AST111: Introduction to Solar System Astronomy
Fall 2013

Instructor: Keith “Kilo” Watt, M.A., M.S.
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Room: GCC Main Campus, PS-167
Date/Time (Section 15758): T/R, 10:00 – 11:15 AM

Office Hours (PS-108):
  M/W   8:30 – 9:30 AM
  Tu    2:00 – 3:00 PM
  F     8:30 – 10:30 AM

Textbook: Required: Mastering Astronomy 7e Online Tutorial System
(http://www.MasteringAstronomy.com)
Optional: The Cosmic Perspective 7e, Bennett/Donahue/Schneider/Volt
(Note that this book includes Mastering Astronomy for free)

Prerequisites: Introductory Algebra (MAT 092) - You’re gonna need it!

Course Description
From the 2012-2013 Catalog:

Introduction to astronomy for the non-science major. History of astronomy, properties of light, instruments, the solar system and nearby stars.

Ooooo-kay. So what is this class really about? Basically you’re going to learn about our Solar System, how it was formed, what the planets and other small bodies in it are like, how we have studied it in the past, and what we are doing to explore it today. I am a former NASA engineer, so I’ll be providing some perspectives and up-to-date information as well. In addition, by the time you complete this course, you will become intimately familiar with telescopes of all types – and the advantages and disadvantages of each – as well as what the planets in our Solar System teach us about our world and where it might be headed.

Expectations
I fully realize that many of you are here only to satisfy a basic science requirement. But in order for you to satisfy that requirement you have to learn something! If you aren't here to learn astronomy, if you have little or no interest in astronomy, drop this course! We have a lot to do and a very limited amount of time in which to do it, so you can expect that we are going to work pretty hard. That said, if you are willing to put in the work, I think you will find this course to be one of the more fun classes you've taken so far.
This class meets only two and a half hours per week. For that reason, attendance is mandatory at all class sessions. If you miss more than **three class sessions**, I’ll assume you’ve decided to drop the class and may drop you from the roster. Realistically, if you’ve missed more than three classes, you don’t have much of a chance of passing the course anyway – you’ll just be too far behind.

Each week you should have the following with you:
- Lecture-Tutorial book
- Pencil (NOT a pen!)
- Paper or notebook for taking notes
- Calculator with scientific notation and trig functions (NOT a cell phone calculator!)

One last thing: Please keep your cell phones off during class. **THIS INCLUDES TEXTING!**  If you have a special circumstance (babysitters at home, elderly parents, etc.), please talk to me and we’ll make arrangements. In addition, I ask that you **not** use laptops in class. I realize this seems very anti-technology, but there have been a number of studies that students who use a laptop in class often score a full letter grade lower – there’s just too much temptation for distraction.

**Office Hours**
In addition to the office hours above, you can also attend the office hours of GCC’s other astronomy professors, Sally Watt in PS-113 or Brian Gleim in PS-110. You should come see me in office hours **BEFORE** you get frustrated and not after! If you are at all uncomfortable with math, come see us for that as well – there’s nothing to be afraid of! We can get you up to speed no matter what trouble you might be having, but it is YOUR responsibility to come see us!

**Grading**
Grades will be assigned based upon the following items:
- **MasteringAstronomy** Homework (daily) = 0.25
- In-Class Quizzes (daily) = 0.10
- Exam 1 = 0.20
- Exam 2 = 0.20
- Final Exam = 0.25

Notice that homework is 25% of your grade. **Please keep in mind that it is impossible to get a C in this class without doing the homework!** If you are having problems on the homework, do not press the “Give Up” button! Email me instead! Consider me to be your “Give Up” button. The purpose of the homework is to help you learn the material – if you need a little extra guidance from me to learn, I’m glad to do that.

As indicated above, we will be having a quiz every day. Yep, get up off the floor, it’s not that bad. If you understand the material from the previous class session, you’ll do fine. On the other hand, if you aren’t in class, on time, and engaged in learning, you probably aren’t going to pass the quizzes or the course either.
Make-ups
As a general rule, assume it can't be done. Other than GCC-approved activities (you should have an authorization form), there are no excused absences. Your homework will be submitted via Mastering Astronomy (our online tutorial system). You will lose 2% of the total possible credit for each hour your assignment is late, to a maximum of 50%. You can always get at least half credit for your work, so it’s worth your while to do it, even if it’s late.

Extra Credit
Obviously, our class meets during the day, so there aren’t a whole lot of stars and planets visible during class hours. In order to encourage you to go out and do some observing of the sky, I will offer you the following deal: If you attend an organized stargazing event (either through “Stargazing for Everyone” or at the GCC North Observatory) and write a one-page college-level paper on what you saw, I will give you an additional 20 points towards your homework point total (about a week’s worth of assignments, on average). You must also provide a signed program from the event as proof of attendance. Planetarium shows and talks do NOT count for this opportunity! Papers are due no later than Monday December 2nd in order to qualify for extra credit – I will not accept late extra credit papers for any reason! Check with me individually if you’re interested in this deal – what a bargain!

Academic Dishonesty
I take the academic integrity VERY seriously. If you are caught, you're history. End of story. In this course, academic dishonesty includes: talking during an exam or quiz, looking at another person's quiz or test, using another person's Mastering Astronomy answers, fabricating data, and utilizing material from previous years. If I get two papers that are substantially the same, then neither person will get credit for the work. Mastering Astronomy has anti-cheating systems installed as well – believe me, it’s obvious when people cheat. Additionally, GCC may impose disciplinary actions on you for misconduct or violations of law or GCC rules and policies. You could be subject to temporary exclusion, disciplinary probation, suspension, or expulsion from class. Sound like fun? I didn’t think so. All of these policies are outlined in the official GCC Student Handbook, so you are responsible for knowing them – read and heed!

Student Conduct
All student conduct and disruption issues will be handled in accordance with the GCC Student Handbook. Please see your Handbook for complete details.

Withdrawal Policy
You may withdraw yourself from the course by submitting a student-initiated withdrawal form to the Admissions Office before November 22nd. I will not drop you after this date for any reason!
**Special Circumstances**
Students with a documented disability should see me ASAP to discuss accommodations. The Disability Services and Resource Office at GCC Main is in TDS-100 (623-845-3080). It's no big deal, obviously I have one too....

**Subject to Change – Your Mileage May Vary**
Good education means adapting my instructional techniques to the particular needs of my students. As a result, any or all of this information in subject to change as necessary!

**Course Objectives**
Here are the objectives for this course, as laid out in GCC’s official course description:

1. Apply the scientific method and other critical thinking models to astronomical phenomena for hypotheses development, experimental design, data acquisition, and data analysis.
2. Explain the application of fundamental physical principles to various astronomical phenomena.
3. Outline the history of astronomical thought.
4. Describe in terms of energy, wavelength, and frequency the various portions of the electromagnetic spectrum.
5. Describe instruments used to detect radiation from the various portions of the electromagnetic spectrum.
6. Compare the physical properties of the earth with its moon.
7. Give an overview of the components of the solar system.
8. Compare and contrast the physical properties of the major planets.
9. Describe the minor components of the solar system.
10. Explain possible models of solar system formation.
11. Describe the physical properties of the sun.
12. Compare solar system dimensions with nearby stars dimensions.
Tentative Course Schedule
This schedule is subject to change from day to day as I may talk more about things that are interesting to the class and less about things that we find aren’t so fascinating.

- **Celestial Motions**
  - Charting the Heavens
  - Motions in the Sky
  - Lunar Phases
  - Reasons for the Seasons

- **The Science Process**
  - History of Astronomy (and Astronomers)
  - Kepler’s Laws of Planetary Motion

- **Tools of Astronomy**
  - Light, Radiation, and Spectroscopy
  - Telescopes, Detectors, and Mounts

- **Introduction to the Solar System**
  - Definitions of Celestial Objects
  - Formation of the Solar System

- **The Terrestrial Planets**
  - Earth
  - The Moon and Mercury
  - Venus and Mars

- **The Jovian Planets**
  - Jupiter and Saturn
  - Uranus and Neptune

- **Small Bodies in the Solar System**
  - Pluto, Dwarf Planets, and Kupier Belt Objects
  - Asteroids, and Comets

- **The Sun**
  - Structure
  - Sunspots and Solar Storms

- **Extrasolar Planets**
  - Detection Methods
  - Important Planets Found So Far
  - Life in the Universe

**Dates to Note:**
- **Exam #1:** Thursday, 3 October
- **Exam #2:** Thursday, 7 November
- **Veteran’s Day:** 13 November (NO CLASS!)
- Last Day to Withdraw: Friday, 22 November
- Last Possible Stargazing Event: Saturday, 30 November
- Extra Credit Paper Deadline: Monday, 2 December
- **Final Exam (Cumulative):** Tuesday, 10 December, 10:00 – 11:50 AM
Using *Mastering Astronomy*

**KEEP THESE INSTRUCTIONS WITH YOU!**

**Registration Procedure**
1. Point your web browser at [http://www.MasteringAstronomy.com](http://www.MasteringAstronomy.com). If you have trouble getting web access or any part of the registration process, come see me or email me right away!
2. You will need to purchase an access code from the site (instructions are on the web page listed above) or from the bookstore. (The optional book includes a free code, as well.)
3. Be sure to use your first name and last initial for both your Login Name and your Student ID.
4. Use **85302** for your school’s ZIP code.
5. The textbook to use is *Bennett/Donahue/Schneider/Volt, The Cosmic Perspective 7e*
6. Here is your course ID: **AST111F131000**

**Working Problems and Tutorials (Summary)**
1. Read each part of the problem, and choose your answer. Press “submit” to see if you are correct.
   a. You can keep trying to answer a question as many times as you like, but you will lose as much as 1/3 of the points for each wrong attempt – be sure of your answer before pressing “submit”!
   b. If you are unsure of the answer, you can press the “hints” button to get hints. These hints do not count against you, but you will get bonus points for every hint you do not open – it’s possible to get greater than 100% on each assignment!
2. **IMPORTANT: IF THE HOMEWORK SET INCLUDES A “TUTORIAL” (an interactive activity) YOU MUST PRESS THE “S” BUTTON IN THE LOWER RIGHT CORNER IN ORDER TO GET CREDIT!!**
3. Once you have answered all parts of the problem, press “Submit Problem” to send your results to me.
4. Sometimes you will be expected to rank certain quantities from greatest to least or vice versa. Remember that some quantities may be **equal** to each other – place them on **top** of each other in the ranking task window or you will not be able to solve the problem!

Keep in mind that you will learn **nothing** by random guessing – you’ll be completely wasting your time. You don’t get the problem right on the **third** try, email me for help before going on! **You should never use the “Give Up” or “Request Answer” button!**
I acknowledge that I have received a course syllabus for the course described above and that I am responsible for knowing and following the information provided. I have read it and understand the attendance, withdrawal, grading and other policies. I recognize that to successfully complete this course, it may require 2 to 3 hours out of class for each hour spent in class. Further, I understand that I have to be in class, on time for every class session.

Every student is expected to know and comply with all current published policies, rules, and regulations as printed in the college catalog, class schedule, and/or student handbook.

Printed Name: _______________________
E-mail address or some way to contact you:
____________________________________

Signature: ___________________________
Date: _______________________________