

# **ASTR 430: Astronomical Pedagogy**

## **VVO 110 / Fall 2013 / W 12:10-1:00 PM**

Instructor: Meredith Hughes

Email: amhughes@wesleyan.edu

Office: VVO 109

Office hours: Tuesday 11am-noon, Friday 3-4pm, or by appointment

Office phone: 3667

### **COURSE DESCRIPTION**

Astronomy is often described as a “gateway science” – its universal appeal makes it an ideal vehicle for outreach and education. As astronomers, we therefore have both a unique opportunity and a responsibility to educate students and the general public about the universe. Many of you will serve as teaching assistants during your time at Wesleyan and may even pursue careers with a pedagogical component. The goal of this course is to provide you with tools and resources to make you a better formal and informal teacher of science, whether as a TA in an astronomy class, a volunteer or docent, or simply an educated citizen.

### **FORMAT**

The course is divided into three components. (1) Early in the semester we will train ourselves in the use of the Starlab and on some appropriate presentation material. Throughout the semester each (group of) student(s) will work on developing an age-appropriate Starlab presentation. At the end of the semester we will apply these skills by giving a planetarium presentation to students in the after-school program at the Green Street arts center. The final class will be spent discussing these presentations, including which aspects of the presentation worked well and which didn't. (2) The middle of the semester will involve five weeks of student presentations on some aspect of pedagogy (which must be approved by the instructor at least one week before the presentation; please ask for suggestions if you need them!). For example, you may demonstrate a pedagogical technique, discuss a recent research result in the field of science education, or present an article from the Astronomy Education Review. (3) For the first time, this pedagogy course will include a component on ethics. These will be student-led discussions on instructor-chosen topics and readings (listed in the Syllabus below and posted on the Moodle site). Ethical conduct in both research and teaching is crucial to the practice of astronomy.

### **Suggestions for Speakers:**

1. Be ready to start on time
2. Take your talk seriously. Research it thoroughly, and put adequate time into the development of the talk itself.
3. Practice your presentations ahead of time to hone your delivery and to ensure that your talk fits within the allotted time.
4. Use visual aids (e.g., PowerPoint, Keynote, Web site, etc). Astronomy is a visual science; take advantage of that!

5. Remember that your topic must be approved at least one week in advance by the instructor. Consult with the instructor, or any other faculty member, if you are unsure about what you would like to talk about.

**Suggestions for the Audience:**

1. Be there on time. We will start PROMPTLY at 12:10pm each week. We always seem to run short on time, so we must start on time!
2. Don't be afraid to ask questions. This course is a seminar so discussion is strongly encouraged. If student speakers cannot answer the questions, it's OK; someone else may jump in with some comments.
3. As we have done in the past, we will also open the floor for CONSTRUCTIVE suggestions for the speakers. These are meant to help them prepare for future presentations, either here or elsewhere.

**TEXTS AND READINGS**

For the pedagogy aspect of the course, assigned readings are available on the Moodle site. The readings are very light, ranging from 4-7 pages per week total (don't be fooled by the large number of documents!). The whole class is expected to read the material on ethics.

**GRADING**

This course is graded on a Credit/Unsatisfactory basis. Receiving credit for the course requires that you: (1) attend class and participate in discussions, (2) (co-)lead at least one class discussion, and (3) develop and deliver a Starlab presentation or other age-appropriate pedagogical activity.

**ATTENDANCE**

Attendance is expected, and will be critical for completing all aspects of this course. Students will be permitted one unexcused absence only. Students with more than one unexcused absence will not receive credit for the course.

**STUDENTS WITH DISABILITIES**

Wesleyan University is committed to ensuring that all qualified students with disabilities are afforded an equal opportunity to participate in and benefit from its programs and services. To receive accommodations, a student must have a documented disability as defined by Section 504 of the Rehabilitation Act of 1973 and the ADA Amendments Act of 2008, and provide documentation of the disability. Since accommodations may require early planning and generally are not provided retroactively, please contact Disability Resources as soon as possible. If you believe that you need accommodations for a disability, please contact Dean Patey in Disability Resources, located in North College, Room 021, or call 860-685-2332 for an appointment to discuss your needs and the process for requesting accommodations. The procedures for registering with Disabilities Services can be found at: <http://www.wesleyan.edu/studentaffairs/disabilities/index.html>

### Course Outline

Date	Topic	Leader(s)	Reading/Assignment
9/4	Overview, Private Universe	Meredith	
9/11	Starlab I: Setup, quick demo, takedown	Meredith	Starlab manual
9/18	Starlab II: Student practice, sample show	Meredith	Sample curricula
9/25	Pedagogy I		
10/2	Pedagogy II		
10/9	Pedagogy III		
10/16	Pedagogy IV		
10/23	Pedagogy V		
10/30	Ethics I: Research Misconduct (PF <sup>2</sup> )		AAS ethics statement, Bubble fusion (Science), US federal policy on research misconduct
11/6	Ethics II: Conflicts of Interest		Gaskell (NYT), NASA Peer Review COI Agreement, (Truth & Consequences - optional)
11/13	Ethics III: Data Management/Authorship		ApJ policy, Hunt 1991, Beckwith essay
11/20	NO CLASS – Starlab presentations	N/A	Sign up for a slot!
11/27	NO CLASS – T-GIVING BREAK	N/A	
12/4	Wrap-up, discussion of Starlab shows	Meredith	

Acknowledgment: Much of the course design, particularly readings, was inspired by a course on pedagogy by Phil Sadler and another on ethics by Paul Kalas.