departmental Elective –I (DE-I)	Open Category course (OC-1)
560114: Maintenance Management	800111: Product Design & Development
560115: Flexible Manufacturing Systems	800112: Computer Integrated Manufacturing
560116: Ergonomics and Work Study	
560117: Total Quality Management.	