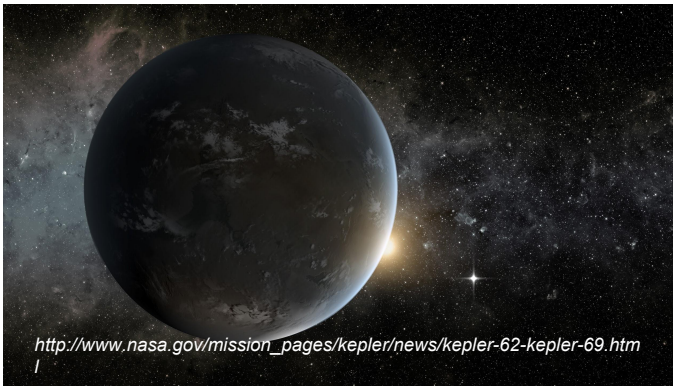
BOISE STATE UNIVERSITY

PHYS104/204 Syllabus - Fall 2017



Kepler-62 Morning Star. This artist's concept depicts in the foreground planet Kepler-62f, a super-Earth-size planet in the habitable zone of its star which is seen peeking out from behind the right edge of the planet.
Credit: NASA/Ames/JPL-Caltech.

The Big Picture

Where did life on Earth come from? Is there life elsewhere in the Universe? How could we find it? Can we communicate with extraterrestrial civilizations?

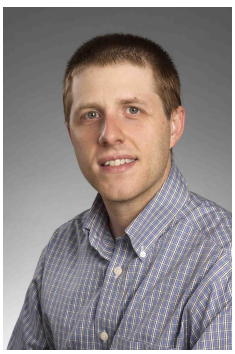
In these courses, students will investigate modern answers to these ancient questions and learn how our solar system formed, how conditions on the early Earth may have given rise to life, and why astronomers think the universe may be bursting with life.

Course Description

PHYS104 - Life in the Universe is an introductory astronomy course designed for science and non-science majors about the origins and requirements for life to arise, seen primarily in an astronomical context.

PHYS204 - Planetary Astronomy is also an introductory astronomy course but geared specifically to Physics majors planning to take an Astrophysics Emphasis.

Both classes comprise twice weekly lectures and once weekly labs. Some of these lab meetings will occur at night to allow us to do astronomical observing. Grades are based on in-class activities, homework assignments, labs, and exams. There are also a few opportunities to earn extra credit.



Prof. Brian Jackson

is a planetary astronomer who finds and studies extrasolar planets, planets outside of our solar system.

Office: Multi-Purpose Classroom Bldg 419
Office Hours: W 3-5 pm or by appointment
E-mail: bjackson@boisestate.edu
Website: http://www.astrojack.com
Phone: (208) 426-3723

Meeting Times and Places

Lecture: Wednesdays and Fridays, 9-10:15a in Multipurpose Building (MB), Lecture Hall 101
PHYS104 Lab: Tuesdays in MB, Room 301
Section A/B: 9-11a/12-2p, LA - Tyler Wade (TylerWade@u.boisestate.edu)
Section C: 3-5p, LA - Katelyn Schuettke (katelynschuettke@u.boisestate.edu)
PHYS204 Lab: Wednesdays, 12-2:45p in MB, Room 301 -- LA: Prof. Brian Jackson
Office Hours: Wednesdays, 3-5p in MB, Room 419

Course Materials (required)

The Cosmic Perspective, ed. 8 -- The Seventh Edition should also be fine.

Pearson's Modified Mastering Astronomy -- You should have received an access code if you purchased your textbook from the campus bookstore. To register, ***do not go to the Mastering Astronomy website***. Click on the Mastering Astronomy link on the left side of the PHYS 104/204 Blackboard page. If you did not purchase the textbook from the bookstore, you can pay online with a credit card after clicking the Blackboard link.

Grades

Graded assignments can be retrieved from the astronomy lab. Final grades are based on the following course components:

- **Introductions (10 points)** -- You are required to schedule a 10-min meeting with Prof. Jackson via e-mail (bjackson@boisestate.edu) by Sep 29.

- **Regular Semester Exams (3 exams, 100 points each)** -- In-class, closed-book, closed-note, multi-choice using scantron sheets, so bring a pencil.

- **Final exam (200 points)** -- Same as regular exams except longer.

- **Labs (14 Labs, 20 points each)** -- Each week, the lab handouts will be available on the course Blackboard site.

  Labs are graded pass/fail, but your instructor must check and sign off on your completed lab report. You must also sign the lab pack and attendance sheet before leaving. Keep the lab report until your grade is posted on Blackboard.

  The lowest lab grade will be dropped, so attend at least 13 labs. Missing more than one lab does NOT mean you will fail the class.

- **Homework (HW) (50 points total) --** You will have several short homeworks in Mastering Astronomy, and at the end of the semester, the total points for these assignments will be re-scaled to 50 points.

Grades (cont.)

- **In-Class Activities (ICA) (50 points total)** -- You will also have in-class exercises and quizzes, graded pass/fail. At the end of the semester, the total points will also be re-scaled to 50 points.

- **Extra Credit (30 points max)** -- There are a few opportunities to receive extra credit (in addition to attending all the labs), each worth 15 points. You can choose two of the following: go to (1) a Boise Astronomical Society viewing session, (2) the Discovery Center of Idaho, (3) the Bruneau Sand Dunes Observatory, or (4) an astronomy event, which take place on Sep 1, Nov 3, & Dec 1 at 7:30p in MP101, our regular lecture hall. ***Extra credit is due by the start of class on Dec 9***. To receive credit for a museum visit/astronomy viewing session, you must e-mail Prof. Jackson a photo of yourself in front of a display at the event. For the events, you must sign the attendance sheet.

One of the exams (NOT the final), all the HW, or all ICA points will be dropped, whichever is worst. ***There is no make-up work*** at the end of the semester. The following table shows the fraction of points you must earn to receive a letter grade:

A: 92.5%	A-: 90%	B+: 87.5%	B: 82.5%	B-: 80%	C+: 77.5%
C: 72.5%	C-: 70%	D+: 67.5%	D: 62.5%	D-: 60%	F: < 60%

Academic Integrity

All students must adhere to Boise State University's Student Code of Conduct on academic dishonesty. Though you can get ideas from other sources and work together, assignments you submit must be your original work and cannot be used in other courses.

Accommodating Disabilities

Students with disabilities needing accommodations should contact the Disability Resource Center (DRC). All accommodations must be approved through the DRC prior to being implemented. Visit the DRC's website at http://drc.boisestate.edu/students/getting-started/.

University Support of Student Well-Being

Boise State is committed to the safety and well-being of our college students, faculty, and staff. If you are concerned about the behavior or safety of a member of the campus community or are in need of support yourself, please share your concerns with the CARE team by submitting a report of concern at care.boisestate.edu. When in doubt, reach out!

Night Observing Labs

There will be two astronomical observing labs during the semester that take place at night, one scheduled in September and the other on Friday, October 6.

- **September Observing Lab** - This lab will involve navigating the night sky, setting up a telescope, and taking an astronomical image.

  Students will be required to form groups of three or four and sign up to participate in the lab on one of the Tuesday, Wednesday, or Thursday evenings between September 5 and 28.

  Each evening can only accommodate 12 students at a time, so be sure to sign up early to claim your preferred evening. Sign up at this website - doodle.com/poll/nbxsf6cyuzf5auya. Be sure to include your first and last name, as well as your e-mail address when you sign up.

  On the evening you've signed up for, you will meet your LA at about 9pm in the Science Building (goo.gl/maps/kMDWWbxzH3A2) and ascend to the observatory on the top of the building.

  If you have a disability that makes it difficult for you to climb stairs, please contact your LA immediately so alternative arrangements can be made. Students are responsible for informing the LAs about the need for other arrangements in advance of the lab.

  Conditions at the observatory may be windy and cool, especially later in the semester, so dress warmly.

  If weather prevents you from doing your lab, you must try to re-schedule with your LA.

- **October 6th Observing Lab** - This lab will involve more using telescopes and making measurements on the sky. It will also double as a public outreach event, and so members of the Boise State community will join us for stargazing this evening.

  You are welcome and encouraged to speak with the public about the astronomy you will have learned by this point, explaining how to navigate the night sky.

  The lab will take place on the southeastern corner of the top of the Brady Street Parking Garage (goo.gl/maps/3ML8aoZhcYs).

  As for the previous lab, temperatures may be cool, so dress warmly.

Boise State's Foundational Studies Program

Boise State's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. PHYS104 - Life in the Universe satisfies four credits of the Foundational Studies Program's Disciplinary Lens requirement. It supports the following University Learning Outcome, along with a variety of other course-specific goals:

> *Apply knowledge and the methods characteristic of scientific inquiry to think critically about and solve theoretical and practical problems about physical structures and processes.*

This course helps to achieve the goals of the Foundational Studies Program by focusing on the following course learning outcomes:

- Identify the standard parts of a planetary system and relate their evolution to physical theories;
- Understand the discovery and nature of extrasolar planetary systems and compare them to our own;
- Understand the nature of life on Earth and its relationship to the astronomical environment;
- Critically assess the chances for life elsewhere, whether in our solar system or beyond.

PHYS204 - Planetary Astronomy has many of the same learning outcomes associated with PHYS104. The topics covered will be identical. The main difference will be the mathematical rigor associated with homework assignments and lab activities.

Course Schedule

Date	Topic/Exam	HW Due	Weekly Lab
Wed, Aug 23	Ch. 1, A Modern View of the Universe		**No labs this week**
Fri, Aug 25		**Ch. 1**	**Due Monday, Aug 28**
Wed, Aug 30	Ch. 2, Discovering the Universe for Yourself		1: Celestial Sphere & Planisphere
Fri, Sep 1		Ch. 2	
Wed, Sep 6	Ch. 3, The Science of Astronomy		2: Scale of the Solar System
Fri, Sep 8		Ch. 3	
Wed, Sep 13	**Exam 1**		3: Planetary Motions
Fri, Sep 15	Ch. 4, Making Sense of the Universe		
Wed, Sep 20			4: Lunar Phases
Fri, Sep 22	Ch. 5, Light and Matter	Ch. 4	
Wed, Sep 27			5: Astronomical Spectra
Fri, Sep 29	Ch. 7, Our Planetary System	Ch. 5	
Wed, Oct 4	**Exam 2**		6: Public Observing Lab
Fri, Oct 6			**LAB ON FRIDAY THIS WEEK**
Wed, Oct 11	Ch. 8, Formation of the Solar System		7: Formation of the Solar System
Fri, Oct 13		Ch. 7	
Wed, Oct 18	Sec. 9.1-9.2, 9.4, 9.6, Planetary Geology		8: Lunar Geology
Fri, Oct 20		Ch. 8	
Wed, Oct 25	Sec. 10.1-10.2, 10.6, Planetary Atmospheres		9: Greenhouse Effect
Fri, Oct 27	Ch. 13, Other Planetary Systems; Review	Ch. 9	
Wed, Nov 1	**Exam 3**		10: Detecting Exoplanets
Fri, Nov 3			
Wed, Nov 8	Ch. 24, Life in the Universe		11: Habitable Zone
Fri, Nov 10	|	Chs. 10 & 13	
Wed, Nov 15	|		12: Drake Equation
Fri, Nov 17	\/	Ch. 24	

Course Schedule

Date	Topic/Exam	HW Due	Weekly Lab
Wed, Nov 22	**THANKSGIVING BREAK**		
Fri, Nov 24	**THANKSGIVING BREAK**		
Wed, Nov 29	Life in the Universe		13: Complexity
Fri, Dec 1	|		
Wed, Dec 6	|		**NO LAB DURING LAST WEEK**
Fri, Dec 8	V		
Fri, Dec 15	**FINAL EXAM 10a-12p in normal classroom**		