



Course Name	Mechanical Principles and Design
Course Director	REN Aihua, Liu Qiang, Sun Guoxing
Major	Mechanical Engineering, Automotive Engineering
Objective	To have students know the basic theory and basic knowledge and skills needed in simple mechanisms synthesis, kinematics and dynamic analysis of machinery. To have students know the way of designing common parts. To have students choose machinery motion patterns, analyze and synthesize mechanisms and develop designs for practical working machinery.
Semester	4th
Language	English
Learning/Teaching methods	Lecture/Exercises and self-study /Experiment
Hour	Lecture48h, Exercises and self-study 60h
Credit	4.0
Prerequisite	Advanced Mathematics, College physics, Theoretical Mechanics, Descriptive Geometry and Mechanical Drawing, Fundamentals of Computer
Content	<ol style="list-style-type: none"> 1. DOF of Planar Mechanism (3h) 2. Linkage Mechanism and Cam Mechanism(4h) 3. Intermittent Mechanism (2h) 4. Screw and Key (6h) 5. Belt and Chain Drive (6h) 6. Gear and Worm Gear (15h) 7. Gear Train (2h) 8. Shaft and Bearing (6h) 9. Coupling, Clutch, Brake (2h) 10.Spring(2h)
Grade/Exam	The course grade will be determined by the performance on the homework assignments (40%), and the final examination (60%).
Reference	<ol style="list-style-type: none"> [1] Ye Zhonghe, Lan Zhaohui, M.R. Smith. Mechanism and Machine Theory [2] Homer D. Eckhardt. Kinematic Design of Machines and Mechanisms [3] Robert L. Norton. Design of Machinery: An introduction to the synthesis and Analysis of Mechanisms and Machines [4] Pu LiangGui Machine design [5] Qiu XuanHuai Machine design [6] Ansel C.Ugural.Mechanical Design [7] M.F.Spotts, T.E. Shoup, L.E. Hornberger. Machine elements