Welcome!

to Mechanical Engineering 200

Statics

Fall 2014 SDSU

Dr. C. Alex Simpkins

Outline

- Course Description
- Examples
- Grading
- Course Policies
  - Complete the course policies agreement available on the Blackboard website
- About Dr. Simpkins

ME 200 Statics

You will learn about:

- Forces experienced between objects (tension, friction)
- How forces balance under equilibrium conditions
- Mathematics of linear systems
- Engineering case study examples

This course will help you to:

- Analyze the mechanics of structures
- Solve engineering problems
- Realize new design opportunities
- View the world from new perspective!

ME 200 Statics

Student Learning Outcomes

SLO#1: Represent of physical quantities using vector notation, compute magnitude and direction of a vector, add vector quantities and resolve vectors into components.
SLO#2: Compute moments caused by planar and 3-D forces acting on rigid bodies
SLO#3: Compute equivalent forces and couples that can replace given system of loading
SLO#4: Draw a correct and complete free body diagram (FBD) of forces and moments acting on a structure.
SLO#5: Compute support reactions of planar and 3D structures under static loading
SLO#6: Analyze truss structures using method of joints and the method of sections.
SLO#7: Calculate the internal forces in frame structures, and mechanisms.
SLO#8: Compute and sketch shear and bending moment distribution diagrams for beams.
SLO#9: Calculate static equilibrium conditions for rigid bodies with friction forces included.
SLO#10: Calculate the centroid and the moment of inertia of lines, areas, and 3D objects using integrations (for continuum shapes) and summation methods (composite shapes)

So what does this mean?
EXAMPLES


So why bother with all this effort?

But also…
MORE EXAMPLES


Boston Dynamics

LECTURES

Instructor: **Dr. C. Alex Simpkins**

Time: **Tues and Thurs 9:30 -10:45 am**

Location: **HH-130**

Activities:

- Present new material
- Announce reading and homework
- Solve example and homework problems
- Take exams*

*Make-ups given only for emergencies.

*Discuss potential conflicts beforehand.

AVAILABILITY OF ASSISTANCE

INSTRUCTOR : Dr. Simpkins

- Office Hours: TBA (Discuss Tue, Th, Fr)
- Office Location: TBA (Starbucks?)
- Email: casimpkins@gmail.com

TEACHING ASSISTANT : TBA

- Homework and review sessions announced on Blackboard and website

ACCOMODATION FOR SPECIAL NEEDS STUDENTS

- Students with disabilities who need support services should notify me ASAP via email or in person
- SDSU Disability services

COURSE MATERIALS I

Required materials:

- *Engineering Mechanics: Statics*
  R.C. Hibbeler, 13th edition, Pearson Publishers (2010)
- *MasteringEngineering Software Access*
  http://www.masteringengineering.com

Blackboard website:

- Announcements and course syllabus
- Lecture Slides (PDF format)
- Homework and Reading Assignments

COURSE MATERIALS II

Course Website:
http://casimpkinsjr.radiantdolphinpress.com/pages/statics_sdsu_fa2014/

- Syllabus
- Handouts
- Assignments (mirrored on blackboard)
- Lecture slides and examples
- Links to other web resources

Text Website: http://www.pearsonhighered.com/

- Complete solutions to selected problems
- Links to other web resources

GRADING

- Exams 80%
  - 4 exams, 200 points (20%) each
- Blackboard quizzes 20%
  - Best 8 of 10 count toward grade
  - 25 points each (max total of 200 points)
- *Bonus – two assignments for feedback +5%*
- Grading Scale (fill the bucket - based on total score of 1000 pts)
  - Standard scale: 90% is A- or above, 80% is B- or above, 70% is C- or above, <70% D or below
  - Scaling (up if necessary but not down)
  - Based on points only – fill the bucket!
  - Grade point opportunities

EXAMS

- Four exams
  - Exam 1 Thurs., TBA
  - Exam 2 Thurs., TBA
  - Exam 3 Thurs., TBA
  - Exam 4 Thurs., TBA
- 200 points each
  - Closed book
  - Based on homework problems, quiz problems and problems solved in class
  - Can use one 8-1/2 x 11 sheet, double-sided page of notes for your exam
  - No makeup exams without formal documentation of absence (medical, family)

Exam Policy

1. Place your backpack in the front of the room.
2. You may have a calculator and pens/pencils ONLY. No headphones, cell phones, iPods can be used during the exam.
3. Keep your eyes on your own paper.
4. Raise your hand if you have a question.
5. Attach all papers together when finished.

ONLINE QUIZZES

- Administered within Blackboard
- Quiz topics cover reading concepts and problems similar to text
- Do the homework problems BEFORE taking the quiz, but do not submit for grading
- Sample quiz slide show available on Blackboard
- Quiz Format:
  - 60 minutes
  - 25 points each (4-6 questions based on homework and reading)
  - 10 quizzes given, highest 8 counted for grade
  - Available only until the night before the next exam. Do not wait until the last night to take the quiz – if you have technical problem with Blackboard on the last quiz day, WE CANNOT HELP YOU!
  - Read directions carefully! No backtracking, do not save, two tries with most recent score entered into gradebook
  - Many different questions for each topic picked at random by Blackboard; unlikely to have the same quiz as your friends

HOMEWORK

- Homework problems for each chapter assigned from book but are not graded
- Solutions available in MasteringEngineering; tutorials also
- Online quizzes
  - Based on Mastering Engineering
  - 25 points each
  - 10 quizzes given, highest 8 counted for grade
  - Available only until the night before the next exam

COURSE POLICIES

1. You may not use cell phones, iPods, laptops or any other electronic equipment during class. If you have an emergency situation, put your phone on vibrate and take any calls outside in the hallway. During an exam you must relinquish your phone when you leave to use the restroom.
2. You are expected to read the text and pay attention in class. Sleeping or talking in class will not be tolerated.
3. It is expected that you have basic math skills, including how to integrate and differentiate, as these skills will be needed to do the homework and exams.
4. Please treat the instructional team with respect as we respect you. We are here to help you learn!
5. You will need access to and familiarity with the SDSU Blackboard website, http://blackboard.sdsu.edu, as it will be used as part of the organization of this course. You should check it often for announcements, grades, lecture notes and other documents which will be posted to the site, as well as the main website.
6. Only University approved excuses for absences will be approved. The schedule for the entire semester is given on the first day of class, so students should plan accordingly. If you wish to request an excused absence on an exam date, please provide your request to be excused in writing along with any required documentation in advance, or immediately upon your return in a medical emergency.

ACADEMIC DISHONESTY

- *Cheating of any form including plagiarism (defined by the University in the 2012/2013 General Catalog, page 478) constitutes a serious offense. Cheating will not be tolerated, and evidence of cheating by a student will result in an automatic "F" as the student's grade and reported to the Judicial Procedures Office*
- *It is expected that you will study collaboratively, working through homework solutions and discussing concepts. However, you must complete the quizzes and exams on your own and not with your friends.*

YOU MUST SIGN A COURSE POLICIES AGREEMENT

- Please review the course policies agreement on the Blackboard website carefully, print a copy, sign and bring to class
- This must be completed in order to take the first exam

ADD CODES

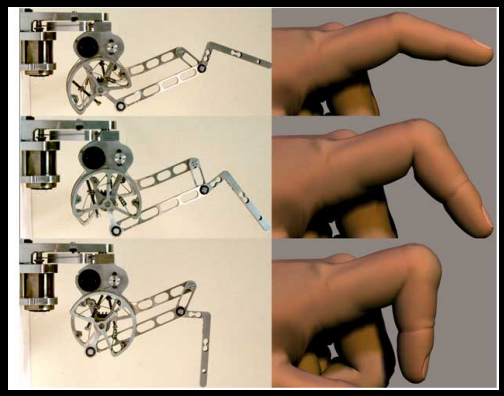
- Prerequisites are being enforced!
  - All registered students MUST show proof of prerequisites in order to remain in the course
  - AE 200 is an equivalent course and has many seats available
  - NOTE: Do not send an email to the instructor or TA providing your reasons for wanting an add code

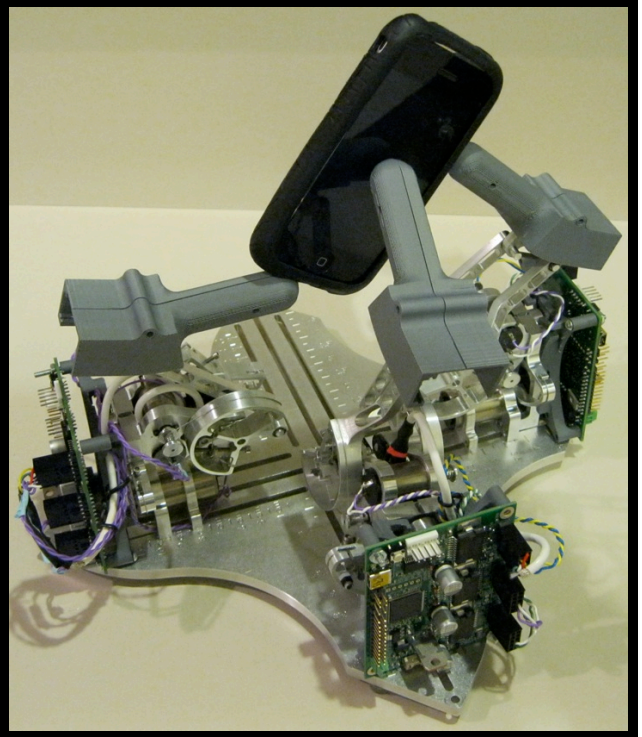
INSTRUCTOR

- Dr. C. Alex Simpkins
  - Lecturer in Mechanical Engineering
  - Consultant, CEO RDPRobotics, LLC
- Teaching Expertise
  - Mechanics, Dynamical systems and control
  - Design, mechatronics, cognitive science/ psychology/neuroscience

INSTRUCTOR

- Research
  - Biomimetic robotics
  - Locomotion/manipulation
  - Learning systems
  - Haptics and vibration
  - System identification and robust and optimal control
  - Rapid prototyping, design and embedded systems
  - Etc☺





Interesting

- http://www.physicsclassroom.com/class/vectors/u3l3c.cfm#statequil
- Beginning is interesting: http://www.youtube.com/watch?v=CQJTIls_u7w
- http://www.teachertube.com/viewVideo.php?video_id=191909

Overviews

- Blackboard Online Quiz
- Mastering Engineering Problems/ Solutions

ANY QUESTIONS?

Have a good semester!