Teaching Staff

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<tr>
<th></th>
<th>Instructor</th>
<th>Teaching Assistant</th>
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<tbody>
<tr>
<td>Name</td>
<td>Prof. Tony Wong</td>
<td>Jessica Evans</td>
</tr>
<tr>
<td>Office</td>
<td>210 Astronomy</td>
<td>128 Astronomy</td>
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<td>Phone</td>
<td>244-4207</td>
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<td>E-mail</td>
<td><a href="mailto:wongt@illinois.edu">wongt@illinois.edu</a></td>
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</tr>
<tr>
<td>Office Hours</td>
<td>Tue 2-3, Thu 3:30-4:30</td>
<td>Mon 4-5 (236 Astronomy)</td>
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Class Schedule (subject to change)

Course Information

Credit: 3 credit hours. If you wish to take this class for Advanced Composition (Comp II), you should also enroll in ASTR 401 (1 credit hour).

Prerequisites: Credit in PHYS 212 (University Physics: E&M). Credit or concurrent registration in PHYS 213 (Thermal Physics) and 214 (Quantum Physics) is strongly recommended. Some prior knowledge of astronomy, at the level of ASTR 210, is assumed.

Course Web Page: Located on [https://courses.las.illinois.edu/](https://courses.las.illinois.edu/) (College of LAS Moodle)

Course Goals

Astronomy 405 is an in-depth survey of the Solar System and the interstellar medium. We will review our current knowledge of our planetary system (and how it was obtained), studies of extrasolar planetary systems, and observations and theory of the gas and dust between the stars. Topics include: solar system dynamics; planetary atmospheres, surfaces, and interiors; characterization of extrasolar planets; star and planet formation; components of the ISM; ionization and recombination; heating and cooling processes; and characteristics of interstellar dust. ASTR 405 is intended for advanced undergraduates with an interest in astronomy and a strong background in physics. The course is highly quantitative, and is intended to provide a flavor of where the current research frontiers in these subjects lie. Upon completion of this course, students should be ready to undertake graduate-level research and coursework in these subjects.

Textbooks

Recommended (available at bookstore and at Grainger Reserves): An Introduction to Modern

List of errata from the publisher
This huge text provides a broad survey of astrophysics, although with relatively poor coverage of the interstellar medium. Still, it is an important reference book for all of the 400-level astronomy courses.

Additional readings from the scientific literature (e.g., Encyclopedia of Astronomy & Astrophysics) will be assigned as appropriate.

Also Recommended (must be purchased online):

  A graduate-level textbook with good coverage of spectral line astrophysics.
  A graduate-level textbook with particular strength in PAH's and PDR's. This book is available at Grainger Reserves.
  This is a more basic text, used when I teach ASTR 210, but still useful for many aspects of the 404-406 series.

Grading

<table>
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<th>Component</th>
<th>Points</th>
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<tr>
<td>Homeworks (best 11 of 12)</td>
<td>440 (40 pts each)</td>
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<tr>
<td>In-class 5-minute essays (20)</td>
<td>100 (5 pts each)</td>
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<tr>
<td>Midterm Hour Exam</td>
<td>160</td>
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<tr>
<td>Final Exam</td>
<td>300</td>
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<tr>
<td><strong>Total Points</strong></td>
<td><strong>1000</strong></td>
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The point total will be converted to a percentage, with A's corresponding to 90-100%, B's corresponding to 80-89%, C's corresponding to 70-79%, and D's corresponding to 60-69%. Pluses and minuses will be used.

Assignments

Regular assignments are an important part of the course, helping to reinforce concepts covered in the lectures and textbook.

1. **Homework assignments** (accessed through the course web page). These will consist of about 6 problems each, and are due in class on Wednesdays. Handwritten solutions are acceptable, but should be legible. Occasionally exercises will need to be completed on a computer. Credit will only be given to well-explained answers, and all important steps in a calculation must be shown.

2. **5-minute Essays**. These will be short (1 paragraph) writing exercises given once or twice a week during lecture. You will be asked to reflect on a recently covered topic or describe the “muddiest” point in the assigned reading. You will be given 5 minutes to complete the paragraph. They will be
graded mostly on a credit (CR) or no credit (NC) basis, the only requirement is that you have made an effort to understand the material. The 20 highest scores will be used in calculating your grade.

3. **Keep a copy of your work.** You are strongly urged to make a scan or photocopy of anything you hand in (or keep a copy of any electronic file). This is to protect you in case a situation arises in which there is disagreement about whether or not an assignment has been submitted.

### Rules of Etiquette

For the benefit of your fellow students and your instructor, you are expected to follow these basic rules of decorum.

- Show up for class on time. If you must be late on a regular basis, please inform the instructor.
- Turn off your cell phone before class begins.
- Electronic devices or laptop computers can only be used with the instructor's permission. These can distract you or others.
- Do not leave class early, and do not rustle papers or pack up bags in preparation for leaving before class time is up.
- Be attentive in class. Do not use headphones, read newspapers, or prop your feet up on other chairs or desks.
- Be respectful in your interactions with your fellow students and your teachers, whether in person or in cyberspace.

### Class Policies

- **General:** This course will follow all policies in the Student Code ([http://www.admin.uiuc.edu/policy/code/](http://www.admin.uiuc.edu/policy/code/)).

- **Class Participation:** Regular attendance is important, and there will be frequent “5-minute essays” which you will need to hand in during class. If you miss too many of these your grade will begin to suffer. You are also encouraged to volunteer or ask questions in class and come to office hours; this is a good way to develop familiarity with the instructor (which might come in handy if you choose to apply for graduate school...).

- **Working With Others:** Discussing course material with your classmates is encouraged, but each student is expected to do his or her own work. You are allowed to work together on homework problems, but each student should write up an individual description of the solution. Some activities may allow you to work together in gathering data. Each student who participated in a joint measurement may make use of that jointly acquired data, but each student should prepare an individual report. If you are in any doubt about whether something is allowed or not, ask the instructor or TA.

- **Late Assignments:** Assignments have due dates as posted on Moodle. Work turned in late will be assessed a 10% penalty per calendar day it is late. For a well-documented excuse (such as illness) the penalty may be waived at the instructor's discretion. No work will be accepted more than a week after the due date, regardless of medical excuse, since solutions will be released. In general, late assignments can only be submitted during official class meeting times, posted office hours, or by e-mail to the TA. Department mailboxes are not secure and should NOT be used.

- **Make-up exams** will be offered in well-justified circumstances, in accordance with sections 1-501,
Advance notice is **required** for approved school events (e.g., athletic events), religious observances, and other planned absences. Sudden illness requires documentation from McKinley Health Center or the Emergency Dean. The Emergency Dean must be contacted in other cases of unforeseen circumstances (e.g., death in the family). The format of the make-up may differ from the standard exam. In all cases, the make-up will be scheduled *after* the main exam.

- **Special accommodations:** To insure that concerns are properly addressed from the beginning, students who require reasonable accommodations to participate in this class are asked to see the instructor as soon as possible. All accommodations will follow the procedures as stated in sections 1-107 and 1-110 of the *Student Code*.

- **Academic Integrity:** Any instance of academic dishonesty (including cheating and plagiarism) will result in a grade of 0 for that component and be documented in the student's academic file. This includes copying written material from the Internet without proper attribution. Please refer to sections 1-401 to 1-406 of the *Student Code*.

*This page last updated 26 Mar 2012 (new office hrs)*