50:750:253 MECHANICS I, Rutgers University Camden

Topics
This course is the first part of the two-semester mechanics in the engineering sequence, covers the subject "statics". Topics this semester includes: review of vector algebra and multi-variable calculus, review of Newton's Laws, two-dimensional and three-dimensional force systems, equilibrium in two and three dimensions, statics of structures, statics involving distributed forces, friction, virtual work.

Specific Learning Goals
Students will gain proficiency in 3D vector algebra, and be able to view any real-world object and system in 3D mathematical framework; Students will refresh their previous knowledge of forces and moments, expand further to concepts such as couples and wrenches, and will be able to simplify any given 2D or 3D force-couple systems to the irreducible form; Students will be able to solve any given 2D or 3D equilibrium problems by setting up linear equation sets and solving by hand or by computer programs; Students will practice and gain proficiency in multi-variable calculus especially integration with various coordinate systems, and apply to solve rigid-body systems involving distributed forces, such as center of mass of a rigid-body with arbitrary shape and mass distribution, beams with various loads, chains with nonnegligible weight, etc..

Instructor
Dr. Jiantao Kong, Department of Physics, email: jk1729@rutgers.edu

Lecture Time and Location
Wednesdays 6pm~8:50pm, CNS 213

Office Hours
Tuesday and Thursday 3:30pm~5:30pm, CNS 216G, and by appointment.

Textbook
Engineering Mechanics, Volume 1, Statics, by Meriam, Kraige and Bolton, 9th edition, Wiley. Hard copies (not required) can be purchased from the University Bookstore; Digital copies work totally fine.

Course Website
Canvas, where all course materials such as lecture slides, lecture recordings, and homework assignments will be posted.

Homework Assignments
Problems will be selected from the textbook and other sources, approximately weekly posted on Canvas, due date will be specified each time. Students solve the problems on paper sheets, take pictures or scans and upload to the Canvas-Assignments link as submission. (Or work directly on digital files, better!)

Two Midterm Exams
In-class, close-book, first in late-February covering textbook chapters 1 2 and 3, second in early April covering textbook chapters 4 and 5. A guide will be provided before each exam. A self-prepared hand-written one-sided A4 equation sheet will be allowed and expected.

Final Exam

Comprehensive, in the final exam week, covering all materials discussed in the semester (chapters 1~7). A self-prepared hand-written two-sided A4 equation sheet will be allowed and expected.

Grades
midterm1 (20%) + midterm2 (20%) + homework (20%) + final (30%) + attendance (10%)

>90.0	>86.0	>80.0	>76.0	>70.0	>60.0	
A	B+	B	C+	C	D	F

[Academic Integrity](#) (click to view the University Policy)
For homework assignments, discussions and group studies are allowed and encouraged, but the work you submit should be absolutely your own, NO COPYING. For exams, no communication is allowed, any evidence of cheating would have to be reported to the University.

Accommodations
Please feel free to talk to me and to the Office of Dean of Students, and it will be offered with University authorization.

This syllabus might be revised and updated on Canvas without further notice.
THE END