

Course Code	ME 328
Course Title	Machine Design
No. of Credits	3
Pre-requisites	ME 222 or ME 209
Compulsory/Optional	Compulsory for the Design track under Mechanical Engineering stream /Optional for others.
Aim(s):	
To provide with an opportunity for students to be familiar with modeling, analysis, synthesis, design methodologies, and the best practices of mechanical design so that all the students will be able to carry out a comprehensive mechanical engineering design.	
Intended Learning Outcomes:	
On successful completion of the course, the students should be able to;	
<ul style="list-style-type: none"> • design mechanical systems with reference to design handbooks, local and international standards, codes practice, • select materials for machine components through multi-disciplinary considerations, • effectively communicate, orally and verbally, design solutions in a technical manner, • use the methods of designing for the assessment of quality and reliability. 	
Time Allocation (Hours) : Lectures 08 , Assignments 74	
(Notional Hours: 150)	
Course content / Course description :	
<ul style="list-style-type: none"> • Material Selection: Selection of materials as a multi-objective constrained optimization problem using software tools. • Design for Static Loading: Design of steel structures according to international standards. • Design of Mechanical Systems: Design against combined stresses, Fatigue loading and wear, Analysis for static and dynamic loading of mechanical systems with gear drives, Belt drives, Pneumatic and hydraulic systems, Actuator selection and control. Reliability and failure, Risk assessment, Preliminary hazard analysis, Failure modes and effects analysis and quality control. Communication of design solutions. • Design of Welded Connections: Metallic and non-metallic welding processes, Types of welded joints, working stresses in welds, Strength of welds welding design procedures. 	
Recommended Texts (if any) :	
<ul style="list-style-type: none"> • Cleghorn, W. &Dechev, N. (2014). <i>Mechanics of Machines</i> (2nd Edition). Oxford University Press, Oxford , UK. • Singhose, W. & Donnell, J. (2012). <i>Introductory Mechanical Design Tools</i> (1st Edition). Lulu Press, Inc, Morrisville, North Carolina.USA. • Budynas–Nisbett (2008). <i>Shigley’s Mechanical Engineering Design</i> (8th Edition). McGraw Hill, New York, USA. • Kilian, C. T. (2001). <i>Modern Control Technology: Components and Systems</i> (2nd Edition). Delmar Thomson Learning, New York, USA. 	

Assessment	Percentage Mark
In-course <u>Tutorials/Assignments/Quizzes/Practicals/ Written reports/Oral Presentations/Viva</u> Mid Semester Examination: Written reports/Oral Presentations	100 -
End-semester evaluation:	-