PHYS 1303 **Introductory Mechanics** **Jan Term 2020**

Course Overview

For science and engineering majors. Covers vector kinematics, Newtonian mechanics, gravitation, rotational motion, oscillations. This is an active-learning course in which students participate in class through small group discussion and with cooperative problem-solving.
Prerequisite: MATH 1337.

Instructor Biography

Prof. Dalley has been teaching physics courses at SMU from non-science majors to graduate students since 2006. In 2013, Prof. Dalley received both an Outstanding Professor Rotunda Award and the Provost's Teaching Recognition Award. At SMU he also directs science outreach programs and professional development courses for high-school physics teachers.

Benefits of taking this course

- Quickly acquire UC tags and satisfy your major's requirements
- Retake to improve your grade
- Gain transferable skills in problem solving
- Take advantage of Jan term's small class sizes

UC "tags" and Student Learning Outcomes

Together with PHYS 1105 lab course, satisfies a Level I Pure & Applied Science Pillar, or a Science and Engineering Breadth requirement (UC16), and a Quantitative Reasoning Proficiency & Experience.

Learning Outcomes

1) demonstrate basic facility with the methods of scientific inquiry and problem-solving
2) explain how the concepts and findings of physics shape our world
3) develop quantitative models as related to the course subject matter
4) apply symbolic systems of representation
5) formulate structured and logical arguments

Class Meeting: 9:00 a.m. – 11:50 a.m.,1:00 – 3:50 p.m.
Daily Routine: 9:00 - 9:50 Quiz; 10-10:50, 11-11:50 Concept classes; Noon – 1pm lunch break; 1-1:50, 2 - 2:50 Concept Classes; 3 – 3:50 Practice problems

Instructor: S. Dalley, Room 207 Fondren Science, sdalley@smu.edu
Office Hours: 8:00 – 8:45 am each day

Text: **Fundamentals of Physics** 11th Edition Instant Access WileyPlus by David Halliday, Robert Resnick, Jearl Walker. Instant Access comes with online textbook. You have the option to pay more for WileyPlus with an e-book or paper text but they are not required.

Website: http://www.physics.smu.edu/sdalley/1303J20/1303home.htm

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Date	Topic	
Before Mon 1/6	**Read and Complete Checkpoints for Chapters 1 and 2 in WileyPlus**	
	Measurement	**1.1 - 1.3**
	Motion in One Dimension - Velocity	**2.1 - 2.2**
	Motion in One Dimension - Acceleration	**2.3-2.5**
Mo 1/6	**Motion in One Dimension**– Free Fall	**2.6- 2.7**
	Vectors	**3.1-3.2**
	Motion in Two Dimensions	**4.1 - 4.4**
	Relative Motion	**4.6 - 4.7**
Tu 1/7		
	Force and Motion- Newton's Laws	**5.1 - 5.2**
	Force and Motion - Examples	**5.3**
	Force and Motion - Resistance	**6.1 – 6.2**
We 1/8	**Force and Circular Motion**	**4.5, 6.3**
	Kinetic Energy & Work- Constant Force	**3.3, 7.1 - 7.3**
	Kinetic Energy & Work – Variable Force	**7.4-7.6**
	Potential and Conserved Energy	**8.1 - 8.3**
Th 1/9	**Non-Conservative Forces**	**8.4-8.5**
	Center of Mass &Linear Momentum	**9.1 - 9.3**
	Linear Momentum& Collisions	**9.4 - 9.8**
Fr 1/10		
	Rotational Motion	**10.1 -10.3**
	Torque and Rotational Inertia	**10.4- 10.7**
	Rolling	**3.3, 11.1, 11.2, 11.4**
Tu 1/14	**Angular Momentum**	**11.5-11.8**
	Equilibrium	**12.1-12.2**
	Gravitation - Force	**13.1 - 13.3**
	Gravitation – Energy and Orbits	**13.4 -13.6**
We 1/15		
	Oscillations – Simple Harmonic Motion	**15.1- 15.2**
	Oscillations – Damping & Driving	**15.4 & 15.6 – 15.7**
Th 1/16	**FINAL EXAM 3 hours All Topics**	

ASSESSMENT

- Pre-class readings with survey questions **10%** of grade.
  Lowest 2 survey scores are dropped for any reason. Late submissions cannot be credited.

- Participation in class student-response polling **10%** of grade.
  Polls are scored on participation only. 1/5 of polled questions may go unanswered before it starts to affect your grade.

- Practice Problem sets **30%** of grade.
  Lowest 2 problem set scores are dropped for any reason. Late submissions are credited at 50%.

- In-class Quizzes (show working), **25%** of grade
  Lowest Quiz score is dropped for any reason.

- Final Exam (3 hrs) multi-choice Problems and Concepts **25%** of grade
  In determining the overall course %:

  If the score on the final exam is better than the overall course % score, the average of these two will be used for the overall course score.

  If the scores on each quiz and on the final exam are all below 50%, the course grade will be F regardless of performance on other assessments.

Course grade Boundaries are fixed at

A > 90% > A - > 85% > B + > 80% > B >75% > B - >70% > C+ > 65% > C > 60% > D > 50% > F.

What you have scored is what determines your grade; not rounding up, effort, attendance, grades in other courses, scores of other students, scholarship requirements, my opinion, your opinion, your desired career path, the orbit of Venus, etc.

PRE-CLASS READINGS & SURVEYS

The classroom is flipped so you are required to spend time ***before*** class reading in WileyPlus the textbook sections indicated on the syllabus and complete the multiple choice survey assignments by 8:45 am on the due date for credit – no exceptions!

Recommended Time Burden outside of class = 1 hour per day

IN-CLASS CONCEPT POLLING

During class you will often be asked to discuss Conceptual questions with other students and provide responses via PollEverywhere. Login at PollEV.com and join session **dalleyphysics** There is participation credit and you are expected to respond to most questions.

POST-CLASS PRACTICE PROBLEMS

Sets of practice problems are assigned in WileyPlus and are due typically by 8:45 am on the day of the next class. Late submissions will receive 50% credit. You will start these problems during class time.

Recommended Time Burden outside of class = 2 hours per day

QUIZZES

Each day there is a 50 min problem-solving quiz on the previous day's material. Most of the credit in the quizzes is for clear working. You may use only the standard formula sheet provided and your own calculator. All data are provided in the questions. Submit your work on a letter-sized paper in black or blue ink.

FINAL EXAM

There is a problem-solving exam and a conceptual question exam (questions are closely related to those done in class). You may use only the standard formula sheet provided and your own calculator. All data are provided in the questions.

ACCOMODATIONS

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit http://www.smu.edu/Provost/ALEC/DASS to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

Attendance: Pursuant to SMU policy governing student wellbeing, attendance will be monitored and, if you are absent from class for more than one day, I will enquire by email whether everything is OK. If I do not receive a response within 1 day or receive a response which I am concerned about, I will forward those concerns to the Dean of Student life. If I do not receive a response within 1 day and your grades are below passing level, I will administratively drop you from the class.