



# ASTR 214: Honors: General Astronomy

Lecture: TCCW 201, MWF 13:50-14:45

Laboratory: TCCW 201, T 20:00-22:00

Website: [physics.wku.edu/~gibson/astr214](http://physics.wku.edu/~gibson/astr214)

Instructor: Dr. Steven Gibson

Office: TCCW 231, Hours: MW 10:20-11:15 or by appointment

Phone: 270-745-3019, Email: (first).(last)@wku.edu

Required: *21st Century Astronomy, 4th Edition*, by Kay, Palen, Smith, & Blumenthal (W. W. Norton, 2013, ISBN 978-0-393-91878-6)

Optional: *Star and Planet Locator* (Edmund Scientific)

**Description:** ASTR 214 is a 4-credit lecture+lab course, with 3 hours of lecture and a 2-hour lab each week. It serves as an introduction to astronomy for science majors. Topics include but are not limited to sky and planetary motions, Solar system bodies, the Sun, stellar properties and evolution, star systems, clusters, interstellar matter, Galactic structure, external galaxies, and cosmology. A keen curiosity coupled with scientific skepticism are highly desirable traits for students in this class. **Co-requisites:** Students taking ASTR 214 must have completed or now be taking MATH 126 or 136 (Calculus I) or have permission from the instructor.

**Learning Outcomes:** After taking this class, you should be able to: (1) explain the role of the scientific method in understanding the cosmos; (2) relate the appearance of objects in the sky to the motions of the Earth and other bodies; (3) describe the general composition, structure, and development of planets, stars, galaxies, and the Universe as a whole; (4) solve problems by relating basic physical attributes of these objects; and (5) demonstrate a general familiarity with the night sky, telescopes, and their use.

**Course Philosophy:** This is an honors course requiring significant focus and maturity for successful students. Given the breadth of the material (the entire Universe!), we will not have time to cover every topic in lecture. Instead, we will focus on the most critical and challenging material. *You are expected to read the entire text on your own, including topics not discussed in class!* You are also expected to be familiar with recommended homework problems, *even though these will not be graded.* Instead, most of your course grade will be based upon frequent exams that will test your knowledge of the material, including your ability to solve problems.

**Course Website:** All announcements, including assigned reading, laboratories, and exam dates, will be posted [online](#) along with other potentially useful materials. This site includes a link to the **Norton StudySpace** site with a range of study and visual aids.

**Grading Method:** Letter grades for the course will be assigned using the scheme shown at left below. Grade thresholds may be lowered but will not be raised. The relative weights of the course components contributing to the final course score are listed at right below.

% Avg Score	Grade
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

Course Component	Grade Fraction
in-class exercises, quizzes	10%
laboratory exercises	20%
block exams ( $[6 - 1] \times 10\%$ )	50%
final exam	20%

## Course Components

- **Reading Quizzes:** You are responsible for reading assignments I will give in class. These are intended to familiarize you with material before it is covered in lecture or class discussions, so that you can grasp important points as they arise rather than frantically trying to note down everything that is said. I will give reading quizzes worth a small fraction of your total grade to encourage you in this regard. (These quizzes are NOT the same as the self-tests on the Norton StudySpace website, but the self-tests may still be a useful study aid!)
- **In-Class Activities:** There will also be in-class activities for credit. Most of these will be group conceptual or problem-solving exercises for “participation points” rather than a grade. Others may be graded, e.g., a quiz or short presentation.
- **Homework:** *There is no formal homework in this class, and no part of your course grade will depend on homework.* However, you are strongly encouraged to work “suggested” problems that will be announced for each chapter in the text as an aid to learning the material. Suggested problems are fair game for exams! Discussion of problems with other students is encouraged as a constructive learning activity. But take care to ensure that you can solve the problems by yourself if they appear on an exam.
- **Laboratory Exercises:** Weekly guided nighttime laboratories during our scheduled Tuesday class period will be conducted on the TCCW rooftop observatory, in the classroom, or other locations to be determined. We may also use equipment off campus as circumstances permit. It will be cold much of the term, so dress accordingly, and bring a flashlight. Lab assignments are due before the start of class on the next lab meeting, unless otherwise stated. Laboratory results must be submitted for individual evaluation and may be used as an exam topic.
- **Block Examinations** will be given during the semester on successive “blocks” of material. Each is worth 10% of your course grade. *The lowest block exam score will be dropped.* The exact dates and topics for each exam are subject to change, but may resemble the following:

Exam	Sample Topics (not complete list!)	Target Date
# 1	basic astro + sky motion + light + telescopes [Ch. 1-2, 5-6]	Fri 9 Sep
# 2	solar system orbits + formation + properties [Ch. 3-4, 7-12]	Mon 26 Sep
# 3	our Sun + star properties + formation + ISM [Ch. 13-15]	Fri 14 Oct
# 4	stellar evolution + end products [Ch. 16-18]	Fri 28 Oct
# 5	our Galaxy + other galaxies [Ch. 19.1, 20-21, 23.1]	Fri 11 Nov
# 6	cosmology + structure + life [Ch. 19, 22-24]	Fri 2 Dec

- **Final Examination:** The final exam for the course will be comprehensive, covering material from the entire semester. The final exam will be given according to the University-mandated schedule, which as of this writing is listed online as:

Course ID	Normal Day, Time	Final Exam Date, Time
ASTR 214-001	MWF 1:50pm	Friday, Dec 9, 10:30am - 12:30pm

**Problem Credit:** One important goal of this course is to get you thinking and communicating like an astronomer, including in the core area of problem solving. On exams, you need to do more than just write down the answer to a problem to receive full credit. I want to be able to follow your reasoning so I can see how you got what you got. In this way I can also give partial credit for wrong or incomplete answers if I can tell you were on the right track. All numerical problem solutions should include the following elements:

- A sketch or graph of the situation with suitable labels
- Appropriate *algebraic* equations (no numbers!) relating known & unknown quantities
- Solved equations with proper numerical values & units for known quantities
- Numerical answer for the “unknown” you were trying to find, including proper units
- Neatness counts! I can’t give credit for anything I can’t follow.

**Lecture Attendance:** Regular and punctual attendance is expected of everyone during every class meeting, including laboratories. You will be responsible for material missed in your absence. Lecture notes must be obtained from a classmate.

**Exam Attendance:** Make-up exams will only given in very unusual circumstances. If you are unable to take an exam, request to schedule a make-up exam by asking permission from the instructor *before* the regularly-scheduled exam period (except in the case of unforeseen circumstances). A serious reason is required to warrant the scheduling of a make-up exam.

**Disability Policy:** In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in Downing University Center, A-201, telephone 270-745-5004 V/TDD. Please do not request accommodations directly from me without a letter of accommodation from the Office for Student Disability Services.

**Classroom Policy:** Food and drinks are NOT allowed in the classroom. Cell phones and similar electronic devices must be turned off and put away during class time. The classroom computers are for specific classroom activities ONLY!

- Do not install or modify any software on these computers.
- Do not use the computers to check email during class time.
- Do not use the computers to instant message or chat with anyone ever.
- Do not submit or view homework assignments during class time.
- Do not browse the internet during class time unless it is part of a class activity.