Term Information

Effective Term	Summer 2016
Previous Value	*Spring 2016*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

1. We request approval to offer this course online

2. Name change to "From Planets to the Cosmos (With Lab)"

What is the rationale for the proposed change(s)?

1. Online courses are popular and serve a larger population of students

2. The name change will better differentiate the course from our recently-approved Astronomy 1102 "From Planets to the Cosmos (No Lab)"

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None.

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Astronomy
Fiscal Unit/Academic Org	Astronomy - D0614
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	1101
Course Title	From Planets to the Cosmos (With Lab)
Previous Value	*From Planets to the Cosmos*
Transcript Abbreviation	Planets to Cosmos
Course Description	Overview of the Copernican revolution, the discovery of the nature of our solar system, light, gravity, and planets around other stars; the nature and evolution of stars and origin of the chemical elements; the history of galaxies and the expanding universe. Weekly laboratory. Not recommended for students who plan to major in astronomy or physics.
Semester Credit Hours/Units	Fixed: 4

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Sometimes
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance Greater or equal to 50% at a distance
Previous Value	*No*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Laboratory, Lecture
Grade Roster Component	Lecture

Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: Math 1050 (075) or 102, or an ACT math subscore of 22 or higher that is less than two years old, or Math Placement R or higher; or permission of instructor.
Exclusions	Not open to students with credit for 1140, 1144, 1161H (H161), 1162H (H162), 2161H, 2162H, 2291 (291), or 2292 (292).

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	40.0201
Subsidy Level	Baccalaureate Course
Intended Rank	Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

General Education course:
Physical Science

Course Details

Course goals or learning objectives/outcomes

- Quantitative Reasoning: Students will understand how quantitative measurements and predictions are used to test scientific ideas and to draw new conclusions.
- Scientific Process: Students will understand the scientific method, interplay between theory and empirical evidence, notions of incremental science and scientific revolutions, and the simultaneous existence of established knowledge and open questions
- Physical Laws: Students will understand that the universe is governed by a set of physical laws and principles that determine the appearance, behavior, and evolution of astrophysical systems.
- Evolution: Students will understand how we infer the evolution of astrophysical systems and the universe from observations at the present day.
- Relevance: Students will identify ways in which science in general and astrophysics in particular are relevant to global issues, US politics, advances in technology, and understanding humanity's place in the universe.

Content Topic List

- The Long Copernican Revolution. "We are not the center of the Universe." Solar system, heliocentric model, orbits. Gravity and the Newtonian revolution. Extrasolar planets: detection (emphasis on transit method), atmospheres, habitability.
- Stars. "We are star stuff." Distances and masses of stars. Nuclear fusion and the origin of the elements, nucleosynthesis, stellar lifetimes. Supernovae, white dwarfs, neutron stars, black holes.
- Galaxies. "Space is big, time is long." Dark matter, evolution and growth of structure. Evidence for the Big Bang.

Attachments

- Astro1101_OnlineSyllabus_Sp2016.pdf: Online version

  (Syllabus. Owner: Martini,Louis Paul)
- Astro1101_Syllabus_Au2015.pdf: In person version from Autumn 2015

  (Syllabus. Owner: Martini,Louis Paul)
- Astro1101_ASCTechChecklist.pdf: ASC Distance Learning Checklist

  (Other Supporting Documentation. Owner: Martini,Louis Paul)
- Astro1101_GEOnlineCoursePlan.xlsx: GE Course Plan developed with ODE

  (Other Supporting Documentation. Owner: Martini,Louis Paul)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Martini,Louis Paul	04/15/2016 03:14 PM	Submitted for Approval
Approved	Weinberg,David Hal	04/15/2016 05:21 PM	Unit Approval
Approved	Haddad,Deborah Moore	04/15/2016 05:22 PM	College Approval
Pending Approval	Nolen,Dawn Vankeerbergen,Bernadette Chantal Hanlin,Deborah Kay Jenkins,Mary Ellen Bigler Hogle,Danielle Nicole	04/15/2016 05:22 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

College of Arts and Sciences
Department of Astronomy

SYLLABUS: ASTRONOMY 1101
FROM PLANETS TO THE COSMOS
SPRING 2016

Course Overview

Instructors

Lecture Instructor: Prof. Richard Pogge

Email address: pogge.1@osu.edu

Phone number: 614-292-0274

Office hours: By Appointment (email)

Lab Instructor: Dr. Wayne Schlingman

Email address: schlingman.4@osu.edu

Phone number: 614-292-5807

Office hours: By Appointment (email)

Course Email: astro1101@osu.edu

Please send all course-related questions (e.g., broken document or video links, etc.) to this address and it is guaranteed to get to both Prof. Pogge and Dr. Schlingman.

Course Description

Astronomy 1101 is an overview of astronomy from our solar system to the universe as a whole. It is a General Education (GE) Physical Science course in the Natural Science category. The goals of courses in this category are for students to understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

Course Learning Outcomes

By the end of this course, students should successfully be able to:

- Understand the basic facts, principles, theories and methods of modern science.
- Understand key events in the development of science and recognize that science is an evolving body of knowledge.
- Describe the interdependence of scientific and technological developments.
- Recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Astronomy 1101 will meet these expected outcomes by covering four overarching and interconnected themes:

- **The Long Copernican Revolution**
  The discovery of the nature of our solar system and planetary systems around other stars, the physics of gravity
- **The Lives of Stars**
  The nature and evolution of stars and the origin of the elements we find in the universe, the physics of light.
- **The Cosmos**
  The history of galaxies and the universe, evidence for the Big Bang, and the structure of the universe on its largest scales.
- **Frontiers of Modern Astronomy**
  Special topics that bring together many of the themes covered in this course, including new and emerging discoveries in the solar system and searches for life in the universe.

This course attempts to convey a number of the facts that astronomers and astrophysicists have learned about these topics, to describe the outstanding scientific problems that are the focus of current research, to illustrate ways in which physical principles are used to understand the universe, and to show how scientific theories are developed and tested against observations.

Among the questions that you should be able to answer by the end of the course are the following:

- What is the architecture of our solar system, and how do we find other planetary systems?
- What is a star, and how do they form, evolve, and end their lives?
- What is a galaxy?
- What is the evidence for dark matter and dark energy?
- What is the Big Bang?
- What empirical evidence supports and/or challenges our explanations for the physical nature of stars, galaxies, and the cosmos?

Course Structure

This is a fully online, four-credit hour course. There will be 3 hours of lecture (available as on-demand video) and a single 2-hour online lab activity per week. For Arts and Sciences students in a Bachelor of Arts program, this course meets the Arts and Sciences GE requirement of a natural sciences course that includes a laboratory component.

All activities are asynchronous, meaning that you do not have to be online at a set time or day. You do, however, have to complete your assignments according to firm deadlines, which you can see in the Course Schedule at the end of this document. In addition, some activities may need to be completed in a specific order.

The course is organized into three units. Here is the breakdown of the course in terms of content (material you view), assignments (work you do), and assessments (tests):

Content

- **Lectures**
  There are three lecture videos to view each week. Each lecture is roughly 40 minutes in length, and has been broken down into two or three 15-to-20 minute segments. To assist you with mastering the content within these lectures, there will be a few questions or discussions presented at the end of the video segments you are required to reflect on.

Assignments

During the first of the week, you are required to complete the introductory module that orients you to the course, ensures you have the needed computer skills for the course, and introduces you to your classmates.

In addition to the introductory module, you will be expected to participate and/or complete the following:

- **Labs**
  There will be full lab activities in all three units. The lab activities will consist of problems where you may need to reason critically, read graphs, do calculations, make predictions, and apply past knowledge to new problems. Detailed instructions will be provided for each lab, however, expect to complete a write-up that will be turned in via the Carmen Dropbox and complete an assessment.
- **Activities**
  There will be weekly activities that will use the Starry Night software or require conducting observations outside. These activities are meant to build up conceptual and contextual knowledge within the framework of the course. There will be a write-up that will be turned in via the Carmen Dropbox and/or an assessment for each activity.
- **Homework**
  There will be homework assignments that will help you understand some of the

materials presented in the course at a deeper level. The assignments will primarily be typed, but may involve some mathematics as part of your answers.

- **Discussions**
  There will be weekly postings of one or more questions that you will be asked to think about and discuss with your classmates. These questions will dig more deeply into the concepts and ideas brought up in the activities, labs, and lectures.

Assessments

- Weekly quizzes will include questions from the lectures, labs and activities.
- Non-repeatable exams (2 unit exams, 1 final exam)

  The **Unit Exams** cover the material from the lectures, labs and activities during that topical unit. All exams are closed-book and closed-notes, with a mix of multiple choice, short answer, and short essay questions.

  The **Final Exam** is comprehensive. It covers the lectures, labs and activities from the entire semester. It is the same type of exam as the unit exams, only roughly twice as long.

Other Fees or Requirements

- One **required in-person meeting** in the Arne Slettebak Planetarium on the OSU Main campus at a date to be arranged in consultation with the class. It will be held in the early evening hours.
- If weather permits, an **optional telescope observing session** will be arranged for the class at the Smith Laboratory Observatory on the OSU Main campus. Date to be determined.

Course Technology

Carmen

Carmen is Ohio State University's course management system and can be accessed at https://carmen.osu.edu/.

General Technical Support

For help with your password, university e-mail, Carmen, or other technology issues, questions, or requests not related to the Starry Night software, contact the OSU IT Service Desk. Support hours are available at https://ocio.osu.edu/help/hours, urgent issue support is available 24x7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Baseline Technical Skills Necessary for Online Courses

- Basic computer and web-browsing skills
- Navigating Carmen

Technology Skills Necessary for this Specific Course

- CarmenConnect text, audio, and video chat
- Collaborating in CarmenWiki
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

Necessary Equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone
- Headphones or earbuds are strongly recommended for group discussions

Necessary Software

Starry Night College (electronic)
http://store.simulationcurriculum.com/products/starrynightcollege-student

- 1 year License - $29.95
- Unlimited License - $59.95

Starry Night System Requirements

- Windows: Requires Windows XP, Vista, 7 or 8, 1GHz or higher processor, 512 MB RAM and 2 GB of hard disk space. 64 MB OpenGL capable graphics card. Minimum recommended monitor resolution of 1024 x 768 pixels.
- Macintosh: Universal Binary runs natively on Intel and PPC Macintosh computers. Requires OS X 10.5 or higher, G4 450 MHz or higher processor, 512 MB RAM and 2 GB of hard disk space. Will not run on OS 9.x or earlier. 32 MB OpenGL capable graphics card. Minimum recommended monitor resolution of 1024 x 768 pixels.

Starry Night Technical Support

For technical support related to the Starry Night College software, first consult the online FAQs - https://support.simulationcurriculum.com/home.

If you cannot find your answer in the FAQ section, submit a support request ticket - https://support.simulationcurriculum.com/anonymous_requests/new and inform your TA via email that you are having difficulty completing the assignment.

Starry Night Privacy Policy

http://store.simulationcurriculum.com/pages/privacy

Grading and Faculty Response

Grades

CATEGORIES	PERCENTAGE
Weekly Lecture Assessments and Discussions	20%
Weekly Labs or Activities	20%
Unit Exams	30%
Final Exam	30%
Total	**100%**

See course schedule, below, for due dates

Late Assignments

- **Labs and Activities**
  No missed lab or activity assignments will be accepted except for legitimate documented emergencies, made up within 1 week of the scheduled activity.
- **Unit Exams**
  No makeup exams will be offered.
- **Final Exam**
  No makeup final will be offered. Students who miss the final exam will be given an incomplete (I) with an alternative grade equal to getting a zero on the final, and have to make it up the following Semester to avoid the alternative grade. In keeping with University policy, early finals will not be available for those persons who wish to depart early for spring break.

Grading Scale

All of the unit exams and the final exam will be graded on a C+/B- curve.

Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

Grading and Feedback

For weekly labs or activities, you can generally expect feedback within **7 days**.

E-mail

All instructors and TAs will reply to e-mails within **24 to 48 hours maximum**.

Discussion Board

One of the instructional staff will check and reply to messages in the discussion boards every **24 hours on weekdays** while discussion boards are open.

Attendance, Participation, and Discussions

Student Participation Requirements

Because this is a distance-education course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Logging in**: **AT LEAST ONCE PER WEEK**
  Make sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*
- **Tracking progress:** We will be assessing progress in the course by looking to see that all materials are being accessed. Weekly assessments will allow you to know if you are understanding the material or need additional work/help.
- **Office hours and live sessions**: **OPTIONAL OR FLEXIBLE**
  All live, scheduled events for the course, including my office hours, are optional. For live presentations, I will provide a recording that you can watch later. If you are required to discuss an assignment with us, please contact us at the beginning of the week if you need a time outside my scheduled office hours. If you feel you need help in the course for any reason, please do not hesitate to contact us and schedule an appointment.
- **Participating in discussion forums**: **4+ TIMES PER WEEK**
  As participation, each week you can expect to post at least four times, or as directed by the assignment, as part of our substantive class discussion on the week's topics.

Discussion and Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling,

and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics only.

- **Tone and civility**: We seek to maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm or ironic statements that are often accompanied by facial expressions or gestures do not always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to support what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.
- **Submitting written materials**: All materials will be submitted through the Carmen Dropbox in Word (Doc or Docx), RTF, or PDF. If you are unable to convert your document into one of these formats, please contact your instructor immediately. All materials will be checked using Turnitin for originality.

Other Course Policies

Academic Integrity Policy

Policies for this Online Course

- **Exams**: You must complete the midterm and final exams yourself, without any external help or communication. Short pre/post-lecture assessment questions are self-checks without any points attached. End-of-week short quizzes *are* graded, as described above.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow a clear and consistent style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in, but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with us first.
- **Fabricating research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or

assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time. In general, even if an answer to a group question is developed as a group, you must write the final answer down in your own words to represent your take on the group's answer.

- **Group projects**: This course includes group projects, which can be stressful for students when it comes to dividing work, taking credit, and receiving grades and feedback. I have attempted to make the guidelines for group work as clear as possible for each activity and assignment, but please let us know if you have any questions.

Ohio State's Academic Integrity Policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct (Faculty Rule 3335-5-487). If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Accessibility Accommodations for Students with Disabilities

Requesting Accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential.

In addition to contacting the instructor, please contact the Student Life Disability Services at 614-292-3307, VRS: 429-1334, or slds@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University.

Go to http://slds.osu.edu for more information.

Accessibility of Course Technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Desire2Learn) accessibility
- Streaming audio and video: All audio lectures have been captioned and are accompanied by a searchable PDF text file.
- Starry Night Software: Contact the instructor if you have questions or need to request an accommodation for this software.

Other Ohio State Resources

To see your available options for academic support, visit http://artsandsciences.osu.edu/current-students/university-resources.

For other student support, see the Student Service Center site at http://ssc.osu.edu/.

Course Schedule (tentative)

WEEK	TOPICS	ASSINGMENTS	DUE DATE
Unit 1: Long Copernican Revolution			
1	Introduction; Measuring Earth & Sky; Celestial Motions		**TBD**
2	Greek Astronomy; Nicolaus Copernicus; Tycho Brahe & Johannes Kepler		**TBD**
3	Galileo Galilei; Isaac Newton; Gravity & Orbits		**TBD**
4	The Solar System; Discovering Planets Around Other Stars; The Properties of Exoplanets		**TBD**
Unit 2: The Lives of Stars			
5	Light and Atoms, Observed Properties of Stars;		**TBD**
6	The Hertzsprung-Russell Diagram; The Internal Structure of Stars, The Age of the Sun		**TBD**
7	Energy Generation & Transport in Stars; The Main Sequence; Star		**TBD**

	Formation		
8	Low-Mass Star Evolution; High-Mass Star Evolution; Supernovae		**TBD**
9	White Dwarfs & Neutron Stars; Black Holes; Testing Stellar Evolution		**TBD**
Unit 3: The Cosmos			
10	Island Universes; The Milky Way and Andromeda; Galaxies, Clusters, and Superclusters		**TBD**
11	The Scale of the Cosmos; A Tale of Two World Views; Curved Space		**TBD**
12	The Expanding Universe; The Big Bang; Tests of the Big Bang		**TBD**
13	Dark Matter & Dark Energy; The First Three Minutes; The Fate of the Universe		**TBD**

Astronomy 1101 – *From Planets to the Cosmos*
Autumn Semester 2015

Lectures: MWF, 12:40-1:35pm, 209 W 18th Ave 170 (EA170)

Professor: Dr. Richard Pogge
Office: 4059 McPherson Lab (292-0274)
Office Hours: Tues & Thursday 1:30-3:30pm or by appointment
E-Mail: pogge.1@osu.edu

Lab Instructor: Dr. Wayne Schlingman
Office: 4057 McPherson Lab (292-5807)
E-Mail: schlingman.4@osu.edu

Required Textbook: None.
Course Web Page: All online materials and updates will be posted to this course's Carmen page (24567).

Course Objectives

Astronomy 1101 is an overview of astronomy from our solar system to the universe as a whole. It is a General Education (GE) Physical Science course in the Natural Science category. The goals of courses in this category are for students to understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

The expected learning outcomes for GE courses in the Natural Science category are as follows:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the interdependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Astronomy 1101 will meet these expected outcomes by covering three overarching and interconnected themes:

1. The Long Copernican Revolution: the discovery of the nature of our solar system and planetary systems around other stars, the physics of light and gravity.
2. The Lives of Stars: the nature and evolution of stars and the origin of the elements we find in nature.
3. The Cosmos: the history of galaxies and the universe, evidence for the Big Bang, and the structure of the universe on its largest scales.

I will attempt to convey a number of the facts that astronomers and astrophysicists have learned about these topics, to describe the outstanding scientific problems that are the focus of current research, to illustrate ways in which physical principles are used to understand the universe, and to show how scientific theories are developed and tested against observations.

Among the questions that you should be able to answer by the end of the course are the following:

- What is the architecture of our solar system, and how do we find other planetary systems?
- What is a star?
- What is a galaxy?
- What is the evidence for dark matter?
- What is the Big Bang theory?
- What empirical evidence supports and/or challenges our explanations for the physical nature of stars, galaxies, and the cosmos?

Course Organization

This is a four-credit hour course; each week, there will be 3 hours of lecture and one two-hour laboratory session. For Arts and Sciences students in a Bachelor of Arts program, this course meets the Arts and Sciences GE requirement of a natural sciences course that includes a laboratory component.

Weekly Laboratory, Lab Write-Ups & Homework

Astronomy 1101 laboratory meets weekly. **Attendance is required**. The primary goal is to reinforce the concepts covered in lecture and to introduce quantitative thinking. All labs start with a half-hour session led by Dr. Schlingman in the OSU Slettebak Planetarium in 5033 Smith Laboratory. The class then divides into smaller groups who accompany their TA to their assigned rooms in Smith Lab for the lab work proper. Each student will finish their in-class lab write up before the end of the session, but this write-up can be taken home to use with the homework assignment handed out at the end of each lab at the start of the next lab time, and then it is turned in the following week along with the homework answers.

The lab times, rooms, and TAs are as follows:

Monday 1:50-3:40	SM3082	TA: Jeff Sun (sun.579@osu.edu
Monday 1:50-3:40	SM3094	TA: Ben Wibking (wibking.1@osu.edu)
Tuesday 2:20-4:10	SM3082	TA: Jamie Tayar (tayar.1@osu.edu)
Tuesday 2:20-4:10	SM3094	TA: Suk Sien Tie (tie.5@osu.edu)
Thursday 2:20-4:10	SM3094	TA: Jenna Freudenburg (freudenburg.2@osu.edu

Please attend only the lab section room and time you are signed up for. Attendance at the weekly laboratory and the lab write-ups account for **20%** of the final grade.

Before leaving the lab, students will be given a homework assignment due at the start of the **next lab session** along with your lab write up. The homework will consist of questions that follow from the laboratory exercises and the class lectures. Collectively, these homework assignments will account for **20%** of the final grade.

Collectively, lab attendance, write-ups, and homework count for **40%** of the final grade. **No missed laboratory or late homework will be accepted** except for legitimate, documented emergencies. We will drop the lowest lab and homework scores in computing your final grade.

In-Class Exams

There will be two in-class exams, scheduled for the following days:

In-Class Exam 1: Friday, September 25
In-Class Exam 2: Wednesday, November 4

Please mark your calendars with these dates. The exams will be held at the normal class time and you will have the entire time in which to complete them. Exams cover the material in the lectures and labs

sessions since the previous exam. All exams will be **closed-book, closed-notes, multiple-choice** tests. Collectively, the two in-class exams will account for **30%** of the final grade.

Makeup exams are only offered by advance arrangement with the professor, except for legitimate, documented emergencies. If you are away on official University-sponsored activities (ROTC, sports, band, etc.), please get a letter from your coach, director, etc. **in advance** of the exam. Exams must be made up before the Wednesday following the missed exam date.

Final Exam

The Final Exam is **Thursday, December 17 from 2:00-3:45pm in EA170**. Attendance is mandatory. The final will be **comprehensive** and worth **30%** of your grade.

No makeup final will be offered. Students who miss the final exam will be given an incomplete (I) with an alternative grade equal to getting a zero on the final, and have to make it up the following Semester to avoid the alternative grade. In keeping with University policy, early finals will **not** be available for those persons who wish to depart early for break.

Grading Policy

Your course grade will be based on the following:

- 20% Weekly Lab attendance and write-ups
- 20% Weekly homework
- 30% In-Class Exams
- 30% Final Exam

Weekly laboratory attendance is required. Lab write-ups are graded on a 4-point integer scale. In round numbers, 4=A, 3=B, etc. However, we will curve the *cumulative* lab scores combined from the entire semester after dropping the lowest score on the labs to compute the final lab grade for the semester.

Each problem on the weekly homework is graded on the same 4-point scale used for labs, and the average over all problems on an assignment is recorded as the grade for that assignment. Like the labs, we will curve the *cumulative* homework scores after dropping the lowest score on the homework, and use this curve to determine the final homework grade for the semester.

The two in-class exams will be 50-question, multiple-choice exams graded on a standard C+/B- curve. Each exam will be curved independently, and grade breakdowns will be posted when exams are returned.

The comprehensive final exam will be a 100-question multiple-choice exam graded on a C+/B- curve.

The overall final course grade will be computed by combining the separate grades from each of the exams, labs, and homework in the proportions described above. Attendance will be taken each day, and will be factored into your final grade. Regular attendance could increase your grade by one step (e.g., B+ to A-) if your calculated overall grade (lab+homework+exams) is within 2% of the next higher grade.

Lectures

Lectures are Monday, Wednesday, and Friday at 12:40-1:35pm, in Room 170 in the 209 W. 18th Avenue classroom building. **Attendance is required**. The lectures, along with the labs and homework assignments, are your primary source of course content, and exams are based on the lectures and the lab exercises. Attendance will be taken daily using Top Hat (plus a backup sign-up sheet). Similarly, participation in classroom activities (group problems and discussions) will factor

into the final course grade. I will use attendance and participation to increase your grade by one step (e.g., from B+ to A-) if your course grade is within 2% of the higher grade.

Student Response System (Top Hat)

Every non-testing day in class we will use OSU's new web-based student response system Top Hat (resourcecenter.odee.osu.edu/top-hat). Top Hat works with laptops and mobile devices (with free iOS and Android apps) connected to the OSU wireless network. You login using your usual OSU name.# and password (no new account needed). We will use Top Hat to ask group questions, take attendance, and perform brief concept assessments and surveys. Your Top Hat scores are recorded in Carmen, and I will use them to track attendance and participation in class to be factored into the attendance and participation components of your final course grade.

Top Hat will also be used in some lab sections, so please bring your devices with you.

Students with Disabilities

Students with disabilities that have been certified by the Office for Disability Services (ODS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; Phone: 292-3307, VRS: 429-1334; (ods.osu.edu). We will rely on ODS to verify the need for accommodation and to help develop appropriate strategies. Students with disabilities who have not previously contacted ODS are encouraged to do so by visiting the ODS website and requesting an appointment. Please take care of this well in advance of the exams, as processing the paperwork takes time.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (studentconduct.osu.edu).

Classroom Etiquette

To help establish and maintain a courteous, respectful, and distraction-free learning environment in our classroom, I ask that everyone please observe the following rules of classroom etiquette:

Making or taking phone calls and texting is prohibited.
During class, please put your cell phone into silent ring mode, and do not make or take calls or text during class. This is very rude and distracting to others around you.

Use of laptops, tablets, smart phones, or other wireless devices is reserved for in-class activities.
When not being used for in-class activities via Top Hat, please put laptops, tablets, smart phones, etc. into standby mode (closed lid/dark screen) until the next activity. Please do not surf the web, text, tweet, post, work on other classes, etc. Such activity is very distracting to others around you.

Please do not start packing up until class is completely over
I'll be clear when we're done, and I work very hard to stay on time, please wait until I finish.

No conversing during lectures.
Please respect the wishes of your fellow students to listen to the lecture, and do not carry on conversations during class except during group discussions or problem-solving sessions.

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: Astronomy 1101
Instructor: Rick Pogge, Wayne Schlingman
Summary: GE Online Course

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/recommendations
6.1 The tools used in the course support the learning objectives and competencies.	✔			This course will be delivered online asynchronously. All tools used in the course; weekly Starry Night software activities, hands-on lab activities, discussion posts and written weekly homework assignments support the overall learning objectives and course competencies. • Understand the basic facts, principles, theories and methods of modern science • Understand key events in the development of science and recognize that science is an evolving body of knowledge • Describe the interdependence of scientific and technological developments • Recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world
6.2 Course tools promote learner engagement and active learning.	✔			To promote learner engagement and active learning, students will engage with the course materials and instructor on a weekly basis in the following ways. Links to all materials will be on Carmen • Weekly lecture videos • Weekly homework assignments • Hands-on labs • Starry Night software activities • Discussion posts
6.3 Technologies required in the course are readily obtainable.	✔			All technologies being used for this course are readily obtainable to students (Carmen, Carmen Connect, Starry Night software). The course technology section of the syllabus provides the students with the required information needed to purchase and download the Starry Night software.

6.4 The course technologies are current.	✔			All technology platforms being used for this course are current. Carmen and Carmen Connect are core common tools offered by the university. The Starry Night software can be purchased and downloaded using a standard web browser.
6.5 Links are provided to privacy policies for all external tools required in the course.	✔			A link to the privacy policies for the Starry Night software has been provided in the "Course Technology" section of the course syllabus.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	✔			Links to the available technical support for the following tools has been provided in the course syllabus. • Carmen • Carmen Connect • Starry Night
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	✔			**The below link should be included in the syllabus. The text for the accessibility statement should be in BOLD 18pt font. http://slds.osu.edu/**
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	✔			The faculty member should add to the syllabus an overview and contact information for the student academic services offered on the OSU main campus. http://artsandsciences.osu.edu/academics/current-students
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	✔			The faculty member should add to the syllabus an overview and contact information for student services offered on the OSU main campus. http://ssc.osu.edu Recommend that this link be included in the "Other Course Policies" section of the syllabus.

Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	✔			Recommend using the Carmen Distance Learning Course Shell to provide a consistent student-user experience in terms of navigation and access to content.
8.2 Information is provided about the accessibility of all technologies required in the course.	✔			The OSU core common tool set used in this course meets the universities policies for accessibility. Information has been provided in the syllabus to contact the instructor for any accessibility issues with the Starry Night software.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	✔			Recommend that resources be developed to address any requests for alternative means of access to course materials. These resources should be in formats that meet the needs of diverse learners.
8.4 The course design facilitates readability	✔			Recommend using the Carmen Distance Learning Course Shell to provide a consistent student-user experience in terms of navigation and access to content.
8.5 Course multimedia facilitate ease of use.	✔			All assignments and activities that use the OSU core common tool set at Ohio State facilitate ease of use with embedded multimedia. Carmen will be the main portal for the delivery of multimedia content.

Reviewer Information

- Date reviewed: 4/12/16
- Reviewed by: Mike Kaylor

Week	Lecture Topic
Unit 1: The Long Copernican Revolution	
1	Introduction: From Planets to the Cosmos Measuring Earth & Sky: Spherical Earth, Eratosthenes, Aristarchus The Stars in their Courses: Celestial Motions
2	Harmony of the Spheres: Greek Astronomy The Revolutions of Nicolaus Copernicus The Watershed: Tycho Brahe and Johannes Kepler
3	The Starry Messenger: Galileo Galilei and the Telescope On the Shoulders of Giants: Isaac Newton and the Laws of Motion Gravity and Orbits
4	Family of the Sun Discovery of Exoplanets Strange New Worlds: The Properties of Exoplanets
Unit 2: The Lives of stars	
5	Light the Messenger Light and Matter Measuring the Stars: Distance, Brightness, and Temperature
6	The Hertzsprung-Russell Diagram The Internal Structure of Stars The Age of the Sun
7	Energy Generation and Transport in Stars The Main Sequence Star Formation
8	The Evolution of low-mass stars The Evolution of high-mass stars Supernovae
9	Extreme Stars: White Dwarfs and Neutron Stars Black Holes Testing Stellar Evolution
Unit 3: The Cosmos	
10	Island Universes: The Discovery of Galaxies A Tale of Two Galaxies: The Milky Way and Andromeda Realm of the Nebulae: Galaxies, Clusters, and Superclusters

11	The Scale of the Cosmos A Tale of Two World Views: Newton and Einstein Curved Space
12	The Expanding Universe: Hubble's law, cosmological redshifts The Big Bang Tests of the Big Bang
13	Dark Matter & Dark Energy The First Three Minutes: The Early Universe This is the Way the World Ends: The Fate of the Universe
Unit 4: Frontiers of Modern Astronomy	
14	Frontiers of the Solar System We are Made of Star Stuff Life in the Universe

Lab Exercise	Activity	Assessment
Download & Install Starry Night, Do the StarryNight Tutorial	Introduce yourself, upload selfie (how to use the dropbox tool) Syllabus & Course Policies Quiz	PreTest: Light & Spectroscopy Concept Inventory (LSCI)
StarryNight - Daily & Annuals Motions in the Sky	Planetarium Visit #1	
Galileo's Observations	Starry Night: Geo- vs. Heliocentric Model Galileo's Observations Observation vs. Inference	
Starry Night: Solar System	Lunar Observing Lab Week 1 of 6	Unit 1 Practice Quiz
Properties of Light (Nebraska and U Colorado PhET online simulation apps)	Lunar Observing Lab Week 2 of 6	Unit 1 Exam all week at the OSU Testig Center
StarryNight Stars Lab (parallax, proper motion, inverse square law, solar neighborhood, HR Diagram)	Lunar Observing Lab Week 3 of 6	PostTest: LSCI
Scaling Relations & the HR Diagram (Week 1 of	Lunar Observing Lab Week 4 of 6	
Scaling Relations & the HR Diagram (Week 1 of	Lunar Observing Lab Week 5 of 6	Midterm Survey
The NASA Budget	Lunar Observing Lab Week 6 of 6	Unit 2 Practice Quiz
No Lab: Lunar Observing Lab Due	Online Discussion: The Properties of Sta	Unit 2 Exam all week at the OSU Testing Center

Galaxy Classification Lab		
Hubble's Law: Scaling Relations in the Expandin Universe	Planetarium Visit #2	
Galaxy Rotation Curves & Dark Matter		Class Summary Assessment
No Lab: Catch-up and Correction Week	Discussion forums: Open Questions and Answers How to Study for the Final	Unit 3 Practice Quiz