

COURSE TITLE PHY 2048.801 General Physics I (w\calculus)

This course is part of the University of South Florida's Foundations of Knowledge and Learning (FKL) Core Curriculum. It is certified for Natural Sciences (Physical Sciences) and for the following dimensions: critical thinking, inquiry-based learning, scientific processes, and quantitative literacy. Students enrolled in this course will be asked to participate in the USF General Education assessment effort. This might involve submitting copies of writing assignments for review, responding to surveys, or participating in other measurements designed to assess the FKL Core Curriculum learning outcomes. Note that as a part of USF's FKL, the General Education Council expects that you will spend an average of 9 hours per week engaged in course related activities.

This course will adhere to standard USF policies, details of which may be found at http://www.ugs.usf.edu/ugc/standard_policies.htm.

MEETING TIMES Section 801 MW 2:00pm – 3:15pm ISA 1051

PLEASE NOTE

This course will use the associated Canvas web site to post grades, supplemental documents, and provide a forum for out-of-class, asynchronous discussion of the course material. You may access that web site through <http://my.usf.edu>.

This course will use the Mastering Physics online homework system that is associated with your textbook. Registration in the online homework system is not optional.

E-mails to the instructor should be sent from your USF e-mail account. The instructor replies to all e-mails. If you do not receive a reply, the e-mail was not received and you should resend it.

OFFICE HOURS Located in ISA 4204
Monday through Thursday, 9:00am- 10:00am
Tuesday, 12:00pm-3:00pm

Also available at other times - Please ask :O)
Phone: 813-974-0165 **E-mail:** rcriss@usf.edu

COURSE DESCRIPTION "First semester of a two semester sequence of calculus based general physics...for physics majors and engineering students", USF 2015-2016 Catalog.

OBJECTIVES* (1) Students should understand fundamental physical concepts.
(2) Students should develop a logical, systematic approach to the analysis and solution of problems.

*Please scroll down for a more complete listing of course objectives and learning outcomes.

PREREQUISITES Calculus I (MAC 2281 or MAC 2311) is a prerequisite for this course. If you have not completed calculus I you should drop this course. If you are a life science major, you are registered for the wrong sequence. PHY 2053/2054 has been designed specifically for you and covers material which you will not see in this course.

REQUIRED TEXTS University Physics, 14th ed., by Young & Freedman, with Mastering Physics Homework.

Note: This text is available in several formats, including entirely online.

Mastering Physics course ID: CRISS2048SP16 (for THIS SECTION only)
A Mastering Physics **access code** should be part of the textbook package you select.
(<http://MasteringPhysics.com>)

IMPORTANT DATES

Friday	Jan. 15	End of Drop/Add
Monday	Jan. 18	USF Holiday
Tuesday	Feb. 23	Midterm grades due
Monday-Friday	Mar. 14 - 18	Spring Break
Saturday	Mar. 26	Last day to withdraw w/“W”
Wednesday	Apr. 27	Last day of classes

SCHEDULED EXAM DATES

Exam # 1	Wed. Feb. 10
Exam # 2	Wed. Mar. 9
Exam # 3	Wed. Apr. 20

Comprehensive Final Exam Monday, May 2, 12:30pm - 2:30pm
(per USF Final Exam Matrix)

GRADED WORK

Exams: You will have three regular exams, the combination of which will be 60% of your course grade. Every exam counts. There will be no dropped scores. However, your lowest regular exam score will be counted as 10% of your course grade, the next lowest as 20% of your course grade, and your highest as 30% of your course grade.

You will also have one comprehensive final exam which counts as 30% of your course grade.

For each of the exams the physics department's T-score system, which is based on standard deviations from the class average, will be used to convert your raw score into a letter grade. This is the only curve that is applied to this course. A T-score is calculated as follows:

$$\text{Your T-score} = \frac{(\text{your score}) - (\text{class average})}{(\text{the standard deviation})}$$

A positive T-score means your score is above the class average. Likewise a negative T-score means your score is below the class average. The t-scores will be converted into 'standard' numeric grades based on a 10 point scale as follows:

1.60	≤	T-score		A+	100 pts.
1.30	≤	T-score	< 1.60	A	95 pts.
1.00	≤	T-score	< 1.30	A-	92 pts.
0.70	≤	T-score	< 1.00	B+	88 pts.
0.40	≤	T-score	< 0.70	B	85 pts.
0.10	≤	T-score	< 0.40	B-	82 pts.
-0.20	≤	T-score	< 0.10	C+	78 pts.
-0.50	≤	T-score	< -0.20	C	75 pts.
-0.80	≤	T-score	< -0.50	C-	72 pts.
-1.10	≤	T-score	< -0.80	D+	68 pts.
-1.40	≤	T-score	< -1.10	D	65 pts.
-1.70	≤	T-score	< -1.40	D-	62 pts.
		T-score	< -1.70	F	50 pts.

As an example: Suppose there were 20 questions on an exam and you answered 12 of them correctly. The class average was 11.3 correct responses with a standard deviation of 2.34. Your t-score on the exam would be $(12-11.3)/2.34 = +0.299$. From the table above, that corresponds to a B-, which would be recorded as an exam score of 82.

Homework: Homework will be 10% of your course grade. Homework will be accepted only through the Mastering Physics homework system. Assignments will be weighted equally in the calculation of your homework grade. Regardless of circumstance, no late homework will be accepted.

Extra Credit: There are no opportunities for extra credit in this course.

UNGRADED WORK

Practice Homework: As we move through the lecture material I will post 'practice' assignments to Mastering Physics. They will have no point value and list a due date at the end of the term. Mastering Physics will provide numerical answers to these problems. Solutions to the odd numbered problems can be found in the Student Solutions Manual which can be checked out from the Reference Desk in the library.

COURSE GRADE

Your course average will be calculated as a weighted average from your scores on the 3 regular exams and the homework. They will be weighted as follows:

Homework	10%
3 Regular Exam	60%
Comprehensive Final Exam	30%
TOTAL	100%

Your course average will be converted to a letter grade using the 10 point scale listed below. Note that rounding of the course average is to the one's place. I will round all numbers ending in a 0.5 up to the next whole number.

A+	97 - 100
A	93 - 96
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	63 - 66
D-	60 - 62
F	0 - 59

POLICY ON LATE WORK, MISSED EXAMS

Late work of any kind, including exams, will generally not be accepted. *Late* is defined to be work submitted any time after it has been collected by the instructor or is due online. A score of zero will be entered into the grade book for late work unless arrangements have been made with the instructor in advance. Please note that making "arrangements" requires a 2-way communication between the student and instructor. For 2-way communication, face-to-face communication is always best, telephone is second best, followed by e-mail.

ATTENDANCE

Attendance is not a part of your course grade. I believe in a value-added classroom experience and will do everything I can to provide you that opportunity. For that reason, you should come to every class meeting. There are no opportunities to make-up a missed classroom experience. I do understand that there are valid & justifiable reasons for missing class. Even so, you remain responsible for everything that we cover in class. You should get notes from a classmate upon your return. Students who anticipate missing exams due to religious observance should inform the instructor by the second class meeting.

ACADEMIC HONESTY: Knowledge and maintenance of the academic standards of honesty and integrity as set forth by the University are the responsibility of the entire academic community, including the instructional faculty, staff and students. **I take this seriously** and am sure that you do as well.

STUDENTS WITH DISABILITIES: Students in need of academic accommodations for a disability may consult with the office of Students with Disabilities Services to arrange appropriate accommodations. Contact SDS at 974-4309 or www.sds.usf.edu. Students are required to give reasonable notice prior to requesting an accommodation. There is no way to make accommodations on or after the due date.

COURSE OUTLINE

Like most college courses, we do not cover every section of every chapter. We 'pick & choose' as appropriate. Below is a list of topics by class day. You can refer to the index of your text book and find the corresponding chapter/section/page numbers. It is intended as a guide only, meaning that the content and timing is subject to change.

	Monday	Wednesday
Week # 1	Vectors, Vector Algebra	1-d Motion
Week # 2	USF Holiday	2-d Motion
Week # 3	3-d Motion, Circular Motion, Relative Motion	Introduction to Newton, Centripetal Force, <i>Last lecture on exam 1 content</i>
Week # 4	Newton's Laws (including Gravity)	Application of Newton's Laws (non-rotational)
Week # 5	The Work-Energy Paradigm	Exam 1
Week # 6	More on Work and Energy	Applications of the Work-Energy Paradigm
Week # 7	Impulse and Linear Momentum, Center of Mass	Introduction to Rotational Motion, Calculating Moments of Inertia
Week # 8	Torque, Rotational form of Newton's 2 nd , Angular Momentum	Applications of Newton's Laws (translational, rotational, equilibrium, non-equilibrium)
Week # 9	More on Applications of Newton's Laws	Exam 2
Week # 10	Stress-Strain, Loose Ends on Gravity and Orbits, Introduction to Fluids	Fluids
Week # 11	Equations for Oscillatory Motion, Simple Harmonic Motion, Systems Displaying SHM	Driven Oscillations, Damped Oscillations, Resonance
Week # 12	Definition and Description of Waves, Wave Functions	Wave Equation, Energy Transport
Week # 13	Superposition, Interference, Boundary Conditions, Standing Waves	Introduction to Sound Waves, Intensity, Decibels
Week # 14	Superposition, Interference, Resonance	Exam 3
Week # 15	Standing Waves, Beats, Doppler, Shock Waves	Fourier Series, Fast Fourier Transform

COURSE OBJECTIVES

- (1) Students will learn the scientific method and how it applies to all scientific inquiry.
- (2) Students will learn critical thinking and analysis.
- (3) Students will develop an understanding of the physical aspects of nature.
- (4) Students will learn problem solving skills, employing mathematics and conceptual knowledge to physical problems in science and technology.
- (5) Students will actively engage in developing an understanding of the laws of physics through class participation and lecture demonstrations.

STUDENT LEARNING OUTCOMES

- (1) Students will apply calculus and analytical geometry to real physical problems
- (2) Students will conceptually and mathematically describe translational and rotational motion.
- (3) Students will develop a conceptual and mathematical understanding of Newton's Laws and apply that to the solution of problems.
- (4) Students will demonstrate a conceptual and mathematical understanding of work and energy by applying those ideas in the solution of problems.
- (5) Students will demonstrate a working knowledge of fluids.
- (6) Students will describe waves and wave behaviors both conceptually and mathematically.