

Syllabus: *Visions of the Universe*, Section 3, Spring 2015

Location 1415 Biomedical and Physical Sciences Building
Times Tuesday, Thursday @ 12:40 pm – 2:00 pm
Start Date Aug 31, 2017

Instructor Dr. Chris Britt
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Office 2173 Biomedical and Physical Sciences
Office Hours Wednesdays at 3:00 - 4:30pm, other times by appointment, or talk after class

Teaching Asst. Megan Davis
Office: Physics Helproom (1248 BPS)
Office Hours: TBD

Contact/ Office Hours

If you have questions or you are having problems with any aspect of the course please **do** contact me!

Quick questions can be answered after class or by email (britt@pa.msu.edu). In *all* emails please ensure you add a relevant topic in the subject line including “ISP205” and remember to sign your full name (I get a lot of emails and this will help ensure yours is not missed).

I will be available to meet in my office (Rm 2173, BPS building) weekly on: **Wednesdays at 3:00 - 4:30pm**. I am happy to meet with you at other times, please email me to arrange a mutually agreeable time.

Required Text and Supplies

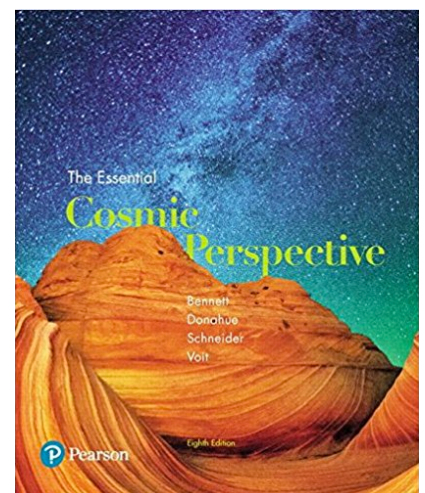
- Our textbook will be: “*The ESSENTIAL Cosmic Perspective, 8th edition (2014)*”, Bennett, Donahue, Schneider, Voit. Publisher: Pearson.

ISBN-10: **0134516338** | ISBN-13: **978-0134516332**

- You also need access to *Mastering Astronomy* (masteringastronomy.com), an online homework system associated with the textbook.

You have three purchasing options:

- (a) A new text book, which should include an access code for MA
- (b) Access to the E-textbook + MA can be purchased on MA
- (c) Purchase a used book; also, you will need to purchase access to MA. Caution: old editions of the book *may* be arranged differently and exclude some content. Use at your own risk. Make sure to choose the correct book! (there are other Cosmic Perspectives, other eds.)



- **iClicker handset**, one per student. The *iClicker2* has more features than we need, but will work fine. If you wish, you may also use the *iClickerGO* on your smart device. You cannot share clickers with another student in the same course (it is not recommended to share them at all).

Course Description

This may be the last physical science course you'll ever take, so we will learn not only what people have discovered about the universe, but how we, as humans, limited by our lifespans and our location, can learn about the universe we can't visit. The first scientists did not have a textbook! They learned about the universe through careful observations. They imagined models for how the universe worked, but they did not stop at what sounded like a good story: they subjected their models to stringent tests. When the models failed the tests, they had to be modified or rejected. 21st century astronomy proceeds the same way. Technology has enabled ever more amazing observations and discoveries and while the universe never seems to be quite what we expect, it continues to yield up its secrets if we persist in asking the questions.

"The most incomprehensible thing about the world is that it is comprehensible."
- Albert Einstein (1879-1955)

Course Objectives

Successful ISP205 students, upon completing this course will have demonstrated, at a level that satisfies the requirements for the undergraduate learning goals of MSU (<http://learninggoals.undergrad.msu.edu>), their scientific literacy acquired from the course content. You will demonstrate scientific literacy in astronomy (and in physical science in general) by being able to:

1. Describe the "big picture" view of the Universe (sizes, distances, history), the process of science, and the historical context of astronomy.
2. Apply familiar, every-day principles of physics to explain the physics of the cosmos.
3. Explain what we learn about planet Earth by studying other planets in the solar system (the greenhouse effect, the risk of impacts, and the beginning of life.)
4. Describe our human connections to the stars: how does our existence require stars, and how can we possibly study the untouchable stars and galaxies that are so far away?
5. Explain to friends and family about current scientific thinking about dark matter, expansion and acceleration of space, "dark energy", and the Big Bang: how can we know anything about these seemingly esoteric and inaccessible topics, and what are the current limits of our understanding?
6. Explain how we, limited to visiting only objects in our Solar System, can scientifically test explanations for what we observe through telescopes: what is the relationship between our evidence and our scientific conclusions?
7. Recognize science: to be able to tell the difference between science, non-science, and superstition; to understand what a scientific theory is and how it differs from a hypothesis; to understand and identify the elements of a scientific inquiry – observations, explanations, scientific tests, the process of falsification, and the conditions that science needs to thrive and to contribute to society.

Schedule

There will be 3 midterm exams and a cumulative final. There are NO make-up exams. The lowest score of the four exams will be dropped. The exams (closed-book, no notes, or any electronic items) will be held on:

Exam 1: Oct 03 (Th), in class

Exam 2: Oct 31 (Th), in class

Exam 3: Nov 28 (T), in class

FINAL: Dec 14 (Th), 12:45 – 2:45 PM

An early final exam will not be given under any circumstances, including the possession of a plane ticket. Make plans accordingly.

Course Requirements

We will be using the Mastering Astronomy site for course homework. Homework is due before every class. You can work up to two weeks ahead at your own pace, but it's not a good idea to get behind.

In addition to the usual course requirements of obtaining course materials and doing the work yourself, you are responsible for:

- 1) Obtaining an iClicker, ensuring it's working, and registering it under your MSU NetID.
- 2) Checking your on-line homework is being recorded in Mastering Astronomy's MY SCORES (left hand column), and getting help immediately if you are having trouble.
- 3) Monitoring your MSU email and your D2L email for course announcements that will be made in class and by email. Make sure your MSU email inbox has adequate space to receive new email.
- 4) Monitoring your D2L Gradebook Report, starting about 2 weeks into the semester. The D2L Gradebook results will be considered final 2 weeks after they are posted, so regularly verify your grade status.
- 5) Ensuring that you have a good course experience. I would like everyone to succeed, but I can't help you if I don't hear from you. Please let me know if things are going wrong or you are having trouble. I will help you, but it's much easier to get you off to a good start than to try to catch you up.

Note: This class is offered under the Integrative Studies program (not the Physics and Astronomy department). The head of Integrative Studies is Prof. Gabe Ording (ordingga@msu.edu) and the administrator is Marsha Walsh (mwalsh@msu.edu). They are there to help you!

Grading and Testing Policy

Grade boundaries*	
Grade	Threshold
4.0	90 -100%
3.5	85 - 90%
3.0	75 - 85%
2.5	65 - 75%
2.0	60 - 65%
1.5	55 - 60%
1.0	50 - 55%
0.0	< 50%

The final grade will be based on:

- Your best 3 out of 4 performances on the 3 midterms and final exam (60%);
- Your Mastering Astronomy homework (15%);
- Clicker and other in-class work (10%).

You can also gain extra credit (added to your final score before grade calculation):

- Your short essay assignment (2%)
- “Astronomical horizons talk” assignment (1%)

Details of these extra credit options will be given later in class (and posted on D2L).

The 3 exams and final are worth 75% of your grade. Each exam is worth 25%; we will drop your worst 1 of the 4 scores. **NO MAKE UP EXAMS.** The drop is to cover all situations, including illness, religious holidays (major holidays are avoided), unexpected travel, job interviews, oversleeping, etc. This syllabus (available by the first day of class) gives the time and dates of all exams, including the final.

Your in-class grade is based on your performance on clicker questions and other in-class activities. All questions are weighted equally. 2/3 of a point are awarded for participating, 1/3 for getting the correct answer. Every class contributes the same amount to your score, irrespective of the number of questions asked. The lowest 8 scores will be dropped before final grade calculation. The drop means the occasional missed class, broken clicker, bad day etc. will not effect your score if you are otherwise consistent.

*you will not be graded on a curve (grade boundaries will not be revised up). However, depending on the class performance, the final boundaries *may* be revised down slightly at my discretion.

Classroom Attendance and Civility Policy

Class attendance is indirectly scored via in-class performance on clicker questions and other activities (for each question, you get 2/3 of a point for participating + 1/3 for the correct answer). 10% of your final grade is for in-class questions.

Note: exams are based on all course material, whether covered in lecture, homework, or reading. There is a strong correlation between class attendance and success in the course.

In class, be respectful of your fellow students and the instructor. Your fellow students deserve a collegial atmosphere and an opportunity to learn. Sound carries very well in our classroom. Do not conduct side conversations – the rest of us can hear you, probably better than you'd like. Turn off your cell phones. If you forget and it rings, please turn it off immediately. Avoid checking email, social websites etc. during class - students behind you can easily see and be distracted by what is on your laptop. If open laptops become a problem, they may be disallowed. At all times, civility and respect for your fellow students and your instructors are required. If after a warning, a student repeats disruptive behavior *the student's participation grade for the entire course will be set to zero, regardless of previous points*. A student will not be allowed to negatively impact the learning experience of any other student.

Academic Integrity

Cheating on an exam will result an undroppable 0.0 on that exam. Do not assist another student during an exam or receive assistance from another student. You may ask questions only of the proctor. Use of a cell phone during the exam inside the exam room, *for any reason*, will be considered cheating. Do not activate or look at your phone until you have left the examination room.

Using someone else's iClicker transmitter or allowing someone else to use your iClicker transmitter is considered deception and a violation of the MSU academic integrity policy. Do NOT use someone else's remote or give your remote to someone else to use for you. If you violate this policy, you will be required to surrender all remotes in your possession. Your participation grade will be zero for the course, whether you are the person with multiple clickers or the person whose clicker is found on another student. If you are not personally present in the class, but your iClicker logs responses "for you", your participation grade for the course will be a zero.

Any person found to be in violation of the academic honesty policy described here or on the University website may potentially receive a grade of 0.0 for the entire course. Any cheating will be reported to your dean through an Academic Dishonesty Report. Such reports are entered into your student folder and may be grounds for probation or dismissal from the university.

Disability Policy

If you need accommodations and you have an RCPD VISA/VISTA form, you must meet with me to discuss and arrange for suitable accommodations in advance. If extra time on exams is required, you will need to reserve time during the same class period with RCPD in 120 Bessey for each test. RCPD prefers two weeks notice to schedule any exams.