

Department of Systems Engineering
Donaghey College of Engineering and Information Technology

SYEN 3371 Engineering Dynamics

Instructor: Dr. Andrew Wright EIT 522
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Prerequisite: SYEN/CNMG 2270. Engineering Statics

Course Description: Kinematics and kinetics of particles, systems of particles, and rigid bodies; energy and momentum methods; mechanical vibrations and resonance; introduction to structural dynamics due to time-varying loads, such as wind and seismic loading. Three hours lecture. Three credit hours

Course Objectives:

1. Kinematics
2. Dynamics of Single Rigid Bodies
3. Dynamics of Multiple Rigid Bodies
4. Moment of Inertia
5. Angular Momentum

Texts, Readings, and Instructional Resources

Required Text: Bedford, Fowler, Engineering Mechanics: Dynamics, Fifth edition, Pearson Publishing, 2008.

Assignments, Evaluation Procedures, and Grading Policy

The course requirements consist of:

1. **Homework assignments (10 points):** Homework assignments will be given periodically to supplement the reading material and lectures.
2. **Written Problems (6-8) (50 points):** in-class written problems (mini-exams, roughly 15 minutes long) will be given throughout the semester (ideally every other week). The best 80% (rounded down) of these problems will be averaged to determine the percentage for this category. If 8 problems are given, then $0.8 \cdot 8 = 6.4 \rightarrow 6$ problems will be averaged.
3. **Final Exam (40 points):** A closed book, closed notes final exam will be given on the university scheduled final exam date. Students may bring a calculator.

Grades (points gained/100 points)

A \geq 90 > B \geq 80 > C \geq 70 \geq 60 > F

Attendance will be taken periodically. If a student misses 15% of classes his/her final grade will be reduced by one letter grade (i.e., from A to B or B to C). Students who do not attend more than 50% of

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classes during the first eleven days of class may be administratively dropped from the course at the discretion of the instructor.

A student who misses more than 25% of classes will receive a final course grade of an F and may be administratively withdrawn at the discretion of the instructor.

Tardiness is disruptive, so please be respectful of your peers and instructor and get to class on time. If you are tardy, please come into the room quietly and sit in the nearest available seat to the door.

Cell phones can be disruptive. Please turn off your cell phone (i.e. airplane mode) before class. If you forget and receive a call in class, please immediately disable your ringer/buzzer and terminate the call. Do NOT answer the call and have a conversation as this may be classified as disruptive behavior.

Disruptive Behavior may result in your being administratively dropped from the class, especially if it is persistent. Persistent disruptive behaviour will also be penalized through the Class Participation grade.

Sickness or Emergency is a legitimate excuse to make up a graded assignment (attendance or exam). The student should notify the instructor in advance or provide an independent written excuse (e.g., a doctor's note) after the fact.

Make up policy: There will be no make-up exams or assignments.

Mid-Term Grades are not required by this course. They may be issued based on student's progress in the course at the mid-point, if it appears that such grades would be useful in assisting in an intervention to improve the student's chance of success in the course.

Late assignments will not be accepted. Due date for all assignments will be at the end of the class period one week after the assignment was made.

Electronic delivery of assignments will NOT be accepted in lieu of a hard-copy of the assignment. However, in extreme circumstances, the student may deliver his/her assignment electronically by the due date to avoid the late penalty. A hard copy must follow up in a reasonable time (for instance, the time it might take the post office to deliver a hard copy) and the hard copy must be identical in content to the electronic copy. The instructor will dispose of the electronic copy once the hard copy has been accepted.

Modifications to Syllabus may be made to improve delivery of the course content. The instructor will provide an updated syllabus at least one week prior to any changes taking effect and no modifications will be done within two weeks of the final exam.

Students with Disabilities: Per academic policy 501.2, the following statement must be included in all syllabi (see <http://ualr.edu/policy/index.php/5012/>)

“Students with Disabilities: Your success in this class is important to me, and it is the policy and practice of the University of Arkansas at Little Rock to create inclusive learning environments consistent with federal and state law. If you have a documented disability (or need to have a disability documented), and need an accommodation, please contact me privately as soon as possible, so that we can discuss with the Disability Resource Center (DRC) how to meet your specific needs and the requirements of the course. The DRC offers resources and coordinates

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reasonable accommodations for students with disabilities. Reasonable accommodations are established through an interactive process among you, your instructor(s) and the DRC. Thus, if you have a disability, please contact me and/or the DRC, at 501-569-3143 (V/TTY) or 501-683-7629 (VP). For more information, please visit the DRC website.”

This statement has not been prepared by the instructor of this course, but is an academic policy, so please excuse the colloquial wording (use of first and second person).