Goal: to survey stellar astrophysics, including the investigative processes and principle results of the discipline

Instructor: Dr. Michael L Allen
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Lab: Webster 249
Email: mlfa@wsu.edu (reliable)
Phone: 509-335-1279 (unreliable)

Credits: 3
Level: Tier II
Prereq's: Math 273, Phys 202
Office Hours: tba

Web Page: astro.wsu.edu/allen/courses/astr435/

This text defines the level of difficulty of the course material, and the sequence of presentation.
This text is also used in Astr 436.

Meeting Places: Regular Lectures MW 3:45 - 5pm, in Webster 11
Planetarium Sloan Hall 231
Observatory on Olympia Ave, near the racetrack and greenhouses, south-east end of campus

Class holidays: ML King Jr Day (holiday) Mon Jan 18, 2010
President’s Day (holiday) Mon Feb 15, 2010
March Break March 15-19, 2010

The full academic calendar is available on the website of the Registrar: http://www.registrar.wsu.edu.

The Registrar has reserved a final exam time for this class on Thurs May 6, 2010, 8 - 10am sharp.

Course webpages: Information posted to the webpages includes timely announcements, and statements of learning expectations.

Course Notes: From time to time, notes will be handed out in class. These notes will highlight the major results of a given discussion. They should not be treated as a substitute for either the textbook or the in-class notes. Students are advised that the best way to prepare for class is to preview the material in the textbook.

Classroom Etiquette:

1. The in-class conduct of the course features individual and group learning exercises. Student participation will benefit everyone. Please come to every class and be prepared to work.
2. Cell phones are a blight upon the land. I want neither to hear nor see them. For every cell phone that rings you will be assigned a 5,000 word essay on a special topic dealing with the radio portion of the electromagnetic spectrum; passing the class will be contingent upon the essay’s completion.

Extra credit: Extra credit will be granted for participation in evening planetarium shows (dates announced in class) and star parties at the Jewett Observatory (http://astro.wsu.edu/observatory.html) or elsewhere, hosted by the Palouse Astronomical Society (http://www.palouseastro.wsu.edu).

Observing dates: Sat Apr 24 all observing begins at dusk
(cancelled if cloudy)

Evaluation:

WSU’s grading system can be paraphrased as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Descriptive anchor</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Consistently above average; exceeds expectations</td>
</tr>
<tr>
<td>B</td>
<td>Occasionally above average; meets or exceeds expectations</td>
</tr>
<tr>
<td>C</td>
<td>Performs at the average; meets expectations for continuation to the next level</td>
</tr>
<tr>
<td>D</td>
<td>Performs below average; meets only the minimum expectations</td>
</tr>
<tr>
<td>F</td>
<td>Does not meet minimum expectations</td>
</tr>
</tbody>
</table>
Defining expectations:

The course will be graded by a contract to be finalized in the first week of classes. The contract will define those actions demonstrable by the student that indicate an achievement of course learning goals. Both the instructor and the student must be satisfied that adequate learning has taken place. Learning will be demonstrated by actions.

Action-based goals may include:

- to recall information central to the discipline, including nomenclature, unit systems, and values, without access to reference materials,
- to solve structured problems at the level of those in the textbook, when given access to reasonable reference materials,
- to relate the properties of stars to basic physics,
- to synthesize information from a variety of sources into a coherent description or story,
- to model the physical situations typical of stars using (i) mathematics, (ii) computational algorithms, (iii) diagrams, and (iv) words,
- to describe the physical situations typical of stars to the layperson,
- to understand and apply observational and investigative practices in stellar astrophysics,
- to appraise and defend the standard results and practices of stellar astrophysics.

Measurables, or assessments of learning, will include at least one from each of the following categories:

- reading and writing assignments, projects, tests, portfolio,
- listening and speaking projects, tests, debates, presentations,
- projects with group accountability,
- projects with individual accountability,
- software projects.

Each measurable will be designed to help the student make incremental progress towards one or more course goals.

<table>
<thead>
<tr>
<th>List of probable topics</th>
<th>Text Reference</th>
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</thead>
<tbody>
<tr>
<td>Continuous spectra: magnitude, color, blackbody law</td>
<td>§3</td>
</tr>
<tr>
<td>Line spectra: Kirchoff’s laws, lines, Bohr atom</td>
<td>§5.1 &amp; 5.3</td>
</tr>
<tr>
<td>Telescopes: Rayleigh resolution criterion</td>
<td>§6.1</td>
</tr>
<tr>
<td>Binary systems and stellar parameters</td>
<td>§7.1 - 7.3</td>
</tr>
<tr>
<td>Morgan-Keenan spectral classes and stellar parameters</td>
<td>§8</td>
</tr>
<tr>
<td>Stellar atmospheres</td>
<td>§9</td>
</tr>
<tr>
<td>Stellar interiors</td>
<td>§10</td>
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<tr>
<td>Our Sun as a model star</td>
<td>§11</td>
</tr>
<tr>
<td>Post main sequence evolution of low mass stars</td>
<td>§13</td>
</tr>
<tr>
<td>Post main sequence evolution of high mass stars</td>
<td>§15.1 - 15.3</td>
</tr>
<tr>
<td>Degenerate stellar remnants</td>
<td>§16</td>
</tr>
</tbody>
</table>

Academic Integrity: "Academic dishonesty" is anytime you represent someone else's work as your own. All forms of cheating, plagiarism, and fabrication, are prohibited as stated in the WSU Handbook (WAC 504-25-015). Academic integrity is policed rigorously in this course. Students receive zero credit for a first offense, and fail the course for subsequent offenses. In all cases, a report is sent to the Office of Student Conduct. Reference: [http://www.conduct.wsu.edu/](http://www.conduct.wsu.edu/).

Students with Disabilities: Reasonable accommodations are available for students who have a documented disability. Please visit the Disability Resource Center (DRC) during the first two weeks of every semester to seek information or to qualify for accommodations. All accommodations must be approved through the DRC, located in Washington Bldg 217, 509-335-3417 in Pullman, or [http://www.drc.wsu.edu](http://www.drc.wsu.edu).

WAC policies on final exams: (1) No final exams will be given at a different time than posted, except (2) an exam date may be changed if a student has 3 or more exams on a single day. (3) No exams shall be given during Dead Week, except make-up exams.

Strategies for success: Look up any word you do not understand in a good dictionary. Re-write your notes in your own words. Form a weekly study group that can meet for 30-60 minutes. Get an early start on assignments. Make good use of instructor office hours by arriving with a written list of questions. Mental and physical health go hand in hand: eat right, stay active, stop watching TV. Maintain an academic mindset: question everything, do not be content with your knowledge.