

Instructors: Prof. Daniel Dale Ms. Emily Jensen  
Office: Physical Sciences 214 Physical Sciences 105  
Office hours: MW 14:00-13:00 MR 15:10-16:00 in STEM 180  
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Class: MWF 11:00-11:50; R 15:10-16:00; R 19:10-21:00  
Room: Enzi STEM 195  
Materials: etext by Andrea Dobson  
Web page: [http://physics.uwyo.edu/~ddale/teach/17\\_18/a2310](http://physics.uwyo.edu/~ddale/teach/17_18/a2310)  
Prerequisite: PHYS 1210, MATH 2200

**Course Content**

I am excited to teach you! This course is intended to be an advanced introduction to the Solar System and the techniques professional astronomers use to observe and analyze celestial objects. The course is aimed at students in their first or second year of the astronomy major degree program. You should already have a generic knowledge foundation of the Sun, the planets, and telescopes, ideally obtained in an introductory astronomy course such as ASTR 1050. We will build upon this foundation and begin to develop a conceptual understanding of the physical processes that drive astrophysics.

**Text**

We will use a new open source text written by Professor Andrea Dobson of Whitman College. Additional references you might consider include:

*Astronomy & Astrophysics* by Zielik & Gregory (1998)  
*Foundations of Astrophysics* by Ryden & Peterson (2010)  
*The Physical Universe* by Shu (1982)  
*Fundamental Astronomy* by Karttunen et al. (2017)  
*An Introduction to Modern Astrophysics* by Carroll & Ostlie (2006)

**Class Meetings**

Study after study has shown that students learn far more when they are actively engaged in the classroom. Hence, I will endeavor to incorporate as many active learning activities as possible while still using a portion of the class time to present material in a semi-traditional format. Please bring your phone or laptop to class for participating in frequent polling.

Since ideas and terminology from the text will be used freely in class, it is necessary for you to read and study the assigned chapters before class. I will avoid presenting the same examples in your text. Instead, class meetings will address the difficult points in the text as well as help place the readings in a larger context. The more actively engaged you are during class, the more you will learn and the better you will perform.

Your full participation in group work will be critical to our success. If you must miss a class, it is your responsibility to let me know well in advance of your absence.

Labs may be carried out in teams but each student must write their own lab report. Guidelines are provided on the course website. Points will automatically be deducted from late work. Thus, it is better to do work late rather than not at all, but it will be difficult to do well in this course if you are consistently late.

**Exams**

Exams will contain both quantitative and conceptual problems, and have both multiple-choice and written formats. The exams will be closed book and closed notes, although to each exam you will be allowed to bring a calculator. Relevant formulas will be provided, so you need not memorize equations. *No make-up exams will be given.*

All examinations are required and none of the scores will be dropped or replaced. The exams will be held at the following times, and cover the following chapters:

Exam 1 - Wednesday Feb 21	11:00-11:50	Ch 02-04	in STEM 195
Exam 2 - Wednesday Apr 04	11:00-11:50	Ch 05-08	in STEM 195
Exam 3 - Monday May 07	10:15-12:15	Ch 09,10,13	in STEM 195

**Assignments**

Students are encouraged to work together, but each student must submit their own work. For the written exercises you should give credit to any sources or people you find helpful. For example, if you work on a problem in a group, the names of all the group members should be given. Also, by citing references, your writings will be more useful to you in the future. To receive full credit, your work must be legible and the logic easy to follow. No credit will be given for incomplete work. Late work will only receive partial credit.

Paper and presentation: each student will research a topic relevant to the Solar System and write a short paper and make a brief presentation (4 pages; 4 minutes; 4 slides). You may choose your own topic or come to me for ideas (first come, first served). A tentative outline and bibliography will be due April 13; the final paper will be due April 20.

**Grading** (Subject to revision):

Exams (3):	51%
Attendance/Participation:	4%
Assignments & Lab:	45%
	<u>100%</u>

Note that grades only reflect performance over a short period; grades are not a holistic reflection of you. Because of the limited scope of this class, your grade cannot possibly represent your full range of abilities in communication, writing, enthusiasm, logic, creativity, perseverance, entrepreneurial spirit, and a host of other talents that will be important to reaching your career and life goals.

**Register your phone or laptop**

We will discuss and vote on conceptual questions using phones or laptops. To register:

- 1a. Create an account polleverywhere.com
- 1b. Select "United States" (not "United States - Education")
- 2a. Register your cell phone number (ignore if using a laptop).
- 2b. Under "Settings" add your number. Follow instructions to certify your cell #.
3. Please allow me to see your name: Under "Settings" choose "Voter Registration". Select "Register as a voter". On the next page you should enter "ddale@uwyo.edu".
4. Bring your cell phone or laptop to each class meeting.
5. Standard text messaging rates may apply.

**Academic Honesty**

The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to

expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated. Suspected violations of standards of academic honesty should be reported to the instructor, department head, or dean.

### **Special accommodations**

If you have a physical, learning, or psychological disability and require accommodations, please let me know as soon as possible. You must register with, and provide documentation of your disability to, University Disability Support Services in SEO, Room 330 Knight Hall.

### **Expectations**

Consider reading “A&S Students and Teachers—Working Together”:  
[uwyo.edu/as/files/current/Students%20and%20Teachers%20Working%20Together.pdf](http://uwyo.edu/as/files/current/Students%20and%20Teachers%20Working%20Together.pdf). These guidelines were written by faculty and students, reviewing instructor expectations as well as what students may expect of teachers and advisors.

### **Early Alert**

In late September, you can view a progress report in WYOWEB for your classes. When you click on the Students tab in WYOWEB, you will see Quick Links on the left side bar; go to EARLY ALERT grades. You will see either a P for pass, or a D or F grade for each of your courses. If you have withdrawn from the class you will see a W. Talk to your instructor if you have a D or F grade. Remember, this is a progress report—not a final grade!—and an ideal time to visit with your instructor and/or your advisor about your options and avenues for support in the class (call 766-2398 for the Center for Advising & Career Services).

### ***What you should expect from me:***

- To teach in a clear, organized manner to help you become competent and confident problem solvers. At the expense of skipping some of the later topics, I will reserve the option of slowing down the pace of the course according to the students' needs.
- To administer multiple feedback questionnaires, to better gauge your perceptions of the course and attend to your recommendations for my instruction.
- To encourage group learning. Research on how people learn physics STRONGLY indicates that lecture alone is NOT an effective way to learn. Effective learning requires interaction with the instructor and classmates.
- To provide numerous demonstrations given that students learn in a variety of ways.
- To expeditiously grade and return the exams to you.

### ***What I expect from you:***

- To attend and participate in each class session. It is your responsibility to obtain and understand the material presented, even if you are not in attendance due to illness or a University-sponsored activity.
- To work both independently and in groups of your peers who can help you understand the course material. I can help connect you with a study group, if desired.
- To take each exam at the scheduled time. If you have a scheduling conflict due to a University-sponsored activity, it is your responsibility to inform the instructor well before the date of the exam.
- To make a good effort and to be prompt in completing assignments and labs.
- To typically spend 12-15 hours per week on this class. If you are spending more time than this, please see me so that I can ensure that you spend your time efficiently.
- To work as many problems as you can beyond the assigned homework. As with everything in life, practice, practice, practice, ...
- Check your UW email

Tentative Class Schedule

Week	M	W	F	Lab	Notes
01/22/18	Intro	Ch 03	Lab #1	Basic Telescope Exploration	Jan 27 Chocolate Cake Day
01/29/18	Ch 03	Ch 03	Ch 02	Sky Gazer's Almanac	Feb 02 Groundhog Day
02/05/18	Ch 02	Ch 02	Ch 02	Moon's Orbit	Feb 09 Toothache Day
02/12/18	Ch 04	Ch 04	Ch 04		Feb 14 Valentine's Day
02/19/18	review	Exam 1	Exoplanets 1		Exam 1 Feb 21; ch. 02,03,04 Feb 23 Dog Biscuit Appreciation Day
02/26/18	Ch 04	Ch 05	Ch 05	Scale Model of the Solar System	Feb 28 Public Sleeping Day
03/05/18	Ch 06	Ch 06	Ch 06	Moon Observations	Mar 10 Middle Name Pride Day
03/12/18	No Class	No Class	No Class		Spring Break!! Mar 14 Potato Chip Day
03/19/18	Ch 07	Ch 07	Lab #6	Craters	Mar 20 Extraterrestrial Abduction Day
03/26/18	Ch 08	Ch 08	Lab #7	Atmospheric Retention	Mar 28 Something on a Stick Day
04/02/18	review	Exam 2	Exoplanets 2		Exam 2 Apr 04; ch. 05,06,07,08 April 7 Beer Day
04/09/18	Ch 09	Ch 09	Project work day	Saturn and its Rings	Apr 14 Look up at the Sky Day
04/16/18	Project work day	Ch 09	Ch 10		Apr 17 Cheeseball Day Apr 18 Outline & bibliography due
04/23/18	Ch 10	Ch 10	Lab #9	Pluto & Charon	Apr 24 Pig in a Blanket Day
04/30/18	Project work day	presentations	presentations	review	May 04 Star Wars Day May 02 Paper due
05/07/18	Finals Week	Finals Week	Finals Week		Exam 3 May 07 10:15 am; ch. 9,10