

課號：522 U5280

類別：知識領域 選修課程

授課教師：黃元茂

學分：3

課程名稱：機械元件設計

英文名稱：Machine Elements Design

適修年級：大三、大四

課程大綱：

Machine elements are used in various devices. To understand machine elements and their background in the areas of fatigue loading and reliability is important for their designs and applications. The objective of this course is to enhance the student's background in the design and functions of machine elements. The course focuses on the following topics:

1. background:
 - a. interactive computer program – to learn writing an interactive computer program to improve the accuracy and speed of machine element design and improve quality life of engineers
 - b. tolerance and fitting – to learn tolerance and fitting of element design, to assure the quality and cost reduction of design
 - c. preferred number – to learn the system of preferred number and to assure the quality and cost reduction of design
 - d. material selection – to learn the selection of material to assure the quality and cost reduction of design
2. statistical consideration – to provide and improve background for reliability and fatigue analysis of machine elements
3. stochastic analysis and reliability – to provide and improve background for reliability and fatigue analysis of machine elements
4. fatigue loading of machine elements
 - a. reliability effect
 - b. stress concentration effect
 - c. cumulative fatigue damage
 - d. bolt fatigue loading
 - e. shaft fatigue loading
 - f. bearing reliability on load capacity
 - g. belt fatigue
 - h. spring fatigue loading
 - i. gear fatigue

課程說明：

本課程是接續機械設計原理之課程，重點以機械、元件變動負載的設計，並

深入介紹相關機械元件之設計與其功能特性，加強實際設計所需之學識，交談式電腦程式，公差與配合、優先數字、材料選擇、統計考量、可靠度、與各種零件的變動負載、包含螺栓、軸、軸承、皮帶、彈簧與齒輪的設計，作業則著重於實際設計之練習。

預修課程：材料力學、機動學、工程圖學(上)(下)、機械設計原理

教科書：

1. 黃元茂, 2000, "機械設計", 上冊二版, 高立圖書公司
2. 黃元茂, 1995, "機械設計", 下冊, 高立圖書公司

成績評量方式：

作業與設計專題((100%))

注意事項：