

ASTRONOMY 205

THE SOLAR SYSTEM

Fall 2023

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ASTR 205. The Solar System. 4 cr. A contemporary perspective with emphasis on understanding basic principles of astronomy, coordinate systems, telescopes, planetary phenomena, and recent results of planetary exploration. 3 hrs lec, 3 hrs lab per wk.

Enrollment Requirements:

Prerequisite(s): MATH 95 or suitable placement score, or Department Consent

Delivery Format: IN PERSON

LECTURES (SCI A113): Monday, Tuesday, and Thursday 2 – 3 PM

LABS (SCI B204): Wednesday 2 – 5 PM

Office Hours:

Monday: 1 – 2 PM | Tuesday: 12 – 2 PM | Wednesday: 1 – 2 PM | Thursday: 1 – 2 PM

Textbook(s): *21st Century Astronomy 6th Ed. by Kay, Palen & Blumenthal*

Supplementary textbook resources (optional):

<https://openstax.org/details/books/astronomy> - free online textbook

<http://astronomynotes.com/> - free online textbook

Other required materials: A *scientific* calculator (graphing capabilities not needed)

Course website: <https://uwsa.instructure.com/courses/612086>

Log on using your UWSP login and password. ***This website will be used for posting grades, lecture and lab notes, homework assignments, study guides, discussion sessions, etc. It is the main hub/interface for this course.***

Learning Outcomes – Upon completing this course, students will be able to:

- Explain major concepts, methods, or theories used in the Astronomy/Planetary Science to investigate the physical world.
- Interpret information, solve problems, and make decisions by applying natural science concepts, methods, and quantitative techniques.
- Describe the relevance of aspects of Astronomy/Planetary Science to their lives and society.

Grading Policies – You will have the following contribution to your final grade:

Laboratory work 17%

Three midterm exams each 15%

Final exam 20%

Homework 10%

CANVAS Discussions 2%

Student End-of-Semester Presentations 4%

Observing Project 2%

TOTAL: 100%

Your current grades will be kept updated as often as possible on CANVAS. If you have any questions/confusions on the listed grades, please contact me immediately so any errors can be corrected.

The final letter grade will be assigned according to the following scale:

A → 93-100%	A- → 90-92.99%	
B+ → 87-89.99%	B → 83-86.99%	B- → 80-82.99%
C+ → 77-79.99%	C → 73-76.99%	C- → 70-72.99%
D+ → 67-69.99%	D → 60-66.99%	
F → less than 60%		

Laboratory work: The lab exercises are done in class. All labs account for 17% toward your final grade. You will be asked to work in teams of two. Each group will turn in a single lab report, hopefully the product of constructive interaction between the members of the group. To get credit for lab work, attendance is mandatory (I emphasize that one major objective of the lab is to allow you to develop group-working skills). You do not get any credit if you do not attend the lab. **The lab reports are due at the end of the lab period**, unless indicated otherwise by instructor.

The lowest lab grade will be dropped. If a lab is missed for any reason, that lab will be the one dropped when calculating the (final) lab grade. Even if a lab is missed, the student is responsible for any material covered in that lab and included in upcoming tests. **There are no make-up labs!**

Midterm Exams: There will be **three** midterm exams during the semester. They will be given during the regular lecture time, as noted in the course outline (tentative schedule). The dates are subject to change; the exams will be announced in class and on CANVAS at least a week ahead of time. Each midterm is worth 15% of your final grade and is based on the material covered in lectures, labs, and homework over the past weeks.

Final exam: A **cumulative/comprehensive** final exam will be given during finals week as noted in the course attached schedule. It is worth 20% of your final grade.

There are no make-up exams. *In the case of an unfortunate event (illness, death in the family, accident, etc.) please contact me **before the exam** so that we could make proper arrangements. It is your responsibility to provide me with a valid doctor excuse for any illness that prevents you from fulfilling the requirements of this class.*

Note: The lowest grade of the three midterm examinations can be replaced by the grade of the final exam (preserving the predefined contribution of 15%). This can be done only if the final exam grade is higher than the lowest grade of all three midterms. However, if you miss a midterm without a strong justification, this rule does not apply (a zero will not get replaced by a grade equal to that of the final exam!!!). Only one midterm grade can be replaced!

Homework: I will post a homework assignment on the course website (CANVAS) every week. I will announce (in the classroom) when the homework is available on the website and emphasize the due date. Homework assignments will be **submitted online** by the due date/time (see instructions later in this syllabus). **No homework will be accepted after the indicated due date/time. The lowest grade of all homework assignments (only one) will be dropped.** All homework will account for 10% of your final grade.

Student presentations: Every group/team of two students (basically the students sitting at the same table in the lab) will give two presentations in front of their fellow classmates during the last two lab periods scheduled in the semester. The first presentation will consist of a 1-2 slide(s) about a recent discovery/event in Astronomy/Space Exploration/Planetary Science covered by news media anytime during the current academic term (a press release for example). The second presentation will cover 10-15 minutes and will be on a predefined topic from a list. Proper instructions will be given by your instructor in class. All members of a team will get the same grade for the presentations. The total contribution to the final grade is 4% (2% and 2%, respectively for the two distinct presentations).

CANVAS Discussions: There will be occasional Discussions on CANVAS, with specific/focused topics. Students are expected to contribute within the time window indicated, using decent, respectful words. Students are expected to use full, clear sentences. Please stay on the topic. You will only see your classmates' comments after you have submitted yours. Participation in the discussion sessions will bring a max of 2% toward the final grade. **Any inappropriate comments will result in removing the student from the discussions from that point forward and the loss of corresponding discussion points.**

Observing project: You will have to complete an observing project during the Fall 2023 semester. It will be worth 2% of your final grade. We will have a couple of portable telescopes set up at a designated location on campus (Colman Field), every Monday, Tuesday, and Wednesday evening between 8:30 – 10:00PM. If the skies are cloudy or the temperatures extremely cold, the stargazing sessions will be cancelled, and you need to go another time. The decision for a night is made between 7:30-8:00 PM on the night of a scheduled observing session. You will find this information on the observatory webpage below.

The stargazing sessions start in mid-September (check the website

http://www.uwsp.edu/physastr/plan_obs/Pages/observatory.aspx for more details and updated info).

When you go there identify yourself as being from Astr205 and arrive before 9:00pm. The student in charge will have you view **six** astronomical objects through the telescope. **There will be an observing report form available at the observatory. After viewing each object, the lead student on duty will affix a sticker on the form. Return the completed report back to me before the last lecture in mid-December.**

I would advise you to go as early as possible since the weather is very unpredictable and I cannot guarantee that you'll have clear weather every Monday, Tuesday or Wednesday during the semester.

Suggestions for Studying:

1. Attend lectures and labs regularly.

The tests are predominantly based on lectures and lab material. If I have not lectured about a particular subject, it will not be on the test. I will often lecture around a picture or slide, and you are responsible for material discussed in class even if it is not written out on the slide. Some in-class clicker questions may be similar (or very similar) to some questions in the exams.

2. Study regularly and constantly.

There is a lot of material covered, most of it probably a complete novelty. The course builds up sequentially and adds a substantial number of new terms to your vocabulary. It is more and more difficult to keep up with the flow of the course if you do not grasp the new concepts as they arise. Postponing study for the night before an exam rarely pays off.

3. Take advantage of the office hours.

Do not hesitate to ask me any kind of questions related to the lecture, labs, homework or any other subject related to Astronomy.

4. Try to attend actively. Take organized notes during lectures and try to keep your mind connected to the subject that is presented. All members of a team should actively engage in the laboratory exercises.

5. Find someone in the class to study with.

Get to know your classmates well enough so that you can ask for lecture notes, get together to study for exams, etc.

Final note: Common courtesy dictates that students attending a class should remain seated for the duration of class. While in class students should refrain from using phones, music players, headphones, etc. and should also refrain from gossiping/chatting while the professor is lecturing, and other students are listening and taking notes.

Absences due to Military Service:

You will not be penalized for class absence due to unavoidable or legitimate required military obligations, or medical appointments at a VA facility, not to exceed two (2) weeks unless special permission is granted by the instructor. You are responsible for notifying faculty members of such circumstances as far in advance as possible and for providing documentation to the Office of the Dean of Students to verify the reason for the absence. The faculty member is responsible to provide reasonable accommodations or opportunities to make up exams or other course assignments that have an impact on the course grade. For absences due to being deployed for active duty, please refer to the <https://www.uwsp.edu/finaid/veteran-services/Pages/default.aspx>

Equal Access for Students with Disabilities:

Students with special needs should contact the Disability Resource Center as soon as possible (<http://www.uwsp.edu/disability/Pages/default.aspx>) to request suitable accommodation. If special accommodation is needed, *please inform the instructor, and contact the Disability Resource Center, Phone: 346-3365, Room 108 in the Collins Classroom Center (CCC).*

Religious Beliefs Accommodations:

It is UW System policy to reasonably accommodate your sincerely held religious beliefs with respect to all examinations and other academic requirements.

You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:

- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified your instructor within the first three weeks of the beginning of classes (first week of summer or interim courses) of the specific days or dates that you will request relief from an examination or academic requirement.

In case of emergency:

In the event of a medical emergency call 9-1-1 or use Red Emergency Phone. Offer assistance if trained and willing to do so. Guide emergency responders to victim.

In the event of a tornado warning, proceed to the lowest level interior room without window exposure. See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx for floor plans showing severe weather shelters on campus. Avoid wide-span structures (gyms, pools or large classrooms).

In the event of a fire alarm, evacuate the building in a calm manner. Meet at DUC. Notify instructor or emergency command personnel of any missing individuals.

Active Shooter/Code React – Run/Escapes, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders.

See UW-Stevens Point Emergency Procedures at <https://www3.uwsp.edu/emergency/Pages/emergency-procedures.aspx> for details on all emergency response at UW-Stevens Point.

Academic Honesty: Students are expected to maintain the highest standards of academic integrity.

More information on your rights and responsibilities are available at:

http://docs.legis.wisconsin.gov/code/admin_code/uws/14.pdf

UWSP 14.01 Statement of principles

The board of regents, administrators, faculty, academic staff and students of the University of Wisconsin system believe that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin system. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors.

UWSP 14.03 Academic misconduct subject to disciplinary action.

Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) Uses unauthorized materials or fabricated data in any academic exercise;
- (c) Forges or falsifies academic documents or records;
- (d) Intentionally impedes or damages the academic work of others;
- (e) Engages in conduct aimed at making false representation of a student's academic performance; or
- (f) Assists other students in any of these acts.

Lecture materials and recordings for Astr205 are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

Tentative Sequence of Topics:

Why Learn Astronomy? Patterns in the Sky Motions of Astronomical Bodies Gravity and Orbits Light	The Tools of the Astronomer Birth & Evolution of Planetary Systems The Terrestrial Planets & Earth's Moon Atmospheres of the Terrestrial Planets	The Giant Planets Tidal Forces Planetary Moons and Rings Dwarf Planets and Small Solar System Bodies The Search for Extraterrestrial Life
MIDTERM 1 (Thursday, Sept. 28)	MIDTERM 2 (Thursday, Oct 26)	MIDTERM 3 (Tuesday, Nov 21)

FINAL EXAM – Wednesday, December 20 – 10:15 – 12:15 PM – CUMULATIVE/COMPREHENSIVE

Tentative Laboratory Exercises (order and titles subject to change):

The Rotating Sky, Basic Coordinates
Seasons
Motions of the Sun
Phases of the Moon and Eclipses
Planetary Orbits
Measuring the Mass of Jupiter
Radius and Mass of a Planet
Spectroscopy
Extrasolar (Exo-) Planets
Planetary Surfaces
Planet Video
Saturn's Spectra

UWSP Service Desk:

The Office of Information Technology (IT) provides a Service Desk to assist students with connecting to the Campus Network, virus and spyware removal, file recovery, equipment loan, and computer repair. You can contact the Service Desk via email at techhelp@uwsp.edu or at (715) 346-4357 (HELP) or visit: <https://www.uwsp.edu/infotech/Pages/ServiceDesk/default.aspx>.

Other UWSP Student Resources:

Tutoring and Learning Center: <https://www3.uwsp.edu/tlc/Pages/default.aspx>

Dean of Students: <https://www3.uwsp.edu/dos/Pages/default.aspx>

Academic and Career Advising: <https://www3.uwsp.edu/ACAC/Pages/default.aspx>

Counseling Center: <https://www3.uwsp.edu/counseling/Pages/default.aspx>