AS101A – Introduction to Astronomy: Cosmology
Washburn University
Spring 2015

Instructor: Dr. Brian Thomas    Office: Stoffer 210B
Office Hours: By appointment; please contact me in class, by phone or email.
Phone: 785-670-2144    E-mail: brian.thomas@washburn.edu
Instructor’s website: http://www.washburn.edu/faculty/bthomas/

REQUIRED SUPPLEMENT: Access to Norton SmartWork online homework system.

Recommended reading:
• A Student’s Guide to Natural Science, by Stephen M. Barr
• From Atoms to Galaxies: A Conceptual Physics Approach to Scientific Awareness, by Sadri Hassani

Recommended online supplement: http://www.astronomynotes.com/

DESCRIPTION:
This course is an introduction to general astronomy, including historical discoveries and the nature of light and how we use it in astronomy. This course focuses on stellar, galactic and extragalactic astronomy and cosmology, reviewing what is known about the universe and emphasizing how we know it. Through this course you should gain an appreciation for what science is about and how it works.

This course falls under the Natural Sciences and Mathematics General Education Distribution Area.

This course satisfies the Quantitative and Scientific Reasoning and Literacy Student Learning Outcome: “Quantitative reasoning involves the ability to work with numerical data and the higher-order thinking skills required to make and understand mathematical arguments. Scientific literacy involves the acquisition and application of skills and knowledge necessary to understand the nature and content of science, and to evaluate scientific arguments using evidence-based reasoning. Students will be able to understand and develop arguments supported by quantitative evidence, clearly communicate those arguments in a variety of formats (using words, tables, graphs, statistical inference, mathematical equations and functions, etc., as appropriate), and apply mathematical and scientific methods to solve problems from a wide array of contexts and everyday situations.”

Course objectives that address the Student Learning Outcome:

Upon successful completion of this course students will be able to:
1. Understand the process, methods and tools of science generally, as well as how these are used in astronomy specifically.
2. Define and explain major terms and concepts in astronomy.
3. Apply understanding of concepts in astronomy make reasoned arguments supported by evidence.
4. Use scientific reasoning to critically analyze problems in science generally and astronomy specifically.
REQUIREMENTS:

Attendance, In-Class Activities and Daily Quizzes

Class attendance is strongly recommended. A portion of your grade is based on participation in in-class activities. Along with other coursework, these activities are specifically designed to help achieve the course goals and develop the General Education skills listed above. The in-class activities provide an opportunity for you to engage the material and to interact with your peers and the instructor. Fully participating will help you understand and retain the material and ultimately improve your exam scores.

You must have consistent access to an internet-enabled computer. This course makes extensive use of the University’s online course system. Additionally, online homework will be assigned. There are several places on campus where you can use computers.

Information on what will be covered and which activities we will do each day will be provided on the course website. For most activities you will be provided with a sheet that describes the activity and has space for your answers. These sheets are available on the course website. You are required to print these sheets and bring them to class. I will not have extra copies. Please note that you may print at Mabee Library and several other locations on campus.

Activities will be graded on the basis of completion and effort shown. You will receive 2 points (substantially complete, effort shown), 1 point (some effort, not complete), or 0 (not turned in). If you forget your sheet for the day, use your own paper to do the activity and turn it in; you will receive a maximum of 1 point. There will be no excused absences or make-ups. However, I will drop your 4 lowest activity grades at the end of the semester. Therefore, you effectively have 4 free classes during the semester. Activity sheets you turn in will be returned to aid in your studying. Material from these activities will appear on exams. You are strongly encouraged to get help outside of class if you are confused about content covered in activities.

There will be a quiz every class day, consisting of one question based on the reading for that day. These will be graded and there will be no make-ups. Each quiz will be worth 2 points and you will receive 1 point if you are present to turn in a quiz, even if it is incorrect. I will drop the lowest 4 scores at the end of the semester. The purpose of these quizzes is to encourage you to gain exposure to the material before class.

Reading

You should read the text before each class. Each day’s reading is detailed on the course website and there will be a reading quiz daily, as described above.

Note that reading a science text is not like reading a novel. You'll need to spend more time and energy and be “active” as you read. That is, take notes, write questions in the margins, work out example problems, etc. You might find it helpful to read a section quickly through and then go back and look more closely at the details. The more exposure you have to material the better you will learn it.

ASSESSMENT:

Homework

Homework will be assigned for every class day using the Norton SmartWork online homework system, associated with the course textbook. Access to SmartWork is required, and is included with the purchase of a new textbook, or with the purchase of an e-book, or may be purchased separately. Homework scores will be compiled into a final homework grade that will then be figured into the overall course grade. See details below.
Exams
Exams are used to assess your learning of important terms and concepts as well as your ability reason from those concepts and apply your knowledge. Exams will be online, in the D2L system. More details will be given elsewhere. Questions will relate to both basic knowledge (e.g. vocabulary) and also applying that knowledge and using critical thinking. Material on exams will be that covered in the readings, lectures, activities and homework assignments.

Projects
An important goal of this course is for students to develop an understanding of how science works, what constitutes “pseudoscience” and how to tell the difference. To that end, we will have at least two “Thanking Scientifically” class days during the semester. Projects associated with these class periods will be assigned. Details on the assignments will be provided elsewhere (see the course website). These projects make up a significant fraction of your grade, which reflects their importance in assessing whether you have gained the ability to think critically and use scientific reasoning.

In addition, you may complete another project for extra credit:
Observing: This assignment requires you to visit a telescope observation or planetarium session at Stoffer Hall or Farpoint Observatory and submit a report about your visit. Details about the assignment are available in “ObservingProject.pdf” on the course website. You may complete up to 2 reports. Each one will be worth a maximum of 2% extra credit to your overall course grade.

GRADING:
Grades will be computed using the following weighting:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm exams</td>
<td>45%</td>
</tr>
<tr>
<td>Final exam</td>
<td>10%</td>
</tr>
<tr>
<td>Projects (SLO)</td>
<td>20%</td>
</tr>
<tr>
<td>Homework (SLO)</td>
<td>10%</td>
</tr>
<tr>
<td>In-class work</td>
<td>10%</td>
</tr>
<tr>
<td>Daily quizzes</td>
<td>5%</td>
</tr>
</tbody>
</table>

GRADING SCALE:

A = 100%-90%  
B = 89%-80%  
C = 79%-70%  
D = 69%-60%  
F = below 60%

You may check your grades at any time on the course website (on the Washburn D2L site).

SCHEDULE:
See the course website for a detailed schedule. We will cover chapters 1-5 and 10-17 in the textbook.

Mission of the University:
Washburn University enriches the lives of students by providing opportunities for them to develop and to realize their intellectual, academic, and professional potential, leading to becoming productive and responsible citizens. We are committed to excellence in teaching, scholarly work, quality academic and professional programs, and high levels of faculty-student interaction. We develop and engage in relationships to enhance educational experiences and our community. Washburn University Board of Regents, 2010

Definition of a Credit Hour:
For every credit hour awarded for an undergraduate course, the student is typically expected to complete approximately one hour of classroom instruction, online interaction with course material, or direct faculty instruction and a minimum of two additional hours of student work each week for approximately 15
weeks for one semester or the equivalent amount of work over a different amount of time.

Notice of Non-Discrimination/Safe Educational Environment:
Washburn University prohibits discrimination on the basis of race, color, sex, religion, age, national origin, ancestry, disability, marital or parental status, sexual orientation/gender identity, genetic information, or other non-merit reasons, in University programs and activities, admissions, educational programs or activities, and employment, as required by applicable laws and regulations. The following person has been designated to handle inquiries regarding the non-discrimination policies: Dr. Pamela Foster, Equal Opportunity Director, Washburn University, 1700 SW College Ave, Topeka, Kansas 66621, 785.670.1509, eodirector@washburn.edu

Academic Misconduct Policy:
All students are expected to conduct themselves appropriately and ethically in their academic work. Inappropriate and unethical behavior includes (but is not limited to) giving or receiving unauthorized aid on examinations or in the preparation of papers or other assignments, or knowingly misrepresenting the source of academic work. Washburn University’s Academic Impropriety Policy describes academically unethical behavior in greater detail and explains the actions that may be taken when such behavior occurs. For guidelines regarding protection of copyright, consult http://www.washburn.edu/copyright. For a complete copy of the Academic Impropriety Policy, contact the office of the Vice President for Academic Affairs, Bradbury Thompson Alumni Center Suite 200, or go on-line to: http://www.washburn.edu/academic-impropriety.

Student Services Center:
The Student Service Center is the place where students can take care of a range of matters related to admissions, financial aid, student records/registration, and student accounts. The "one-stop" concept in Morgan Hall, room 152 incorporates the front office services of the Business Office, Financial Aid and the Registrar in one convenient location. Stop in and visit with a University Service Advisor for assistance or give us call us at (785) 670-2162. You can also email us at SSC@washburn.edu.

Student Health Services:
Student Health Services (SHS) provides support for students experiencing challenges with learning and adapting to university life. SHS offers urgent care for illness and injury; sports, school, and travel abroad physicals (including TB testing); well woman exams; STD and pregnancy testing; immunizations/vaccinations; and care of chronic illness. Services are provided by Board Certified Advanced Practice Registered Nurses (APRN) who collaborate with WU Student Counseling Services and physicians in the Topeka area. More information can be found at http://www.washburn.edu/health

WU Counseling Services
Licensed mental health professionals are available in the Counseling Services’ office for personal, academic, and mental health support. This is accomplished by providing a variety of counseling services as well as resources and referrals to students. More information can be found at http://www.washburn.edu/counseling

Disability Services:
The Student Services Office is responsible for assisting in arranging accommodations and for identifying resources on campus for persons with disabilities. Qualified students with disabilities must register with the office to be eligible for services. The office MUST have appropriate documentation on file in order to provide services. Accommodations may include in-class note takers, test readers and/or scribes, adaptive computer technology, brailled materials. Requests for accommodations should be submitted at least two
months before services should begin; however, if you need an accommodation this semester, please contact the Student Services Office immediately.

Location: Student Services, Memorial Student Union/Mosiman Room (MOVED effective 1/6/2014)  
Web: http://www.washburn.edu/student-services  
Phone: 785-670-1629  
E-Mail: student-services@washburn.edu

Students may voluntarily identify themselves to the instructor for a referral to the Student Services Office.

Center for Student Success:  
As a Washburn student, you may experience difficulty with issues such as studying, personal problems, time management, or choice of major, classes, or employment. The Center for Student Success (Office of Academic Advising, University Tutoring and Writing Center, First-Year Experience, and Testing and Assessment) is available to help students either directly through academic advising, mentoring, testing and developing learning strategies or by identifying the appropriate University resource. If you feel you need someone with whom to discuss an issue confidentially and free of charge, contact the center at 785-670-1942, advising@washburn.edu, or visit Mabee Library, Room 201.

Withdrawal Policy:  
During fall and spring semesters, students may go online and withdraw from full semester courses through the second week of class with no recorded grade. From the third through the eleventh week a “W” is recorded for any dropped course. After the eleventh week, there are NO withdrawals, and a grade will be assigned for the course. These deadlines will be different for short-term, out-of-sequence, or summer courses. To view the deadline dates for your courses visit the “Last Day” Deadlines web page at: https://www2-prod.washburn.edu/self-service/coursedates.php Depending on the timing of the request to withdraw from a course, students may be eligible for a full or partial refund. Information regarding tuition refunds is available at http://www.washburn.edu/current-students/business-office/tuition-refunds.html Please note: tuition refund amounts and deadlines are changing effective Fall 2014. In addition, depending on the timing of the request to withdraw from a course, students may be responsible for repaying all or a portion of their financial aid. Students who do not attend their courses and fail to officially withdraw themselves will receive a grade of “F” and may also be required to repay all or a portion of their financial aid based on their non-attendance. For further information, contact the Financial Aid Office at 785.670.1151 or e-mail financialaid@washburn.edu.

Attendance/Administrative Withdrawal:  
Although it is the student's responsibility to initiate course withdrawals, an instructor, after due notice to the student, may request withdrawal of the student from a course because of nonattendance through the same date as the last day a student may withdraw from a course. This would NOT absolve the student of financial responsibility for tuition/fees for the course in question. The inclusion of this information in the course syllabus is considered due notice.

Official E-Mail Address:  
Your Washburn University e-mail address will be the official address used by the University for relaying important messages regarding academic and financial information and the University will consider this your official notification for important information. It may also be used by your instructors to provide specific course information. If you prefer to use an alternate e-mail address to receive official University notices you can set a forwarding address in the Outlook Web App by following the steps below.

Outlook Web App: Set Forwarding Address  
1. Go to http://outlook.washburn.edu
2. Sign in
3. Click the **Gear** in the upper right
4. Choose **Options**
5. Select **Forward your email** from the list on the right
6. In the lower portion of the screen, enter the email address to which you want to forward all your email.
7. Click the **start forwarding** button

It is your responsibility to ensure that your official e-mail box does not exceed your message quota resulting in the inability of e-mail messages to be accepted into your mailbox.

**Success Week:**
Success Week for undergraduate students is designated as the five week days preceding the first day of scheduled final examinations each Fall and Spring semester. Success Week is intended to provide students ample opportunity to prepare for final examinations. For academic programs, the following guidelines apply:

A. Faculty are encouraged to utilize Success Week as a time for review of course material in preparation for the final examination. If an examination is to be given during Success Week, it must not be given in the last **three** days of Success Week unless approved by the Dean or Department Chair. Assignments worth no more than 10% of the final grade and covering no more than one-fourth of assigned reading material in the course may be given.

B. Major course assignments (extensive research papers, projects, etc.) should be due on or before the Friday prior to Success Week and should be assigned early in the semester. Any modifications to assignments should be made in a timely fashion to give students adequate time to complete the assignments.

C. If major course assignments must be given during Success Week, they should be due in the first **three** days of Success Week. Exceptions include class presentations by students and semester-long projects such as a project assignment in lieu of a final. Participation and attendance grades are acceptable.

The Success Week policy excludes make-up assignments, make-up tests, take-home final exams, and laboratory examinations. It also does not apply to classes meeting one day a week for more than one hour. All University laboratory classes are exempt from this policy.