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**Statics and Mechanics of Materials I****Spring 2022****Syllabus**

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**CATALOG DESCRIPTION**

First of a two-course sequence covering statics and strength of materials. Topics covered include: concurrent force systems, equilibrium, axial loading, stress, strain, deformation, moments, equivalent systems, centroids, centers of mass, and distributed loads, free-body diagrams, equilibrium of rigid and deformable bodies, plane trusses, frames and machines, equilibrium in 3D, torsion and friction. Use is made of computers for problem solving.

**Prerequisite:** MATH 0150 or 0230 or 0231 or 0235 and PHYS 0150 or 0174 or 0201 or 0475. 3 credit hours.

**Instructor:** Qi, Gang PhD

**Textbook:** Statics and Mechanics of Materials: An Integrated Approach (2<sup>nd</sup> Edition), W. F. Riley,  
L. D. Sturges, and D. H. Morris, Wiley, ISBN – 978-0-471-43446-7

**Classroom:** 江安文科楼三区 104

**Office:** 4-219;

**Email:** gang.qi@scupi.cn

**Office hours:** 9:00 – 10:00 am and 1:30 – 3:00 pm Thu and 9:00 – 10:00 am Fri.

**Teaching Assistant:** Li, Lyn

*(Modifications to this syllabus may become necessary during the semester. Any changes to the syllabus shall be posted on the course website and announced in class)*

## Prerequisites

MATH 0230 Analytic Geometry & Calculus 2

PHYS 0174 Basic Physics for Science & Engr. 1

## Class Format

The teaching format of this course is lecture + inclass exercise. The lectures include introducing the concepts, the commands, text materials, and questions. There will be ~20 min for students to solve inclass exercises as a part of class activities.

## Assignments

There are two parts of assignments: Inclass Exercises and Homework every week. Both must be submitted in clear electronic writeups.

**Inclass exercises:** These problems are introductory. Students are required to complete them use a good part of the class period time while instructor is present. The scores of these problems are based the completeness not the correctness as the instructor will address most of them in the following class.

**Homework:** Students are required to complete these assignments individually and submit an electronic writeups at no later than the midnight before the next class. For instance, the due day is the midnight of following Monday (24:00).

## **Plagiarism and Academic Misconduct**

Plagiarism, copying, and any other form of academic misconduct or dishonesty will not be tolerated. Cite all references, such as books, technical reports, and web sites you have used. You may discuss the homework with other people currently taking this class, the instructors, and any teaching assistants.

## **Course Topics and Calendars:**

Session	Chapter	Topic	Assignment
1	1	Basic Concepts, Newton's Law Units, Dimensions, Numerical Results	HW Set 1
2	2	Vectors, Force systems	HW Set 2
3	2	Triangle and Cartesian Resultant	HW Set 3
4	3	Equilibrium of Concurrent Force Systems	HW Set 4
5	4.1 - 4.5	Stress and Strain under Axial Loading Stress-Strain Diagram and Hooke's Law	HW Set 5
6	4.6-4.11	Thermal Effect Deformation under Axial Loading	HW Set 6
7	<b>Interm Exam 1</b>		
8	5.1-5.5	Moments	HW Set 7
9	5.6-5.8	Equivalent Systems, Centroids, Center of Mass, and Distributed Loads	HW Set 8
10	5.9-5.11	Centroids of Composite Bodies Distributed Loads on Structural Members	HW Set 9
11	<b>Interm Exam 2</b>		
12	6.1-6.3	Free-Body Diagrams, Equilibrium of Rigid and Deformable Bodies	HW Set 10
13	6.4-6.5	Frame & Machines Statically Indeterminate Problems	HW Set 11
14	6.6-6.9	Plane Truss, Equilibrium in 3D and Friction	HW Set 12
15	7.1-7.4	Torsion	HW Set 13
16	7.5-7.8	Torsion	HW Set 14
17		Review	
18	<b>Interm Exam 3</b>		

## Grading:

- Homework Assignments 10%
- Inclass Exercises 5%
- One open end design project 5%
- Three Interm exams 80%

Numerical and letter scales conversion

Letter	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Percentage (%)	100~90	89~85	84~80	79~76	75~73	72~70	69~66	65~63	62~61	60	<60

Your HW assignments will be graded by the TA of your section. If you believe an error has been made in the grading of an assignment, you are to bring it to the attention of the TA within ONE WEEK after grading.