

## **Astronomy 203**

### **Tier 2 Natural Sciences: Stars (Spring 2015)**

**Lectures:** 11:00AM-11:50AM MWF in Steward N210

**Instructor:** Prof. Kratter

**Office:** SO N328

**TA:** Vanessa Bailey

**Preceptor:** Hayley Keith

**Class Email:** [ASTRKratter@email.arizona.edu](mailto:ASTRKratter@email.arizona.edu)

#### **Office hours:**

Prof. Kratter: 2:30-3:30PM Wednesdays

TA V. Bailey: 1-3PM Tuesdays, location TBA

Preceptor H. Keith: by appointment only

### **Course Description**

In this course we will focus on the role of stars in the universe and in our daily lives. We will learn where stars come from, how they change in time, and how they die. Along the way we will examine the most important physical processes that govern the behavior of these astronomical objects. We will supplement the study of stars with readings of science news articles that will be the subject of regular in class writing assignments.

#### **Topics to be covered**

Method of Scientific Inquiry  
Order of Magnitude Reasoning  
Scales in the Universe  
Motions on the Sky  
Star Formation  
Stellar Evolution  
Supernovae  
Black holes  
Special and General Relativity  
Planet Formation  
Exoplanets

**GRADING:** Your course grade will be based on:

- Homework and Online Quizzes (drop lowest two scores): 15%

- In class activities / writing: 25% (drop lowest score)
- In class tests (drop lowest score): 40%
- Final Exam: 20%

The class will not be curved, grades are absolute. The correspondence between final percentages and letter grades will be: **A:** 85% – 100%; **B:** 70% – 85%; **C:** 50% – 70%, **D:** 30% – 50%; **E:** 0% – 30%.

**TEXTBOOK** For this course we will use “21st Century Astronomy, 4th Edition,” by Kay, Palen, Smith, & Blumenthal. You are only required to purchase the “Stars and Galaxies” split, available in the bookstore. **NOTE:** You are welcome to purchase a used copy of the textbook, but you must also purchase an account on SmartWork for \$20 from Norton. See the instruction sheet attached to this syllabus for more information.

**MIDTERM TESTS** There will be **THREE** in class tests during the semester. Only your best **TWO** scores will count. No makeup tests without a prior approved Deans Excuse. Do not ask for exceptions: this is why your lowest score is dropped. They will be held on:

**Friday, February 6th**  
**Friday, March 13th**  
**Monday, April 27th**

**FINAL EXAM** The final exam will be held on May 11th 10:30-12:30.

### **Course Conduct and Expectations**

Please come to class ready to learn and engage with your peers. Student participation is required! In order to ensure a productive learning environment for all students, please note the following strict class rules:

1. NO cellphones in class. They must be kept in a bag or pocket and on silent.
2. Laptops / tablets **ONLY** for note taking. All students using such devices must sit in the center section in the front three rows.
3. No class disruptions (talking, note passing, etc).
4. Follow the University of Arizona Code of Academic Integrity
5. Bring your student photo-ID to class every day and to the final exam.

If a student violates any of the above conduct rules the following punitive actions will be taken:

- First offense: ejected from that class, lose any relevant points for in class work that day

- Second offense: ejected from class that day, lose any relevant points for in class work that day, and automatic 5% deduction from your final course grade
- Third offense: ejected from class, automatic course failure!

**Course Email and Websites:**

In this class we will make regular use of D2L and Norton's SmartWork online system. It is your responsibility to check D2L regularly for course notifications / updates/ and assignments.

**Email:** All emails regarding the course should be sent to [ASTRKratter@as.arizona.edu](mailto:ASTRKratter@as.arizona.edu). Emails sent to ANY OTHER email address will not get a response. If you ask a question that is *\*clearly\** answered on the course syllabus (e.g. when is the final exam) you WILL NOT get a reply. We will aim to respond to all other emails in 48 hours or less.

**Students with disabilities** who require reasonable accommodations to fully participate in course activities or meet course requirements are encouraged to register with the Disability Resource Center (<http://drc.arizona.edu>) and contact Prof. Kratter to discuss accessibility issues.

**Code of conduct:** Students are expected to understand and follow the Student Code of Conduct, which is available at <http://w3.arizona.edu/~studpubs/policies/ppmainpg.html>.

## **Astronomy 203**

### **Class Schedule** *preliminary*

- **Jan 14:** Logistics, Introduction to Astronomical Scales and Terms, Chp. 1
- **Jan 16:** Basic Astronomical Terms, Motion and Seasons, Chp 2.1-2.3
- **Jan 21:** Gravity and Orbits Part I, Chp. 3-4
- **Jan 23:** Science Writing 1
- **Jan 26:** Gravity and Orbits Part II, Chp 3-4
- **Jan 28:** The Moon, Chp 2.4-2.7
- **Jan 30:** Planetarium Show!
- **Feb 2:** What is Light?, Chp.5
- **Feb 4:** Quantum Basics, Chp 5
- **Feb 6:** Exam 1
- **Feb 9:** What is a star, Chp 13
- **Feb 11:** Measuring Stellar Properties, Chp 13
- **Feb 13:** Science Writing 2
- **Feb 16:** Our Sun and similar stars, Chp 14
- **Feb 18:** Nuclear Reactors in Stars vs on Earth, Supplement
- **Feb 20:** Solar power and Energy on Earth
- **Feb 23:** Low Mass Stellar Evolution, Chp 16
- **Feb 25:** Science Writing 3
- **Feb 27:** Binary Stars, supplement
- **Mar 2:** Dead Stars and Exotic Matter, Chp 16
- **Mar 4:** White Dwarfs, Chp16, supplement
- **Mar 6:** The Fate of our Solar System
- **Mar 9:** High Mass Stars, Chp 17

- **Mar 11:** Science Writing 4
- **Mar 13:** Exam 2
- **Mar 23:** Exam 1 + 2 concept review
- **Mar 25:** High Mass Stellar Evolution / Supernovae Chp 17
- **Mar 27:** Supernovae II
- **Mar 30:** Neutron Stars And Black Holes, Chp 17, supplement
- **Apr 1:** Intro to Relativity, Chp 18
- **Apr 3:** Science Writing 5
- **Apr 6:** Relativity II, Chp 18
- **Apr 8:** Stellar Nurseries Molecular Clouds, Chp 15
- **Apr 10:** Magnetic fields: in Space and on Earth, Supplement
- **Apr 13:** Star Formation, Chp 15
- **Apr 15:** Protostellar and Protoplanetary Disks, Chp 7
- **Apr 17:** Science Writing 6
- **Apr 20:** Planet Formation, Chp 7, supplements
- **Apr 22:** Exoplanet Detection, supplements
- **Apr 24:** Exoplanets vs the Solar System, supplements
- **Apr 27:** Exam 3
- **Apr 29:** Stars and Cosmology, Chp. 19
- **May 1:** Stars and Cosmology II, Chp 19
- **May 4:** Science Writing 7 / Review
- **May 6:** Climate Change
- **May 11:** FINAL EXAM 10:30-12:30!

# smartwork

To enroll in SmartWork you will need an Enrollment Key (provided by your instructor), a valid email address, and a Registration Code from W. W. Norton.

## MY ENROLLMENT KEY IS:

Registration codes are contained within SmartWork folders; these are bundled with new books at your instructor's request. If you do not have a registration code, you may purchase one at [wwnorton.com/smartwork](http://wwnorton.com/smartwork).

1. Go to [wwnorton.com/smartwork](http://wwnorton.com/smartwork)
2. Select "Create an account"
3. Fill out all fields and click "Create my new Account."

Don't forget to record your account information for future reference!

4. Retrieve the confirmation email from [no-reply@wwnorton.com](mailto:no-reply@wwnorton.com) to confirm your account.
5. Click "Courses" and select your instructor's course section from the list provided.
6. Enter the Enrollment Key provided by your instructor, and your Registration Code. Click "Join this course."

### Choose your email address and password

Email address   
Email (again)   
Password   Unmask

### More details

First name   
Last name   
City/town   
Country   
State/Province   
School/University

Enter the enrollment key you received from your instructor.

Enrollment key:   
(case-sensitive)

Enter the registration code, bundled with your textbook or available for sale from Norton's [Student Store](#).

Registration code:   
(sample: XXXX-XXXX)

Don't have a registration code? Use our free 2-week trial access. After the trial period expires, you will need to enter a registration code to continue using this course.

2-week trial

DON'T FORGET TO RECORD YOUR USERNAME AND PASSWORD FOR FUTURE REFERENCE.