Physics 250: Applied Mathematics for Scientists and Engineers
Gustavus Adolphus College   Fall 2018

Instructor: Jessie Petricka   **e-mail: jpetrick@gustavus.edu**
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Class Meetings: The class will meet on MTWRF 9:00-9:50.
Students are expected to have read assigned materials before coming to class.

Textbooks:
Mathematical Methods for Engineers and Physicists, by Gary Felder and Kenny Felder, ©2015
Mathematical Handbook of Formulas and Tables, by Murray R. Spiegel (Schaum's Outline Series)

Course website: Moodle

Course Description and Objectives:
This course aims to develop understanding in the mathematics used by scientists and engineers to describe physical systems. Topics include: differential equations and their solutions, multivariable and vector calculus, linear equations and algebra, series expansions and special functions, and complex numbers and functions. Students will continue to develop problem solving skills through individual and group work. Also, new mathematical tools such as formula tables and Mathematica will be introduced and used throughout.

<u>**Course Policies and Evaluation:**</u>
1. Book coverage and extra topics: Readings are listed in the course schedule and/or announced in class. Due to the pace of this course, lectures will not cover all of the material in the reading. The purpose of the lectures will be to explain and clarify the book, to give examples, to practice, and to answer your questions. Occasionally, material in lectures will be in addition to what is in the textbook. You are responsible for **all** of the material covered by both the readings and lectures.

2. Prerequisite Mathematics: Students in PHY250 are expected to have a <u>**solid background**</u> and have passed Calculus I and Calculus II. Material from these courses will be used frequently in PHY250 including in homework <u>**and exam**</u> problems.

3. Homework: Problems sets will be assigned approximately every week. Written homework sets should be neat and organized. Legibility and thorough explanations of answers are required. Each student will submit their own assignment, but you are encouraged to discuss and work problems with each other, and your instructor. Copying of homework from classmate or any other source is considered a violation of the academic honor code.

4. Late Homework: Late homework will be accepted at the discretion of the instructor with loss of points. No homework will be accepted after the problems have been returned to the class or the solutions posted.

5. Discovery Exercises: Most sections of the text have short "Discovery Exercises" or "Motivating Exercises". These will be frequently assigned to be completed and turned in prior to the start of class. No late discovery exercises will be accepted.

6. Group Problems: In class, students will work together in assigned groups to cooperatively solve problems. There will be no make-up for group problems missed due to absence.

7. Attendance: Students are expected to attend all classes during the scheduled hours. Students are responsible for informing themselves of material and assignments covered during absences. Students must advise the instructor in writing during the first week of class of any scheduled athletic, music, or other college activities

that will require their absence during the semester. Such written notice does not imply a waiver of course requirements or an agreement to reschedule exams.

8. Exams: There will be four one-hour exams and a two-hour written final exam.

9. Missed Exams: Students are expected to arrange in writing with the instructor well in advance to take an exam/quiz at other than the announced time. Requests to reschedule exams/quizzes for non-emergency personal reasons will be declined. Missed exams for an unexcused absence will result in a score of zero.

10. Academic Honesty: You will abide by the academic honesty policy printed in the Academic Bulletin, the academic honor code, and abide by decisions of the joint student/faculty Honor Board.

11. Incompletes: A grade of incomplete will only be given for work not completed due to circumstances beyond the control of the student (college policy).

12. Disability: Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or you think you may have a disability of any nature) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with the Disability Services staff, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Disability Services as early as possible. Disability Services (*https://gustavus.edu/advising/disability/*) is located in the Academic Support Center.

13. ESL/ELL
The Writing Center has on staff a part-time tutor with professional training in ESL/ELL instruction. Students can schedule work with this tutor by contacting the Writing Center. Students may bring their instructors documentation concerning their ELL status. Where it is appropriate, faculty may choose to allow such students more time to complete either in- or out-of-class writing assignments. For further information, contact the Academic Advising Office.

14. Evaluation:
Hour exams 40%   Homework 20%   Final Exam 25%   Group problems 5%   Discovery Problems 10%

13. Tutors: Tutoring for this course will be available at times announced in the departmental tutoring schedule.

15. Office Hours: Office hours: 12:30-1:30 M-F and 1:30-2:30 M, T and R. I will also be available at other times by appointment, *__or any time my door is open__*. ***Don't be afraid to ask for help: stop by for your bonus points!***

Course grades will be assigned using the following scale as a guide:
94-100 A	82-86 B	70-74 C	58-62 D
90-94 A-	78-82 B-	66-70 C-	0-58 F
86-90 B+	74-78 C+	62-66 D+	

Assignment of the final letter grades will also take into account other factors including the instructor's subjective evaluation of the student's attendance, initiative, evidence of improvement, and the quality of independent work.