

NIRMA UNIVERSITY
INSTITUTE OF TECHNOLOGY, SCHOOL OF ENGINEERING
B Tech in Mechanical Engineering
Semester VI

L	T	P	C
3	0	0	3

Course Code	2ME602
Course Title	Machine Design - II

Course Outcomes (CO):

After successful completion of the course, student will be able to-

1. design power transmission elements and systems,
2. design material handling equipment,
3. make use of the design concepts for IC engine components,
4. select rolling contact bearings and design sliding contact bearings.

Syllabus

45

Total Hours:

UNIT - I	Design of power transmission elements	16 hours
	Design of belt drives, selection of flat and V- belts, design of pulleys. Design of gear drives - spur, helical, bevel and worm gear drives. Rating of gears as per I.S. and AGMA standards.	
UNIT - II	Design of gear boxes	05 hours
	Types of gear boxes, Design of single and multistage speed reducers. Design of machine tool gear boxes using preferred numbers.	
UNIT - III	Design and selection of bearings	08 hours
	Rolling contact bearings, Classification and selection, factors affecting bearing Life. Design of hydrodynamic journal bearings. Classification, material selection, Sommerfeld number and use of charts for the estimation of minimum film thickness, temperature rise, flow quantity etc.	
UNIT - IV	Design of IC engine components	10 hours
	Design of IC engine cylinder, design of piston and associated component, design of connecting rod, design of crankshaft, design of valve gear mechanism.	

UNIT - V Design of material handling devices

06 hours

Selection of steel wire rope for hoists and cranes, crane hooks, design of hook block, sheaves and rope winding drums.

Self – Study The self-study contents will be declared at the commencement of semester.
Around 10% of the questions will be asked from self-study contents.

Suggested Readings:

1. Bhandari V..B., Design of Machine Elements, Tata McGraw Hill
2. Shigley, Budnyas, Nisbett, Mechanical Engineering Design, Tata McGraw Hill
3. Norton R.L., Machine Design, Pearson Education
4. Juvinal R. C., Marshek K. M., Fundamentals of Machine Component Design, John Wiley & Sons
5. Mehta N. K., Machine Tools Design and Numerical Control, Tata McGraw Hill Education
6. Apple J. M., Material Handling System Design, John-Wiley and Sons Publication.

L=Lecture T= Tutorial P=Practical, C=Credit

w.e.f. academic year 2020-21 and onwards