

MENG 383S

Mechanical Engineering III: Dynamics

Instructor: Corey O’Hern, Professor of Mechanical Engineering & Materials Science, Applied Physics, Physics, and Computational Biology & Bioinformatics
Mason Lab, Room 203
Phone: 432-4258
Email: corey.ohern@yale.edu

When: MW 6:00P-9:15P

Where: Remote via Zoom

Office Hours: any time, best to make an appointment first via email

TA: Yuxuan Cheng (5th year Ph.D. student in Physics;
yuxuan.cheng@yale.edu)

Problem-Solving Sessions: twice each week, conducted by teaching fellow, attendance monitored and strongly encouraged

Course Textbooks:

(primary) Stephen T. Thornton and Jerry B. Marion, “Classical Dynamics of Particles and Systems”, 5th Edition, Brooks & Cole 2005 (Yale Bookstore and on reserve)

<https://tinyurl.com/MENG-383-1-A18>

(secondary) Anthony Bedford and Wallace Fowler, “Engineering Mechanics: Dynamics”, 4th Edition, Prentice Hall, 2005 (Yale Bookstore and on reserve)

Topics:

1. Units, Newtonian Gravitation (week 1)
2. Motion of a Point (week 1)
3. Force, Mass, and Acceleration (week 2)
4. Energy Budget (week 2)
5. Momentum Budget (week 2)
6. Planar Kinematics of Rigid Bodies (week 3)
7. Planar Dynamics of Rigid Bodies (week 3)
8. Energy and Momentum Methods in Rigid-Body Dynamics (week 3)

9. 3D Kinematics and Dynamics of Rigid Bodies (week 4)
10. Vibrations and Nonlinear Dynamics (week 5)

Grading:

1. Weekly homework assignments (20%)
2. Class Participation (20%)
3. In-class mid-term exam (30%); Monday, July 19
4. In-class end-term exam (30%); Wednesday, August 2

Statement on Academic Integrity: Students are allowed to collaborate on homework assignments, however, each student should write up and turn in their own homework assignments. The exams are not collaborative and will be proctored by the instructor. See additional guidance at <http://ctl.yale.edu/writing/wr-instructor-resources/addressing-academic-integrity-and-plagiarism>.