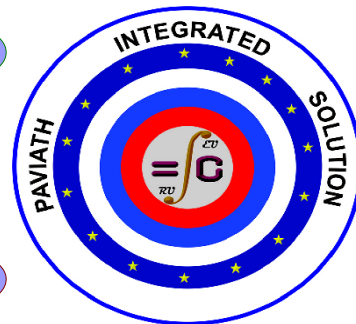


ISO/GOST/EN/DIN

SEMESTER UNITS

REFERENCE BOOKS



POLYTECH - AICTE - UNIVERSITY

## INTERNSHIP SYLLABUS

MECHANISM

MACHINE ELEMENT

STRUCTURAL

### III. DESIGN OF MACHINE ELEMENTS

- ◆ SYLLABUS PROGRAM
- ◆ DESIGN OF MACHINE ELEMENTS
- ◆ MECHANICAL ENGINEERING
- ◆ SEMESTER VI (THIRD YEAR)
- ◆ ENGINEERING CODE PCC-ME 308

ACADEMIC SYLLABUS

INDUSTRY DB/APPLN

PROFESSIONAL COACH

DEGREE/DIPLOMA\*

COURSE SEMESTER

- ◆ OBJECTIVE OF COURSE
- ◆ COURSE CONTENTS
- ◆ COURSE OUTCOMES
- ◆ REFERENCE BOOKS

#### OBJECTIVE

- THIS COURSE SEEKS TO PROVIDE AN INTRODUCTION TO THE DESIGN OF MACHINE ELEMENTS COMMONLY ENCOUNTERED IN MECHANICAL ENGINEERING PRACTICE, THROUGH
1. A STRONG BACKGROUND IN MECHANICS OF MATERIALS BASED FAILURE CRITERIA UNDERPINNING THE SAFETY-CRITICAL DESIGN OF MACHINE COMPONENTS
  2. AN UNDERSTANDING OF THE ORIGINS, NATURE AND APPLICABILITY OF EMPIRICAL DESIGN PRINCIPLES, BASED ON SAFETY CONSIDERATIONS
  3. AN OVERVIEW OF CODES, STANDARDS AND DESIGN GUIDELINES FOR DIFFERENT ELEMENTS
  4. AN APPRECIATION OF PARAMETER OPTIMIZATION AND DESIGN ITERATION
  5. AN APPRECIATION OF THE RELATIONSHIPS BETWEEN COMPONENT LEVEL DESIGN AND OVERALL MACHINE SYSTEM DESIGN AND PERFORMANCE

#### COURSE CONTENT

- ◆ DESIGN CONSIDERATIONS ◆ LIMITS, FITS AND STANDARDIZATION ◆ REVIEW OF FAILURE THEORIES FOR STATIC AND DYNAMIC LOADING (INCLUDING FATIGUE FAILURE) ◆ DESIGN OF SHAFTS UNDER STATIC AND FATIGUE LOADINGS ◆ ANALYSIS AND DESIGN OF SLIDING AND ROLLING CONTACT BEARINGS ◆ DESIGN OF TRANSMISSION ELEMENTS SPUR, HELICAL, BEVEL AND WORM GEARS; BELT AND CHAIN DRIVES ◆ DESIGN OF SPRINGS HELICAL COMPRESSION, TENSION, TORSIONAL AND LEAF SPRINGS ◆ DESIGN OF JOINTS: THREADED FASTENERS PRELOADED BOLTS AND WELDED JOINTS ◆ ANALYSIS AND APPLICATIONS OF POWER SCREWS AND COUPLINGS ◆ ANALYSIS OF CLUTCHES AND BRAKES

#### COURSE OUTCOMES

- UPON COMPLETION OF THIS COURSE, STUDENTS WILL GET AN OVERVIEW OF THE DESIGN METHODOLOGIES EMPLOYED FOR THE DESIGN OF VARIOUS MACHINE COMPONENTS.

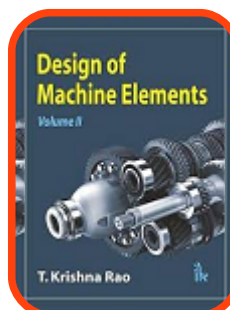
#### REFERENCE BOOKS

- [1] SHIGLEY, J.E. AND MISHKE, C.R., MECHANICAL ENGINEERING DESIGN, FIFTH EDITION, MCGRAW-HILL INTERNATIONAL; 1989.
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- [3] JUVINAL, R.C., FUNDAMENTALS OF MACHINE COMPONENT DESIGN, JOHN WILEY, 1994.
- [4] SPOTTES, M.F., DESIGN OF MACHINE ELEMENTS, PRENTICE-HALL INDIA, 1994.
- [5] R. L. NORTON, MECHANICAL DESIGN - AN INTEGRATED APPROACH, PRENTICE HALL, 1998

APM CAM/APM PLAIN  
APM SCREW/APM STRUCTURE3D  
APM DYNAMICS/APM BEAM  
APM GRAPH/APM STUDIO  
APM DRIVE/APM TRANS  
APM SHAFT/APM BEAR  
APM JOINT/APM SPRING

#### SAM

(SYNTHESIS ANALYSIS MECHANISM)  
GENERAL - DESIGN WIZARDS -  
MODELLING - INPUT MOTION -  
CAD INTERFACE - ANALYSIS -  
RESULTS - POST-PROCESSING  
- OPTIMIZATION - TUTORIALS



#### SOFTWARE

APM WINMACHINE  
SAM  
SALTIRE  
VARICAD  
KOMPAS 3D

<http://www.paviathjobportal.com/index>

[info@paviathintegratedsolution.com](mailto:info@paviathintegratedsolution.com)

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ONLINE INTERNSHIP