ASTRONOMY 112: Stars, Galaxies, and Cosmology
Spring 2014 Syllabus
Section 18522
MWF 9:00 – 9:50 AM
Room: PS167

Contact Information:

<table>
<thead>
<tr>
<th>Instructor:  Sally Watt, M.S.</th>
<th>Office Hours:</th>
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<tbody>
<tr>
<td>Office:        PS113</td>
<td>Mon, Wed 11:00 AM – 12:00 PM</td>
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<tr>
<td>Phone: (623) 845-3386</td>
<td>Tues Thurs 8:30 – 10:00 AM</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:sara.watt@gccaz.edu">sara.watt@gccaz.edu</a></td>
<td>Astronomy Assist times are available as well.</td>
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Course Description: This course will provide you with an introduction to astronomy and science procedures even if you are not a science major. We will discuss the scientific method, history of astronomy, properties of light, the structure and evolution of stars, star clusters, galaxies and cosmology.

Prerequisites: Introductory Algebra (MAT 092) or a higher course. Introductory Algebra is similar to a one-year high school algebra course. There will be some algebra required.

Text: All texts must be purchased new! You must bring the lecture-tutorials workbook to class every day! The homework will be assigned through Mastering Astronomy.

(Note: this kit is linked to The Cosmic Perspective 7th edition by Bennett et al.)

Attendance: It is your responsibility to be in class on time! You are responsible for the material presented in class. Other than GCC approved activities, there will be no excused absences. As there is no assigned text for this class, most of the information will be presented in class. We will be covering a lot of material in each class so it is important that you are here every day. There will be attendance checks on random days. No make-ups for the attendance checks will be allowed.

Withdrawal Policy: A student may withdraw from the course by submitting a withdrawal form to the Admissions Office. All withdrawals must be done before the last date for student initiated withdrawal, April 18, 2014. I will not withdraw students on the final roster! If you miss an exam and have not contacted me, I reserve the right to initiate your withdrawal from the class.

Disabilities: If you have a disability that may have some impact on your work in this class and for which you may require accommodations, please notify me and the Disability Services and Resources Office on the GCC campus located in room TDS 100 (Phone: 623.845.3080) or on the GCC North campus located in the Student Services C building.

Disciplinary Action: Disciplinary actions may be imposed on student for misconduct or violation of law and/or college rules and policies. Students may be subject to the following: temporary exclusion, disciplinary probation, suspension or expulsion from class. The policies followed in disciplinary actions are outlined in the official Student Handbook. The relevant section can be viewed online at http://www.gc.maricopa.edu/catalog/student_rights.html. 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.
Lecture Schedule:
The following is a rough outline of what we will cover each week. The schedule is subject to change. Changes will be announced in class but you will be responsible for the changes whether or not you are present.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Jan. 13 – 17</td>
<td>Intro. / Positions on the sky / Motions of Earth</td>
</tr>
<tr>
<td>Jan. 20 – 24</td>
<td>MLK HOLIDAY / History of Astronomical Thought</td>
</tr>
<tr>
<td>Jan. 27 – 31</td>
<td>Radiation and Spectroscopy</td>
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<tr>
<td>Feb. 3 – 7</td>
<td>Telescopes</td>
</tr>
<tr>
<td>Feb. 10 – 14</td>
<td>The Sun</td>
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<tr>
<td>Feb. 17 – 21</td>
<td>Review and Exam</td>
</tr>
<tr>
<td>Feb. 24 – 28</td>
<td>A field guide to the Stars</td>
</tr>
<tr>
<td>Mar. 3 – 7</td>
<td>Interstellar Medium</td>
</tr>
<tr>
<td>Mar. 10 – 14</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>Mar. 17 – 21</td>
<td>Stellar Evolution</td>
</tr>
<tr>
<td>Mar. 24 – 28</td>
<td>Explosions, Neutron Stars and Black holes</td>
</tr>
<tr>
<td>Mar. 31 – Apr. 4</td>
<td>Review and Exam</td>
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<tr>
<td>Apr. 7 – 11</td>
<td>The Milky Way Galaxy</td>
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<tr>
<td>Apr. 14 – 18</td>
<td>Other Galaxies</td>
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<tr>
<td>Apr. 21 – 25</td>
<td>Dark Matter</td>
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<tr>
<td>Apr. 28 – May 2</td>
<td>Cosmology / Life in the Universe</td>
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<tr>
<td>Mon. May 5</td>
<td>9:00 – 10:50 AM Review and Final Exam</td>
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By the end of this course you should be able to:
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. Describe in terms of energy, wavelength, and frequency the various portions of the electromagnetic spectrum.
4. Explain what information can be obtained by spectral analysis.
5. Describe the physical properties of the Sun.
6. Explain various techniques used to provide estimates of some fundamental properties of stars.
7. Explain binary star systems and star clusters.
8. Discuss the significance of the Hertzsprung-Russell Diagram.
9. Describe the composition of the interstellar medium and its effects on radiation.
10. List the possible steps in the formation of stars.
11. Describe the birth, life, and death of both low-mass stars and high-mass stars.
12. Describe the final remnants of both low-mass stars and high-mass stars.
13. Describe the contents and structure of the Milky Way Galaxy.
14. Describe the classification and distribution of galaxies.
15. Discuss the significance of Hubble’s Law.
16. Describe the possible models which account for active galaxies.
17. Describe current cosmological models and their implications on the past and the future.
Stargazing Event:
Yes, this is an astronomy course. No, we will not be spending most classes outside at night since this course is during the day. However, I DO want you to take a look at the sky above you and what wonders it can hold. So, for 20 extra credit points you may attend a stargazing event held by a suitable astronomy club or our very own observatory. Check out the stargazing events held by Tony and Carole LaConte (www.stargazingforeveryone.com). See the website for times and locations. Kitt Peak Observatory in Tucson or Lowell Observatory in Flagstaff are viable options as well. A planetarium program is NOT an acceptable event. A one-page report on where you went, what you saw, and what you learned and some proof that you attended will be due by Monday April 28, 2014.

Late Policy: You will have all semester to do this! Absolutely no late papers will be accepted!

Homework:
Homework assignments will be assigned each week and can be done through the Mastering Astronomy Web site. You will have 1 week to complete each homework assignment. If you do not have a computer with internet access at home, the computers in the High Tech centers may be used. To log onto the website, you will need to create your own account. Follow the instructions found later in this syllabus.

Late Policy: Homework is due by midnight on the due date whether you are in class or not. Late homework will decrease the points awarded by 2% per hour for 50 hours after the due date. After that, no late homework will be accepted, but you can complete the homework for practice.

Grades:
There will be three exams (2 mid-terms and a final) worth 100 points each. Homework will vary depending on the amount of work required for each question. Random quizzes will show up throughout the semester – be prepared!

| 3 Exams @ 100 points each | 300 |
| 14 Homeworks | ~120 |
| Quizzes | ~50 |
| **Total (approx.)** | ~470 |

Exam grades may be curved, but the final grades will be assigned by total points with 90% = A, 80% = B etc. I will give you running estimates of your grades after each exam.

Syllabus Acknowledgement Sheet:
You are responsible for understanding the material presented in this syllabus. Students will be notified by the instructor of any changes in the course requirements or policies. In order to remain in the class, you must sign and date the syllabus acknowledgement sheet on the last page by January 20, 2014.
Dear Student:
In this course you will be using MasteringAstronomy™, an online tutorial and homework program that accompanies your textbook.

What You Need:
- ✓ A valid email address
- ✓ A student access code (Comes in the Student Access Kit that may have been packaged with your new textbook or is available separately in your school’s bookstore. Otherwise, you can purchase access online at www.masteringastronomy.com.)
- ✓ If given the choice, link your account to Bennett/Donahue/Schneider/Voit, The Cosmic Perspective, 7e
- ✓ The ZIP code for your school: 85302
- ✓ A Course ID: WATTAST112SEC18522

Register
- Go to www.masteringastronomy.com and click New Students under Register.
- To register using the Student Access Code inside the MasteringAstronomy Student Access Kit, select Yes, I have an access code. Click Continue.
  –OR– Purchase access online: Select No, I need to purchase access online now. Select the text listed above and whether you want to include access to the eBook (optional), and click Continue. Follow the on-screen instructions to purchase access using a credit card. The purchase path includes registration, but the process may differ slightly from the steps printed here.
- License Agreement and Privacy Policy: Click I Accept to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under “Do you have a Pearson Education account?” and supply the requested information. Upon completion, the Confirmation & Summary page confirms your registration. This information will also be emailed to you for your records. You can either click Log In Now or return to www.masteringastronomy.com later.

Log In
- Go to www.masteringastronomy.com.
- Enter your Login Name and Password and click Log In.

Enroll in Your Instructor’s Course and/or Access the Self-Study Area
Upon first login, you’ll be prompted to do one or more of the following:
- Enter your instructor’s MasteringAstronomy Course ID listed above.
- Select your text, if available, and Go to Study Area for access to self-study material.
- Enter a Student ID. Your instructor may request that you enter a special Student ID for this course. If so, be sure to enter this information EXACTLY as instructed.

Click Save and OK.

Congratulations! You have completed registration and have enrolled in your instructor’s MasteringAstronomy course. To access your course from now on, simply go to www.masteringastronomy.com, enter your Login Name and Password, and click Log In. If your instructor has created assignments, you can access them by clicking on the Assignments button. Otherwise, click on Study Area to access self-study material.

Support
Access Customer Support at www.masteringastronomy.com/support, where you will find:
- System Requirements
- Answers to Frequently Asked Questions
- Additional contact information for Customer Support, including Live Chat
I acknowledge that I have received a course syllabus for the course described above. I have read it and understand the attendance, withdrawal, grading and other polices. I recognize that to successfully complete this course, it may require 2 to 3 hours out of class for each hour spent in class. I understand that I am 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:  _______________________________

Have you ever had a course in astronomy prior to this one?

If yes, when and where (list all courses including labs)?

How much Physics, Physical Science, Chemistry, and Math have you had?

What do you hope to get out of this course?

What (if any) part of astronomy do you think will be most interesting to you?