Semester	Fall 2022
Course Number	ME1029
Course Title	Mechanical Design 2
Instructor	Professor Xiangyun. Li, Ph.D. Office: TBD E-mail: lixiangyun@scupi.cn
Office Hours	Friday 1:00-4:00PM
Teaching Assistant	Zhengwei Wang E-mail: 531792151@qq.com
Lecture Time/Room	Wednesday 13:50-16:25AM Zone 4-203
Prerequisites	MEMS 1028 Mechanical Design 1 MEMS 0024 Intro to ME Design
Textbook	Shigley's Mechanical Engineering Design by Richard G. Budynas and J. Keith Nisbett, 11th edition, McGraw-Hill Education, 2020.
Course Description	This course is a 3-credit hour class. It is an advanced study with focus to introduce elements frequently used in mechanical designs. As the class evolves, students will develop (1) functionality understanding of components in static and dynamic mechanical applications, (2) thought process in the decision of selecting components for the targeted applications, and (3) analysis and synthesis methodologies for evaluation of the structural risks of the selected components. Students will involve in an extensive final design project in this class. Students will individually compete to develop a design for a product, applying structured design practices to real hardware. Students will apply the learned knowledge to size their designs, deliberate the pros and cons of their designs, and systematically draw conclusions per analytical opinions.

Course Outline

Session	Class Date	Chapter	Topics	Homework
1	Aug 31	Ch.3.16, 7.8	LN00 Course Overview LN01 Press Fit Design	HW01
2	Sep 07	Ch.3.16, 7.8 5.3 – 5.5, 5.7	LN01 Press Fit Design LN02 Static Failure	HW02
3	Sep 14	Ch.06	LN03 Review: High-Cycle Fatigue Design	HW03
4	Sep 21	Ch.06 Ch.07	LN03 Review: High-Cycle Fatigue Design LN04 Shafts and Shaft Components (7-4 Shaft Design for Stress)	HW04
5	Sep 28	Ch.07	LN04 Shafts and Shaft Components (Resume from 7-4 Shaft Design for Stress)	HW05
6	Oct 05	Ch.11	LN07 Rolling Contact Bearings	HW06
7	Oct 12	Ch.11	LN07B Tapered Roller Bearings; Direct/Indirect Mount; Hertzian Contact	HW07
8	Oct 19		Midterm Exam 01	
9	Oct 26	Ch.12	LN06A Lubrication & Journal Bearings	HW08
10	Nov 02	Ch.12	LN06B Lubrication & Journal Bearings	HW09
11	Nov 09	Ch.08	LN05A Nonpermanent Joints	HW10
12	Nov 16	Ch.08	LN05B Nonpermanent Joints	HW11
13	Nov 23	Ch.08 Ch.11	LN05C Nonpermanent Joints LN08A Gear Fundamentals	HW12

14	Nov 30		Midterm Exam 02	
15	Dec 07	Ch.11	LN08A Gear Fundamentals	HW13
16	Dec 14		LN08B Spur Gear Design Analysis	HW14
17	Dec 28		LN08B Spur Gear Design Analysis	

Homework	Problem sets will be distributed each week after the class. Each problem set is designed to build upon the material covered in the preceding lectures and recitations. Homework assigned in a particular class is due at 8 AM on the day of the next class period, unless otherwise posted. Late HW will not be accepted. HW missed due to unforeseeable emergencies will be handled on a case-by-case basis.
Exams	Two midterm exams Midterm exams will be fast-paced and computation-intensive. Purpose is to test student's proficiency and familiarity with the section contents. The exams in this course will be closed-book and open-note (one page, A4 size). No make-up will be given for the missing exam. Exams missed due to unpredictable events will be dealt with on a case-by-case basis.
Exam Calculator	Don't forget to bring one to the exams. You will need it. No programmable calculator of any kind is permitted in ME exams. Students can use their calculator of choice for other assignments.
Grading	Homework assignment: 15% Two midterm exams (2 x 25): 50% One final design project: 35% 附件：等级成绩和百分成绩、绩点对照表
Class Attendance	Students are expected to attend every class period. Early is on time, on time is late. As a courtesy to your fellow classmates, be punctual and arrive no later than the class starting time.
Academic Honesty	All of us are equally responsible for ensuring a fair and positive learning environment. Students are permitted to discuss homework assignments together, but should do their own work when preparing a problem solution. All exams are to be completed without unauthorized assistance. Any student caught cheating on an assignment or exam will receive disciplinary action, up to and including receiving a grade of "F" for the course.

字母等级	A	A-	B+	B	B-	C+	C	C-	D+	D	F
中文等级	优秀		良好		中等		合格				不合格
百分制	100~90	89~85	84~80	79~76	75~73	72~70	69~66	65~63	62~61	60	<60
绩点	4	3.7	3.3	3	2.7	2.3	2	1.7	1.3	1	0