

PH 494 - SEC 101 - Spring 2012
Physical Mechanics II
Department of Physics
University of South Alabama

Instructor: Dr. Romulus Godang

- **Office Hours:** ILB 104, MWF 10:00 AM-12:00 NOON or by appointment
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Meeting Schedule

- **Class:** MWF 12:20–1:10 PM, ILB Room 250
- **Web:** <http://www.southalabama.edu/physics/lectures/godang/PH494/>

Required Text

- Thornton & Marion: Classical Dynamics of Particles and Systems (5th Edition)

Description

Second course in a two-semester sequence in classical mechanics. Topics include: moving and rotating coordinate systems. Lagrange's equation and applications, Hamiltonian formulation, inertia and stress tensors, rotations of rigid bodies and the theory of small oscillations.

General Education Competencies

This course will help the student to achieve the Critical Thinking and Quantitative Reasoning General Education competencies.

Critical Thinking: Critical Thinking is the formulation, rational scrutinizing, and/or considered assessment of information and diverse reasons for belief or action.

Quantitative Reasoning: Quantitative Reasoning is the ability to systematically analyze quantitative concepts, evidence, processes, and outcomes to reach a rational conclusion.

Attendance

Attendance in class is mandatory. It will be checked and taken. There is a bonus of 5% to the final exam for students who attend all meetings. If you miss any meeting you will not get the 5% bonus. Students are allowed to miss a maximum of two meetings. Each additional meeting that is missed will result in a final grade reduction of 1% for each missed meeting. An official record of all meetings will be kept.

Homework, Test, and Final Exam

Homework will be assigned every week. The homework is due at the beginning of class period on the day indicated. The assigned homework problems will be graded. **Late homework assignments will be accepted only under circumstances.** A penalty of 10% will be applied to homework that is submitted up to 24 hours late. No credit will be given for homework that is submitted more than 24 hours after it is due.

There are three 50-minute comprehensive tests. You must take all three tests. As per department policy, one missed test may be made up only if you have submitted a valid, written excuse to the instructor within 48 hours of the missed test. The missed test will be given at the end of semester. The missed-test problems is generally more difficult than the regular scheduled tests and it will cover all materials during the semester.

There will be a 2-hour comprehensive final exam. The final exam will cover all materials during the semester. It is a two-hours comprehensive exam. The final exam date has a fixed schedule. It will be changed in an extreme circumstances. Request for relief from three or four final exams on the same day must be submitted in a formal writing to the dean of college at least two weeks prior to the first day of exam.

The final exam will be given on Monday, May 7, 2012 at 1:00–3:00 PM.

The final grade composition (Table 1) and the grade scale (Table 2) are shown below.

Table 1: Final Grade Composition

| Source | Grade Percentage (%) |
|-------------------------|----------------------|
| Attendance | Mandatory |
| Homework | 26 |
| Three Tests at 18% each | 54 |
| Final Exam | 20 |

The final grade based on the grade composition will be calculated using the following formula:

$$Grade = 0.26 \times HW + 0.54 \times T_{ave} + 0.20 \times F_{exam}$$

where HW is the homework average, T_{ave} is the average score of all three tests, and F_{exam} is the final exam score.

Dishonesty on homework, test, and final exam will result in a failing grade.

NOTE: *Since all classes do not progress at the same rate, the instructor/professor may wish to modify the above requirements or their timing as circumstances dictate.*

Student Academic Conduct Policy

As a community of students and scholars, the University strives to maintain the highest standards of academic integrity. All members of the community are expected to exhibit honesty and competence

Table 2: Grade Scale

| Percentage (%) | Grade |
|----------------|-------------------|
| 90–100 | A |
| 80–89 | B |
| 70–79 | C |
| 60–69 | D |
| < 60 | F |
| Others | University Policy |

in academic work. This responsibility can be met only through earnest and continuing effort on the part of all students and faculty. Detail information regarding “Student Academic Conduct Policy” is available at <http://www.southalabama.edu/academicaffairs/policies.html>

Academic Disruption Policy

I expect all of you to be cordial, courteous, and respectful of faculty members and fellow students. The University of South Alabama’s policy regarding Academic Disruption can be found in The Lowdown, the student handbook.

Academic Honor Code

Any dishonesty related to academic work or records constitutes academic misconduct including, but not limited to, activities such as giving or receiving unauthorized aid in tests and exams, improperly obtaining a copy of an exam, plagiarism, misrepresentation of information, or altering transcripts or university records.

Accommodations for Disabilities

In accordance with the Americans with Disabilities Act, students with bona fide disabilities will be afforded reasonable accommodation. The Office of Special Student Services (OSSS) will certify a disability and advise faculty members of reasonable accommodations.

If you have a specific disability that qualifies you for academic accommodations, please notify the instructor/professor and provide certification from Special Student Services. The OSSS is located in Room 270 of the Student Center (460-7212).

| Date | Chapter | Topic | Homework |
|---------|---------------------|-------------------------------------|------------------------|
| 1/18 | Chapter 9 | Dynamics of a System | |
| 1/20 | | of Particles | HW 1 |
| 1/23 | | | |
| 1/25 | | | |
| 1/27 | | | HW 2 |
| 1/30 | | | |
| 2/1 | | | |
| 2/3 | | | HW 3 |
| 2/6 | Chapter 10 | Motion in a Noninertial | |
| 2/8 | | Reference Frame | |
| 2/10 | | | HW 4 |
| 2/13 | | | |
| 2/15 | | | |
| 2/17 | Test 1 | Chapters: 9-10 | HW 5 |
| 2/20 | Chapter 11 | Dynamics of Rigid Bodies | |
| 2/22 | | | |
| 2/24 | | | HW 6 |
| 2/27 | | | |
| 2/29 | | | |
| 3/2 | | | HW 7 |
| 3/5 | Chapter 12 | Coupled Oscillations | |
| 3/7 | | | |
| 3/9 | | | HW 8 |
| 3/12-16 | Spring Break | | |
| 3/19 | | | |
| 3/21 | | | |
| 3/23 | Test 2 | Chapters: 11-12 | HW 9 |
| 3/26 | | | |
| 3/28 | Chapter 13 | Continuous System: Waves | |
| 3/30 | | | HW 10 |
| 4/2 | | | |
| 4/4 | | | |
| 4/6 | | | HW 11 |
| 4/9 | Chapter 14 | Special Theory of Relativity | |
| 4/11 | | | |
| 4/13 | | | HW 12 |
| 4/16 | | | |
| 4/18 | | | |
| 4/20 | Test 3 | Chapters: 13-14 | HW 13 |
| 4/23 | | | |
| 4/25 | | | |
| 4/27 | | | |
| 4/30 | | | |
| 5/2 | | | |
| 5/4 | | | |
| 5/7 | Monday | Final Exam | 1:00 PM–3:00 PM |