ASTRONOMY 100
Unveiling the Universe

Spring 2017
Sections 3 & 4

Instructor: Dr. Adriana Durbala
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Meeting rooms/times:
Lecture (A109 SCI) **–** Tuesday and Thursday 12:00-12:50 p.m.

Lab (B204 SCI)**:** Section 3 – Wednesday 12:00 – 1:50 p.m.
Section 4 – Wednesday 3:00 – 4:50 p.m.

ASTR 100. Unveiling the Universe. 3 cr. An encounter with ideas concerning the physical universe, from earth to intergalactic space. 2 hrs lec, 2 hrs lab per wk. You may not take both 100 and 311 for credit. Also, you may not take 100 for credit if you have already taken 205 or 206. GDR: NS; GEP: NSC

Office Hours:
I have scheduled five office hours weekly:

Monday 10:00 – 11:00 a.m. & 12:00 – 1:00 p.m.
Wednesday 10:00 – 11:00 a.m. & 2:00 – 3:00 p.m.
Friday 9:00 – 10:00 a.m.
(or anytime my office door is open)

The purpose of the office hours is to allow students to stop by my office and ask any kind of questions related to Astr100 (lectures, labs, homework, exams, etc.) or Astronomy in general. If your schedule is in conflict with all listed time intervals, I am also available by appointment; you would have to send me an email or call me and we decide accordingly.

Tutoring: The Department of Physics and Astronomy has a tutoring room. It is located at A105 Sci. About the second week of class a schedule will be posted on the door (see also http://www.uwsp.edu/physastr/Pages/Tutoring.aspx). This service is free of charge and by walk-in. Feel free to use it as you need it.

Textbook: *The Essential Cosmic Perspective (7th Ed.) by Bennet, Donahue, Schneider & Voit*

Other required materials*: Astronomy 100 Lab manual (available at the bookstore), a portable scientific calculator (graphing capabilities not needed) and a* ***clicker*** *for in-class exercises (leasing instructions below).*

Course website: http://www.uwsp.edu/d2l/Pages/default.aspx
Log on using your UWSP login and password. ***This website will be used for posting grades, lecture and lab notes, homework assignments, study guides, practice problems, and, very importantly, class announcements; for example, change of due dates for assignments, comments on a homework problem, etc.***

Learning Outcomes:

Upon completing this course, students will be able to:

1) Develop a sense of scale in space and time pertinent to the Universe as a system.
2) Understand the historical development of Astronomy as a science and genuinely grasp the scientific approach in acquiring knowledge.
3) Explain major concepts, methods, or theories used in the natural sciences to investigate the physical world.
4) Put the objects of study (planets, stars, galaxies, etc.) into a larger perspective: formation, evolution, and interactions;
5) Understand phenomena and describe their relevance to our lives and society; e.g., seasons, eclipses, tides, keeping track of time, etc.
6) Humbly appreciate the fragility of the Earth's ecology
7) Interpret information, infer relationships, solve problems, and make predictions/decisions by applying natural science concepts, methods, and quantitative techniques.

Attendance:

Lecture attendance is **strongly recommended**. It is extremely important to an effective learning process. Although the lecture slides are available on the course website, they are not necessarily complete. They are meant only as an outline of a particular subject. Not everything that we talk about in classroom is on the slides and what is on the slides is not always self-explanatory.

All scheduled exams will be "in-class" (no take-home exams) and they are all mandatory.

Laboratory attendance is **mandatory**. The laboratory is an integral part of the Astronomy 100 course. A missed lab will automatically bring a zero contribution to the corresponding lab grade. **Failing the lab component of the class (scoring below 60%) will result in a failing grade for the ENTIRE Astr100 course.**

In case of potential time conflict between a scheduled exam or a lab and religious observances, the student must bring this to the instructor's attention within the first three weeks of the semester, according to the policy of the University.

Grading Policies:

You will have the following contribution to your final grade:

Laboratory work 23%
Three midterm exams each 15%
Final exam 20%
Homework 10%
Observing Project 2%

TOTAL: 100%

Your current grades will be posted periodically (updated typically every week) on the class website. If you have any questions on the grades listed, 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: Lab reports consist of two parts. There is a pre-lab assignment for each lab exercise available in the lab manual. This assignment must be turned in at the start of the lab. Pre-lab assignments will only be accepted if the student attends lab and only if they are turned in at the start of class. **Late pre-lab assignment will not be accepted, nor will they be accepted if the student does not attend the lab.** The main part of the exercise is done in class. The pre-lab assignments and the in-class labs will account for 23% of the final grade. **The lowest lab grade will be dropped.**

In order 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. **Each lab report is due at the end of the laboratory class**. If a lab is missed for any reason, that lab will be the one dropped when calculating the lab grade. Even if a lab is missed, the student is responsible for any material covered in that lab. If you know of any absence ahead of time, please contact me so we can try to accommodate you into another lab section that same week. **There are no make-up labs!**

Students may not attend another lab section without prior permission from the instructor.

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, as announced in class. Each midterm is worth 15% of your final grade and is based on the material covered in lecture, labs and homework over the past weeks.

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 greater than the lowest grade of all three midterms. However, if you miss a midterm, 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!

Final exam: A **comprehensive/cumulative** 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*** *(if at all possible) 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.*

Homework: I will post a homework assignment on the course website almost every week. I will announce in 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 on page 7 of this syllabus). **No homework will be accepted after the indicated due date/time.** The lowest grade of all homework assignments will be dropped. All homework will account for 10% of your final grade.

Observing project: An observing project will be assigned at the beginning of the semester; it is worth 2% of your final grade. Details are provided on the last page of the Syllabus.

Bonus questions using clickers: Questions will be asked periodically and you will answer using clickers (see below). All bonus questions will account for a maximum of 3%. All answers will be rewarded, the incorrect ones getting partial credit.

Bonus points come on top of all other contributions. In other words, bonus questions can only boost, not lower your grade by any means.

This class uses "Clickers" to do interactive polling. You are required to lease a clicker for $8 for the semester. This semester lease fee will be automatically added to your UWSP student bill.

You will need your UWSP Student ID to lease a clicker.

Clickers are available through:

- **UWSP's Help Desk, located in the basement of the Library, room 027.**
  For hours: http://www.uwsp.edu/infotech/Pages/HelpDesk/default.aspx

Important: Your clicker may be used in any class that requires clickers for the semester.

Returning clickers: Clickers must be returned to the UWSP's IT Help Desk before the end of finals. Students with unreturned clickers will be billed a late fee and/or may be billed the replacement cost of the clicker.

Suggestions for Studying:

1. **Attend lecture and lab regularly.**

The tests are predominantly based on lecture 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. The in-class bonus questions not only allow you to get bonus points, but they also offer you examples of questions reasonably similar to those that you'll see on the exams.

2. **Study regularly.**

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. **Do the practice questions provided online (course website)**
6. **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.

Disability Services:

Students with special needs should contact the Office of Disability Services as soon as possible (http://www.uwsp.edu/disability/Pages/default.aspx) in order to request suitable accommodation.

Academic misconduct: Students are expected to maintain the highest standards of academic integrity. Common examples of misconduct: copying the homework from others, looking at notes while taking an exam, talking to others while taking an exam. Just to avoid the embarrassment of misconduct I would strongly advice that if you need some clarification during an exam or while working on homework, you should ask the instructor/proctor for help. More information on your rights and responsibilities are available at:
http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/Academic%20Integrity%20Brochure.pdf

In case of emergency: http://www.uwsp.edu/rmgt/Pages/em/procedures/default.aspx

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, head phones, etc. and should also refrain from gossiping/chatting while the professor is lecturing and other students are listening and taking notes.

Tentative Schedule

Week	Lecture topics	Textbook Chs.	Lab Ex.	Homework
Jan 23-27	What does Astronomy study, the modern view of the Universe A sense of scale in a Universe where all things are in motion. (**Observing Project handed out)**	1	**NO LABS this week** **(Purchase Astro Lab Manual)**	
Jan 30-Feb 3	Celestial sphere, patterns and motions in the sky. Seasons, early observations of planetary motions, Moon's phases, eclipses.	2	Planetarium visit/ Motions in the Sky	HW 1 begins Thursday February 2
Feb 6-10	Ancient roots of science, ancient Greek science, Copernican revolution, Brahe and Kepler, Galileo. Astronomy as a science.	3	Planetarium/ Celestial Globe	HW 1 due/HW 2 begins Thursday February 9
Feb 13-17	Describing motion with simple examples, mass and weight, conservation laws, tides. Basic properties of light.	4, 5	Phases of the Moon	HW 2 due/ HW 3 begins Thursday February 16
Feb 20-24	**MIDTERM 1 (Tuesday, Feb 21)** Clues to how and when our solar system formed. Formation of our solar system	 6	Mass of Jupiter	HW 3 due/ HW 4 begins Thursday February 23
Feb 27-Mar 3	Other planetary systems Features and geology of the terrestrial planets.	7, 10	Planetary cratering	HW 4 due/ HW 5 begins Thursday March 2
Mar 6-10	Jovian planets: structures, moons, and rings.	8	Telescopes	HW 5 due/ HW 6 begins Thursday March 9
Mar 13-17	Asteroids, comets and dwarf planets.	9	Planet Video	HW 6 due/ HW 7 begins Thursday March 16
Mar 18-26	**Spring Break**		**No labs this week**	**No HW due this week**
Mar 27-31	Spectroscopy **MIDTERM 2 (Thursday, Mar 30)**	5	Observing spectra	HW 7 due/ HW 8 begins Thursday March 30
Apr 3-7	Properties of our Sun Solar cycle, Sun-Earth connection.	11	Photometry of Pleiades	HW 8 due/ HW 9 begins Thursday April 6

Apr 10-14	Measuring the properties of stars. Patterns among stars	12	Stars and nebulae	HW 9 due/ HW 10 begins Thursday April 13
Apr 17-21	Star clusters Evolution and death of low mass stars	12, 13	Stars video	HW 10 due/ HW 11 begins Thursday April 20
Apr 24-28	Evolution and death of high mass stars Stellar remnants	13, 14	Morphology of galaxies	HW 11 due/ HW 12 begins Thursday April 27
	MIDTERM 3 (Thursday, Apr 27)			
May 1-5	Milky Way Galaxy A universe of galaxies	15,16	Hubble's Law	HW 12 due/ HW 13 begins Thursday May 4
May 8-12	Measuring distances in the Universe Introduction to cosmology; the Big Bang Model Review Session **(Observing Project due this week)**	16, 17	Movie TBD	HW 13 due Thursday May 11
May 18	**FINAL EXAM – Sections 3 & 4** **Thursday, May 18th** **12:30 a.m. – 2:30 p.m.**	**Comprehensive/ Cumulative**		

Astr 100 ONLINE HOMEWORK INSTRUCTIONS

Here are a few general instructions about the homework. Please review these, but also read the instructions for the individual homework assignments on-line (whenever the case)

1. Homework assignments can be found at the course website http://www.uwsp.edu/d2l/Pages/default.aspx and going to the QUIZZES section. Two different categories are listed. The ***Practice Problems not graded*** are just that, problems posted for you to practice for the exams, but are not graded and although recommended, are not due at all. This handout is concerned with the other section labeled ***Graded Homework***. These homework assignments have a specific due date and are graded.

2. The homework (that would be graded) will be due at 10 P.M. on the date listed/announced. Time and due date are shown on the online listing of the homework. **No late homework will be accepted.**

3. Although you can do the homework multiple times for practice, **only the first attempt on the homework will be recorded and input into the gradebook.** Please make sure that it is your first attempt on the homework that you spend most time on.

4. Keep in mind that when you log into homework, you do not have to finish it during that session. As long as you just close down your browser or back out of that page without hitting the "Submit Quiz" button, you can always go back at another day or time to finish the homework. This allows you to look at the homework, and then come and ask me questions if needed prior to submitting the homework assignment. However, do not forget to hit "Submit" before the due date/time. Just saving the answers does not return a grade.

5. Please feel free to come and ask questions about the homework problems. I am happy to meet with you during office hours, before or after lab, etc. if you have questions prior to submitting your homework.

6. Do not put off your homework until the last minute. There are times when computers do not work, servers go down, etc. Plan ahead and start your homework early so that computer problems do not keep you from turning in your homework.

7. ***Practice Problems*** are generated randomly from a large set of problems. Every time you access a practice test you may see new questions. Sometimes the homework lags behind the last chapter included in an exam, so these practice problems are a valuable resource for testing and reviewing your knowledge. Moreover, the exam could contain a good fraction of questions very similar or even identical to those available for practice.

OBSERVING PROJECT

You will be required to visit the observatory on campus at least once during the semester. The observatory opens for the spring semester at the beginning of February. When you go there the student in charge will have you view at least two astronomical objects through the telescope. **There will be an observing report form available at the observatory. After viewing the objects, fill out the form and have it signed by the student on duty, and return to me by the last day we have a scheduled lecture (see the tentative schedule above).**

The observatory is normally open Monday, Tuesday, and Wednesday evenings from 8:30-10 pm (please check the website http://www.uwsp.edu/physastr/plan_obs/Pages/observatory.aspx). If the skies are cloudy, the observatory will be closed and you need to go another time. The observatory can be contacted to determine if it will be open and has clear skies from any touch-tone phone by calling 346-2208 and selecting the observatory option (number 6) from the automated attendant. The announcement for the evening is usually not recorded until sometime after 8:00 pm since they do not want to close unless absolutely necessary.

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 in the last few weeks of the semester.

Location: The observatory is located on the roof of the Science building. You need to use the southwest stairwell in the Science building and go to the fourth floor, room D402. It is usually very cold in the observatory at night since the dome is open, so please dress appropriately.

You can also benefit from the Planetarium shows (the schedule is available at http://www.uwsp.edu/physastr/plan_obs/Pages/Public-Programs.aspx).