		L	T	P	C
15ME101	**BASIC MECHANICAL ENGINEERING**	**2**	**0**	**0**	**2**
	Prerequisite				
	Nil				

PURPOSE

To familiarize the students with the basics of Mechanical Engineering.

INSTRUCTIONAL OBJECTIVES

1. To familiarize with the basic machine elements
2. To familiarize with the Sources of Energy and Power Generation
3. To familiarize with the various manufacturing processes

UNIT I MACHINE ELEMENTS 10

Springs: Helical and leaf springs – Springs in series and parallel. **Cams:** Types of cams and followers – Cam profile.

Power Transmission: Gears (terminology, spur, helical and bevel gears, gear trains). Belt drives (types). Chain drives. **Simple Problems.**

UNIT II ENERGY 10

Sources: Renewable and non-renewable (various types, characteristics, advantages/disadvantages). **Power Generation:** External and internal combustion engines – Hydro, thermal and nuclear power plants (layouts, element/component description, advantages, disadvantages, applications). **Simple Problems.**

UNIT III MANUFACTURING PROCESSES 10

Sheet Metal Work: Introduction – Equipments – Tools and accessories – Various processes (applications, advantages / disadvantages). **Welding:** Types – Equipments – Tools and accessories – Techniques employed -applications, advantages / disadvantages – Gas cutting – Brazing and soldering. **Lathe Practice:** Types - Description of main components – Cutting tools – Work holding devices – Basic operations. **Simple Problems**. **Drilling Practice:** Introduction – Types – Description – Tools. S**imple Problems**.

TOTAL 30

REFERENCES

1. Kumar, T., Leenus Jesu Martin and Murali, G., *Basic Mechanical Engineering*, Suma Publications, Chennai,2007.
2. Prabhu, T. J., Jai Ganesh, V. and Jebaraj, S., *Basic Mechanical Engineering*, Scitech Publications, Chennai, 2000.
3. Hajra Choudhary, S.K. and HajraChoudhary, A. K., *Elements of Workshop TechnologyVols. I & II*, Indian Book Distributing Company Calcutta, 2007.
4. Nag, P.K., *Power Plant Engineering*, Tata McGraw-Hill, New Delhi, 2008.
5. Rattan, S.S., *Theory of Machines*, Tata McGraw-Hill, New Delhi, 2010.

<table>
<tr><th colspan="13">15ME101–BASIC MECHANICAL ENGINEERING</th></tr>
<tr><td colspan="2">Course designed by</td><td colspan="11">Department of Mechanical Engineering</td></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Student Outcome</td><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>g</td><td>h</td><td>i</td><td>j</td><td>k</td></tr>
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<tr><td>2</td><td>Mapping of instructional objectives with student outcome</td><td>1, 2, 3</td><td></td><td></td><td></td><td>1, 2, 3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Category</td><td>GENERAL (G)</td><td colspan="3">BASIC SCIENCES (B)</td><td colspan="3">ENGINEERING SCIENCES AND TECHNICAL ART (E)</td><td colspan="4">PROFESSIONAL SUBJECTS (P)</td></tr>
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<tr><td>4</td><td>Approval</td><td colspan="11">23rd meeting of the Academic Council , May 2013</td></tr>
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