Course Code & No. - Section:	ASTR 121
Course Title (Credits):	Introductory Astronomy (3)
Term & Year:	Fall / 2014
Course Ref. No. (CRN):	80020

Instructor:	Gigi Giles
Phone(s):	775-544-9052
Email:	ggiles@sierranevada.edu
Office:	TCES 214
Office Hours:	MW 5:30 – 6:30 pm and by appointment

Class Meeting Time:	MW 7:00 – 8:15 pm
Location:	TCES 205

Prerequisites:	none
Corequisites:	none

Course Description

An introduction to planetary and stellar astronomy, and cosmology. Course topics include the cycles of the sky, observing the night sky, the Solar System, stellar evolution, galaxies, and the nature of the Universe.

Student Outcomes

Upon successful completion of ASTR 121, students will have demonstrated the ability to:

1. Describe the diurnal (daily) and annual motions of the celestial sphere
2. Understand the nature of electromagnetic radiation and its importance in astronomical research
3. Discuss the origin of the Solar System and the diversity of Solar System objects
4. Discuss the nature and life cycle of stars
5. Identify three basic types of galaxies and describe their evolution
6. Discuss current theories on the origin and evolution of the Universe

Methods of Assessing Student Outcomes

Outcomes will be assessed through written midterm and final exam, observational projects, class presentation, and a scientific essay.

Instructional Strategies

Students will prepare for class by reading assigned materials and writing draft answers to questions provided by the instructor. Class time will be spent on clarifying questions about reading or homework assignments, lecture and discussion, indoor and outdoor activities, and individual student presentations.

Required Texts and Materials

1. **T. Arny & S. Schneider**. ***Explorations: An Introduction to Astronomy*****, 7**th ed. McGraw-Hill 2014. ISBN 978-0-07-351222-8
2. Access to a computer (one that meets the published SNC Computer Requirements) and internet.
3. Red bulb flashlight or 'red light' app on mobile device. Red lights will be used during dark-sky activities. White lights (including phone lights) destroy night vision and will not be allowed.

Moodle

The Syllabus will be posted on Moodle. Vital information on assessment items will also be posted. Check Moodle regularly for schedule changes.

Course Policies:

1. Attendance: Success in Introductory Astronomy is directly related to participation in lecture/discussions and activities. Class will begin promptly at the start time. Please do not arrive late or leave early. Late work will NOT be accepted from students who skipped class on the due date. The instructor MAY choose to excuse an absence and accept late work, but absences related to travel for weekends or holidays and employment will not be excused.

2. Electronic Devices: Students are not permitted to use MP3 players in class at any time, including during exams. Cell phones, tablets, and laptops may be used to access online resources or take notes in class. Students have permission to tape classes for later study. Students will be asked to stow phones, tablets, and laptops if used for non-class-related activities.

3. Late Work: Homework and assignments are due at the beginning of the class period on the due date unless the instructor permits students to hold them while asking questions. Late work will be accepted, but students will lose 10% of the possible points for each calendar day that work is late. Work more than seven days late will not be accepted.

` **4. E-mailed Work**: The essay must be generated on a computer and submitted by e-mail as .doc or .pdf. The file name must be as follows: EssayLastnameFall2014.doc (or .pdf). The instructor will reply to verify that e-mailed work was received. It is the student's responsibility to follow up if the instructor does not reply about e-mailed work.

5. Outdoor Observations/Activities: Outdoor and off-campus activities are considered 'class time' and are subject to course policies. Attendance is required. Please dress warmly and wear sturdy shoes. No smoking. no dogs.

Times and locations of outside activities will be discussed and determined in class. Outdoor activities are subject to weather conditions and will be scheduled accordingly. Dark-sky activities may be scheduled on class nights, as late as 10:00 pm, depending on sunset times. Your input regarding activity scheduling is vital. If you have scheduling conflicts, contact the instructor in advance.

6. Extra credit: The instructor will offer extra credit for additional work with instructional value regularly throughout the semester. A list of extra credit options available throughout the semester will be posted on Moodle. Extra credit must be submitted before Wednesday, Nov. 27, at start of class. Some extra credit options will be posted on Moodle periodically and will have shorter-range due dates. A student may earn up to 50 extra credit points, 5% of the total number of points possible for the class.

7. Modifications to the ASTR 121 course syllabus: This syllabus and schedule is intended to provide students with a clear and accurate outline of course content, student outcomes, class topics, assignments, due dates, and exam dates. Please be aware that **the schedule will change according to weather conditions**. Students should keep and refer to the syllabus regularly, and learn how to access it on the course Moodle page. The instructor reserves the right to make announced changes to the syllabus and class schedule at her discretion if it is in the best interest of the students to do so. Major changes, such as changes to exam dates or coverage and permanent changes to the schedule, will be posted on the Moodle site and students will be e-mailed about such postings

Prim Library Resources

Using the library's resources effectively (not just Internet resources) contributes to developing each of SNC's core themes by exposing students to high quality academic resources, diverse opinions, new ideas, and a future that includes building on a liberal arts education. In this course, you will be expected to utilize the library's resources (either on-site or remotely) as you complete your assignments.

Prim Library Resources for ASTR 121 includes, but is not limited to:

1. Reference materials (for use inside Prim Library):
   Mitton, J. Cambridge Illustrated Dictionary of Astronomy (2007) Cambridge: Cambridge University Press. This is a comprehensive dictionary of astronomical terms and acronyms with fascinating images and illustrations. Star maps, biographical sketches, and space missions are included.
2. Books (can be checked out):
   a. In general, books related to astronomy have Library of Congress Classification numbers beginning with QB. Some topics, such as electromagnetic theory and gravity, can be found in the physics section (QC). However, you will find books related to our course with other LCC numbers, so search the Prim Library Catalog using key words related to your term paper topic.
   b. Blum, D., Knudson, M., and Henig, R. M., eds. (2006) *A Field Guide for Science Writers, 2nd ed.* London: Oxford University Press. LCC number: T11.F52 2006. A detailed resource for writing

scientific papers that will help you with voice, tense, and other nuances of scientific writing required for your lab reports.

c. The Prim Library has a good collection of books for stargazers and amateur astronomers.

3. Electronic databases (for peer-reviewed research articles, reviews, and newspaper and magazine articles): Electronic databases most likely to include articles related to your term paper topics are EBSCO: Academic Search Premier and General Science Collection.
4. Hardcopy periodicals: Prim Library has current subscriptions for Science, New Scientist, Science News, and National Geographic Magazine. Any of these may have articles on your term paper topic. Full-text articles from many more periodicals are available through the electronic databases.
5. Lib Guides: http://Libguides.sierranevada.edu These web pages contain instructions about how to use resources available at Prim Library, how to evaluate the appropriateness of information from the Internet for a research paper, how to cite sources, and other topics related to finding and using information.

Sanctions for Cheating and/or Plagiarism

The Honor Code

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility, and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves. Therefore, faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

Consequences of Violating the Student Honor Code

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1st Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2nd Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3rd Offense: Student is expelled.

Cutting and pasting or copying phrases or sentences from internet sources, books, articles, or other students is a violation of the student honor code. If you consistently write using your own words, you will avoid plagiarizing or cheating.

Grading Policy

The grading curve is based on a 1000-point scale. Sierra Nevada College awards half grades (e.g., A– or B+), so a student with a point total within 1.5% of the cutoff for the letter grade will earn the appropriate half grade.

GRADING CURVE	
A	900 – 1000 points
B	800 – 899 points
C	680 – 799 points
D	580 – 679 points
F	< 580 points

ASSESSMENTS	VALUE
Classwork and Activities	100 points
Moon Observation Project	150 points
Essay	200 points
Presentation	150 points
Midterm	200 points
Final	200 points

Assessment Details

Classwork and Class Activities

Seven or more assessment opportunities will be given for work completed in class or during outside activities. Your five best grades will be recorded. No make-up work will be given.

Moon Observing Project

The Moon observing project is one of the most important assignments you will have. Good work is expected. The project is not difficult, but it requires advance planning and careful attention to deadlines. Begin planning your Moon observations right away. You will have enough time to finish, regardless of the weather, if you plan correctly. Bad weather is not an acceptable excuse. Follow the instructions carefully and turn in all required work. Do not plagiarize. Do not create work based on "pretend" observations—you will be penalized. The project is due on or before **October 27.** Late work will be penalized.

Essay

The essay is a research and writing assessment. A list of topic choices and their descriptions will be given. Topic selection must be approved by the instructor, on or before **August 27**. Essays are due **October 29** and must be submitted electronically. This is a firm deadline. Late work will be penalized.

You will receive *The Essay Writing Guide*. It contains the guidelines for your ASTR 121 essay. For high marks, you must adhere to these guidelines. Your essay must be 750-1000 words (not including references, captions, and footnotes). Essays that are not within the word limits will be penalized. Include (and properly reference) images, tables, and charts as needed. The essay should be much more than a list of facts — it should be original, interesting, and readable. The content should be at the level of a popular science magazine article. Plagiarism will not be accepted. Reputable references must be included (do not reference Wikipedia or your textbook).

Presentation

This is your opportunity to research an astronomy topic that interests you. Choose something that you are passionate about, curious about, or have always wanted to know more about. Present an 8-10 minute talk using visuals. The presentation needs to be more than a list of facts — it should be creative and interesting. Teach the class something new. Show us why you are fascinated with the subject. Reputable references need to be included. Your topic must be approved by the instructor, on or before **September 10**. Class presentations will be given near the end of term.

Midterm and Final Exams

Exams will be closed book/closed computer. Students are allowed to bring a hand-written notes on one sheet of standard paper, front only. The Midterm and Final exams consist of multiple choice, short-answer, and critical-thinking essay questions. The exams are designed to assess your understanding of concepts and processes. They will include key vocabulary terms, but do not require regurgitation of facts and numbers (with a few exceptions, e.g. distance from Earth to Sun).

The Midterm exam is scheduled for October 13 and includes all material covered up to that date.
The Final exam is Saturday, December 13, 8:00- 11:00 am. It is a comprehensive exam.

ADA Accommodations

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, hconover@sierranevada.edu, office in Prim Library: PL-304.

The SNC Email System

The SNC email system is the official communication vehicle among students, faculty members, and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

The Sierra Nevada College Mission Statement:

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic, and educational sustainability.

The Core Themes:

Liberal Arts Professional Preparedness

Entrepreneurial Thinking Sustainability

Class Schedule

Attention: This schedule is likely to change, due to observing conditions.

WEEK/ DATES	READING ASSIGNMENTS	TOPICS/ACTIVITIES	WORK DUE
Week 1 Aug 18	Syllabus	Overview of ASTR 121 and "Bad Astronomy"	
Aug 20	Preview: The Cosmic Landscape	Outside Activity: The Earth is a Peppercorn	
Week 2 Aug 25	Chapter 1: The Cycles of the Sky	Activity: Kinesthetic Astronomy	
Aug 27	Astrobites: Life, the Universe and Everything Explained, http://astrobites.org/2014/04/01/life-the-universe-and-everything-explained/	Ch. 1: The Cycles of the Sky	**Submit Essay Topic**

Week 3 Sept 1	-------- **Labor Day Holiday** ---------	----------	
Sept 3	Looking Up #1 thru #4 (behind title page of textbook)	Dark Sky Observing (time and location TBA)	Making and Using a Sky Map
Week 4 Sept 8	Essay 1: Backyard Astronomy (p. 62 in textbook)	Essay 1: Backyard Astronomy (p. 62 in textbook)	
Sept 10	Chapter 2: The Rise of Astronomy	Chapter 2: The Rise of Astronomy	**Submit Presentation Topic**
Week 5 Sept 15	Ch. 3: Gravity and Motion	Ch. 3: Gravity and Motion	
Sept 17	Ch. 4: Light and Atoms	Ch. 4: Light and Atoms	
Week 6 Sept 22	Ch. 5: Telescopes	Ch. 5: Telescopes	
Sept 24	Ch. 7: The Moon	Ch. 7: The Moon	
Week 7 Sept 29	The Evening Sky Map, October 2014: Northern Edition, http://skymaps.com/downloads.html (download, print, and read both sides)	Dark Sky Observing (time and location TBA)	
Oct 1	Ch. 8: Survey of Solar Systems	Ch. 8: Survey of Solar Systems	
Week 8 Oct 6	Ch. 9: The Terrestrial Planets and Ch. 10: The Outer Planets	Ch. 9: The Terrestrial Planets Ch. 10: The Outer Planets	
Oct 8	Ch. 11: Small Bodies Orbiting the Sun	Ch. 11: Small Bodies Orbiting the Sun	
Week 9 Oct 13	Prepare for Midterm Exam	**Midterm Exam**	**MIDTERM**
Oct 15	Essay 3: Keeping Time	Activity: Solar Motion Demonstrator	Using the Solar Motion Demonstrator
Week 10 Oct 20	Chapter 12: The Sun, Our Star	Ch. 12: The Sun, Our Star	
Oct 22	Ch. 13: Measuring the Properties of Stars	Ch. 13: Measuring the Properties of Stars	
Week 11 Oct 27	Ch. 14: Stellar Evolution	Ch. 14: Stellar Evolution	
Oct 29	Ch. 15: Stellar Remnants: White Dwarfs, Neutron Stars, and Black Holes	Ch. 15: Stellar Remnants: White Dwarfs, Neutron Stars, and Black Holes	**ESSAY SUBMISSION DEADLINE**

Week 12 Nov 3	TED Talk: Andrea Ghez, www.ted.com/talks/andrea_ghez_the_search_for_a_supermassive_black_hole	Activity: Star Cycles	Star Cycle Worksheet
Nov 5	Ch. 16: The Milky Way Galaxy	Ch. 16: The Milky Way Galaxy	
Week 13 Nov 10	The Drake Equation Interactive, http://www.pbs.org/wgbh/nova/space/drake-equation.html Compute and report your own results.	Activity: How Many Stars?	"How Many Stars" worksheet
Nov 12	Ch. 17: Galaxies	Ch. 17: Galaxies	**OBSERVING THE MOON, SUBMISSION DEADLINE**
Week 14 Nov 17	The Evening Sky Map, November 2014: Northern Edition, http://skymaps.com/downloads.html (download, print, and read both sides)	Dark Sky Observing (time and location TBA)	"Your Choice: Which Object Shall We Observe and Why?"
Nov 19	Ch. 18: Cosmology	Ch. 18: Cosmology and Brian Greene video	
Thanksgiving Break – No Classes Nov 24 Nov 26			
Week 15 Dec 1	Prepare for Presentation and Final Exam	Student Presentations	**STUDENT PRESENTATIONS**
Dec 3	Prepare for Final Exam	Student Presentations	**STUDENT PRESENTATIONS**
FINAL EXAM -- Saturday, December 13, 8:00 – 11:00 am, TCES 205			