



**Course Name:** Galaxies, Quasars and Cosmology  
**Course Number:** PH 207  
**Term Offered:** Spring 2016  
**Credits:** 4  
**Instructor name:** Dr. Kathryn Hadley  
**Instructor email:** [Kathryn.Hadley@oregonstate.edu](mailto:Kathryn.Hadley@oregonstate.edu)  
**Instructor phone:** 541-737-4312  
**Link to instructor bio or website:** [people.oregonstate.edu/~hadlekat](http://people.oregonstate.edu/~hadlekat)

**Teaching Assistant name and contact info:**

Amani Ali Alobaidi [alobaiam@onid.orst.edu](mailto:alobaiam@onid.orst.edu)

**Course Description**

This course covers properties of galaxies, including our Milky Way, as well as the early evolution of galaxies, including quasars and active galactic nuclei. We include background information of our place in the cosmos, mechanics, electromagnetic radiation and spectroscopy as they pertain to dynamical behavior and observation. We will study cosmology, including the big bang theory and observational evidence as well as evolution of the universe and large scale structure of the universe. The courses in the astronomy sequence (PH 205, PH 206, PH 207) can be taken in any order. Lec/lab. (Bacc Core Course)

**Prerequisites/Corequisites** There are no separate pre- or co-requisites. However, students should have a working knowledge of basic algebra, logarithms, and scientific notation.

**Communication**

Please post all course-related questions in the General Discussion Forum so that the whole class may benefit from our conversation. Please email your instructor for matters of a personal nature. I will reply to course-related questions and email within 24-48 hours. I will strive to return your assignments and grades for course activities to you within five days of the due date.

**Course Credits**

This course combines ~120 hours of instruction, online activities, and assignments for 4 credits.

**Technical Assistance**

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email [osuhelpdesk@oregonstate.edu](mailto:osuhelpdesk@oregonstate.edu) or visit the [OSU Computer Helpdesk](http://OSU Computer Helpdesk) online.

**Learning Resources**

Textbook: Astronomy Today (8<sup>th</sup> Ed) by Eric Chaisson and Steve McMillan, Pearson ISBN 0321901673

This course is offered through Oregon State University Extended Campus. For more information, contact:  
Web: [ecampus.oregonstate.edu](http://ecampus.oregonstate.edu) Email: [ecampus@oregonstate.edu](mailto:ecampus@oregonstate.edu) Tel: 800-667-1465

**Note to prospective students:** Please check with the OSU Bookstore for up-to-date information for the term you enroll (<http://osubeaverstore.com/Academics> or 800-595-0357). If you purchase course materials from other sources, be very careful to obtain the correct ISBN.

### **Canvas**

This course will be delivered via Canvas where you will interact with your classmates and with your instructor. Within the course Canvas site, you will access the learning materials, such as the syllabus, class discussions, assignments, projects, and quizzes. To preview how an online course works, visit the [Ecampus Course Demo](#). For technical assistance, please visit [Ecampus Technical Help](#).

### **Measurable Student Learning Outcomes**

PH 207 is a Baccalaureate Core course in the Perspectives–Biological and Physical Sciences category. Students taking a course in this category will:

1. Recognize and apply concepts and theories of basic physical or biological sciences.
2. Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis.
3. Demonstrate connections with other subject areas.

The first item will be measured through exams and homework assignments, and the second and third items will be evaluated via labs, exams, and homework assignments.

Specifically, students taking PH 207 will:

1. Recognize, explain, and apply concepts and theories of galaxies and cosmology.
2. Apply scientific methodology employed in the field of astronomy/astrophysics.
3. Demonstrate the ability to draw conclusions based on observation, analysis, interpretation, comparison, and synthesis.
4. Demonstrate connections with physics, chemistry, biology, optics, space sciences, electrical engineering, mechanical engineering, computer sciences, and big data sciences.

The first item will be measured primarily through exams and homework assignments, the second and fourth items via labs, exams, and homework assignments, and the third item thru labs.

### **Evaluation of Student Performance**

Your course grade is determined the distribution of points is as follows:

Midterm Exam 1: 15%  
Midterm Exam 2: 15%  
Final Exam: 30%  
Homework: 10%  
Discussion: 10%  
Lab: 20%

At the end of the term, the lower cutoff for an A– will be set no higher than 90%, that for a B– will be set no higher than 80%, that for a C– will be set no higher than 70%, and that for a D– will be set no higher than 60%. The cutoff may go lower than this.

In order to pass the **course**, you must (1) take all three exams, (2) score a 50% or better on the homework component, (3) submit contribution for summaries of three discussion topics, (4) successfully pass at least seven labs, **and** (5) obtain the lower cutoff for a D-.

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## Course Content

All deadlines are 11:59 pm on the day indicated

Week	Topic	Reading Assignments	Learning Activities	Due Dates
1	Introduction Cosmic Perspective	Chapter 1 sec 1.1,1.2,1.3,1.6 Chapter 2 sec 2.5,2.6,2.7,2.8	Discussion Milky Way exercise begin Lab 1 observations	Sun Sun
2	EM radiation	Chapter 3	Hw 1 Discussion Lab 2	M W,F,Sun Sun
3	Spectroscopy	Chapter 4	Hw 2 Discussion Lab 3	M W,F,Sun Sun
4	Milky Way	Chapter 23	Hw 3 Discussion Lab 1 first submission	M W,F,Sun Sun
5	Galaxies	Chapter 22 sec 22.5 - 22.8 Chapter 24	Hw 4 Discussion Lab 4 Midterm 1 (Thru ch 24)	M W,F,Sun Sun Proctored
6	Galaxies and dark matter	Chapter 25	Hw 5 Discussion Lab 5	M W,F,Sun Sun
7	Cosmology	Chapter 26	Hw 6 Discussion Lab 6	M W,F,Sun Sun
8	Early universe	Chapter 27	Hw 7 Discussion Lab 7	M W,F,Sun Sun
9	Life in the universe	Chapter 28	Hw 8 Discussion Lab 8 Midterm 2 (Ch 25-28)	M W,F,Sun Sun Proctored
10	Review		Hw 9 Discussion Lab 1 second submission	M W,F,Sun Sun
Finals			Final Exam (cumulative)	Proctored

Schedule dates are tentative and may be subject to change.

## Course Policies

### Discussion Participation

Students are expected to participate in all graded discussions. While there is great flexibility in online courses, this is not a self-paced course. You will need to participate in our discussions on at least two different days each week, with your first post due no later than Wednesday evening, your second by Friday and third post due by the end of each week. The first week discussion posts are all due by Sunday.

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## **Proctored Exams**

This course requires that you take exams under the supervision of an approved proctor. Proctoring guidelines and registration for proctored exams are available online through the Ecampus [testing and proctoring website](#). It is important to submit your proctoring request as early as possible to avoid delays.

## **Makeup Exams**

Makeup exams will be given only for missed exams excused in advance by the instructor. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very unusual circumstances.

## **Lateness Policy**

Homework exercises are timed and will not be accepted after the due dates. Late labs will receive a 10% deduction for each day late. Discussion posts will receive a 10% deduction for each day late, and will not be accepted after the end of the week (Sunday).

## **Incompletes**

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in 80% of the points possible. If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

## **Guidelines for a Productive and Effective Online Classroom**

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility.

Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

## **Statement Regarding Students with Disabilities**

Accommodations are collaborative efforts between students, faculty, and [Disability Access Services \(DAS\)](#). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

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### **Accessibility of Course Materials**

All materials used in this course are accessible. If you require accommodations please contact [Disability Access Services \(DAS\)](#).

Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

### **Expectations for Student Conduct**

Student conduct is governed by the university's policies, as explained in the [Student Conduct Code](#).

### **Academic Integrity**

Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit [Student Conduct and Community Standards](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.

b) It includes:

(i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

(ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

(iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

(iv) TAMPERING - altering or interfering with evaluation instruments or documents.

(v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

### **Conduct in this Online Classroom**

Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the [university's regulations regarding civility](#).

### **Tutoring**

[NetTutor](#) is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. NetTutor provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment. They also have an online writing lab where tutors critique and return essays within 24 to 48 hours. Access NetTutor from within your Canvas class by clicking on the NetTutor button in your course menu.

### **OSU Student Evaluation of Teaching**

Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. Results from the questions are tabulated anonymously and go directly to instructors and department heads. Student comments on the open-ended questions are compiled and confidentially forwarded to each instructor, per OSU procedures. The online Student Evaluation of Teaching form will be available toward the end of each term, and you will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. You will log in to "Student Online Services" to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.