Instructor: Dr. C. Case  
Office Location: Leifson Physics Room 312  
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Office Hours: Tuesdays 1:00 PM-2:20 PM, Thursdays 1:30 PM-2:20 PM

Class/Lab Schedule: Our class meets Tuesday and Thursdays from 2:30 P.M. to 3:45 P.M. in Schulich Lecture Hall 1 (the circular lecture hall building between Physics and Chemistry). We will have our four Lab Experiences on dates to be announced in our Lecture Hall.

Course Description: Descriptive introduction to stellar and galactic systems. The life cycles of stars. Theories of the universe and its formation.

Course Pre/Co-requisites: Completion of the Core Curriculum Mathematics requirement or SAT of 610 or ACT of 27 or COREQUISITE. Corequisite(s): Math 126 R or Math 127 R or Math 128 or Math 176 or Math 181.


Course Objectives: Introductory study of stellar and galactic systems, the life cycles of stars and the formation of the Universe
Silver Core Objective 4 (CO4): Physical & Natural Phenomena
Students will be able to explain the processes by which the natural and physical world is investigated, articulate basic principles used to explain natural phenomena, and apply scientific processes to real problems using observational or experimental methods.
Completion of AST 110 will partially satisfy Silver Core CO4.

Student Learning Outcomes (SLOs):
The underlying idea of SLOS in the large for our Astronomy course can best be summarized by a statement made by Stephen Hawking in his book The Universe in a Nutshell, p. viii : “Our quest for discovery fuels our creativity in all fields, not just science.”

Astronomy is a very broad field and its early development was due to its practical utility for early peoples in their using the stars as a compass, making predictions of the seasons, and, as hunter-gathers settled into fixed communities, developed agriculture, specialized wise men, supported by the community, developed the calendar. Observational Astronomy was what made those developments possible. There is a social component here as well in that as time passed, the development of the calendar led the settled communities to be less close to the seasonal rhythms of the Earth. Also, as scientific and technical discoveries were made, such as spectroscopy and photography, these discoveries were immediately applied to the study of the cosmos. Astronomy spans the times of early peoples to the present day to include nuclear physics and, most recently particle physics considerations related to the Big Bang theory of the origin of the Universe. Most recently, we have successfully landed a space probe on a comet—the Rosetta Project! Astronomy is a very live, vibrant, and con- temporary area of work and well worth our study of it. The scientific method is at the root of all advances in science. Briefly, it consists of being able to consider new ideas with an open mind, requiring new ideas to stand the test of experimental verification, including making verifiable, by experiment, predictions, and eventually be connectable with pre-existing science so far as possible. The methods of skeptical inquiry, of proposing hypotheses, and being able to test them are transferable in some cases to everyday life as well.

In the face of all this, SLOS for us must be relatively few, attainable, and aim at being lifetime takeaways from the course. Most of these takeaways are necessarily specialized to the content and context of the course. After successful completion of AST 110-1001, students will be able to

1. Explain natural and physical phenomena predicted and observed such as sunspots, red- and blue-shifted spectra from “star-light”, supernovae, and colliding galaxies, and the role of nuclear fusion in producing most of the light and heat from the Sun and the other stars.

2. Judge the relative temperatures of stars observed using a telescope and, for stars on the main sequence of the H-R diagram, deduce relative main sequence lifetimes of stars, their relative masses, their relative luminosities, their relative absolute magnitudes, and their relative surface temperatures.
3. (On a clear night, at a location in the Northern Hemisphere) determine the latitude by observing Polaris, the North Star, and in addition determine the North, South, East, and West directions.

4. Demonstrate mastery of the following practical skills

   - Calculate the magnifying powers of simple astronomical telescopes, given the appropriate information
   - Estimate the relative resolving powers of simple astronomical telescopes, given the appropriate information
   - Calculate the f/number of simple astronomical telescopes given the appropriate information and explain the utility of knowing the f/number of a simple telescope.

5. Determine the phases of the Moon by looking at it, and to so determine how far along the Moonth (old Anglo-Saxon word for month after which our Moon is named) is.

6. Students will be able to formulate questions, and analyze scientific evidence, to discriminate between sound and unsound claims, for example comparing and contrasting different hypotheses regarding the origin and evolution of the universe.

**Unique Class Procedures:**
1. We will do most of our homework using WebAssign as discussed below.
2. We will do our four required Lab Experiences as part of our classroom work as discussed above.
3. The Instructor will communicate with class members by announcements in class and by sending emails using the official class roster. We will do a test email on Tuesday, January 20 and discuss the results on Thursday, January 22. If you have not received the email, it is essential that you visit Admissions and Records and make sure they have your correct email to add to the official class roster. It is the responsibility of each class member to check his or her email at least once per day just in case.

**Description of Assignments:**
WebAssign will be used to assign most homework problems and is required for this course. The class key needed to sign onto WebAssign.net is “unr 32101099” where the indicated spaces need to be observed. The cost for this is about $40.19. The cost for access to WebAssign and an ebook version of our required text for the semester is about $61.44. The WebAssign help line telephone number is 1-800-955-8275. A relatively few quantitative problems will be assigned in addition to the WebAssign homework.
The WebAssign Homework assignments, including their due dates, will be made as we go along. All the WebAssign homework assignments will be available on the WebAssign Web Site until the end of the semester even though the due dates for specific assignments will be given as we go along and so be earlier than the end of the course.
If no work on an assignment has been done by the due date set in class, a zero for that assignment will be posted in the Grade Book portion of WebCampus. This zero is a placeholder only and will be removed as soon as work is done on the assignment. Whatever work has been done on assignments will be posted as we go along. Assignments need not be completed by the due dates, though it is better we all do our best to keep up as we go along. All work done on homework assignments is posted for full credit no matter when in the semester it is done.

Grading:
Unless more quizzes and exams prove to be needed, we will have two quizzes during the semester, a mid-term exam, and the final exam. The quizzes, taken together, are 20% of the final grade. The mid-term exam is 10% of the final grade. The final exam is 15% of the final grade. The homework assignments, taken together, are 25% of the final grade. The four lab experiences, collectively, are 20% of the final grade. Attendance, which will be taken every class period including lab, quiz, and exam days, is 5% of the final grade. The questions on the Student Learning Outcomes, which will be separate from the final exam and given along with the final exam, are 5% of the final grade. Plus/Minus grading will be used. The grade scale, based on the final percentage score for each student is as follows.

- A: 93% - 100%
- A-: 90% - 92%
- B+: 87% - 89%
- B: 83% - 86%
- B-: 80% - 82%
- C+: 77% - 79%
- C: 73% - 76%
- C-: 70% - 72%
- D+: 67% - 69%
- D: 63% - 66%
- D-: 60% - 62%
- F: 59% or less

Chapters to be Covered:
We will take Chapters 1-7 and Chapters 17-24 in the order in which they appear. The topics we will cover are the topics of those chapters, sometimes with additional related material. We will nominally cover one to two chapters per week. Homework will be assigned upon the completion of each chapter and due date for each assignment will be given as well as discussed above.
Quizzes and Exams:
The approximate dates of the two quizzes (which are really of exam length) are:
Quiz 1– Thursday, February 19, Quiz 2–Thursday, April 30. The approximate
date for the mid-term exam will be on Thursday, March 26.

As time permits we will devote a class period prior to each Quiz and the mid-term in reviewing for it. We will have at least one weeks’ notice before each Quiz and the mid-term exam. It is the responsibility of the student to seek to make up a missed Quiz or Exam. Everything we do can be made up for full credit.

The final Exam will be held on Thursday, May 7 from 12:30 PM-2:30 PM in our usual Lecture Hall 1 in Schulich and will be over Chapters. 1-7, 17-24, the topics in lecture, some of which are not necessarily in the book, and the Lab Experiences.

The Final Exam will contain a separate portion measuring the Student Learning Outcomes (SLOs) given above and will be part of the final grade for the semester.

Labs:
Rubric for Lab Report Grading:
Our four Lab Reports are done online in WebCampus. The rubric for grading is given there as well and the Grade for each lab can be from 0 to 25 points.

Attendance:
The Absence from Class policy at Board of Regents Handbook, Title 4, Chapter 20 is:
1. There shall be no official absences from any university, state college, or community college class. It is the personal responsibility of the student to consult with the professor regarding absence from class.
2. It is the policy of the NSHE to be sensitive to the religious obligations of its students. Any student missing class, quizzes, examinations or any other class or lab work because of observance of religious holy days shall, whenever possible, be given an opportunity during that semester to make up the missed work. The make-up will apply to the religious holy day absence only. It shall be the responsibility of the student to notify the instructor in advance in writing, according to the policy of the institution offering the class, if the student intends to participate in a religious holy day that does not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the assignment at an alternate time would impose an undue hardship on the instructor or the institution that could not reasonably have been avoided.
Any student, who is denied a make-up option after appropriately noticing the instructor shall have the right to appeal that decision through the normal appeal mechanism in place at that institution.

3. This policy statement, along with additional relevant institutional policies should be included in catalogues or handbooks distributed to students and faculty.

Statement on Academic Dishonesty:
“ ‘Cheating, plagiarism or otherwise obtaining grades under false pretenses’ constitute academic dishonesty according the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student’s enrollment without a grade, giving an F for the course or for the assignment. For more details, see the UNR General Catalog.”

Statement of Disability Services:
Any student with a disability needing academic adjustment or accommodations is requested to speak with me or the Disability Resource Center, Thompson Building, Suite 101, as soon as possible to arrange for appropriate accommodations.

Statement for Academic Success Services: “Your student fees cover usage of the Math Center (784-4433 or www.unr.edu/mathcenter/), Tutoring Center (784-6801 or www.unr.edu/tutoring/), and University Writing Center (784-6030 or http://www.unr.edu/writing-center). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.”

Surreptitious Taping of Class Lectures
“Surreptitious or covert video-taping of class or unauthorized recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students understand that their comments during class may be recorded.”

Syllabus Modification:
This Syllabus may be modified at any time as appropriate.

Finally:
Experience has shown that as class members become acquainted and work together, a semester of enjoyable personal interactions and learning experiences is the result. Let’s think of ourselves as Team Class! This is your class. Enjoy!