

# Syllabus for PHYS 152 Astronomy

PHYS 152 Descriptive Astronomy. Prerequisite: None. Corequisite: PHYS 153 (a good idea but not mandatory, see below). Topics: Historical Astronomy, Gravity & Newton's Laws, Light and Atoms, Telescopes, The Solar System, Stars and Stellar Evolution, Galaxies, Cosmology (Chapters 1- 17 in Army).

**INSTRUCTOR:** Mr. Martin Hackworth (Martin), Senior Lecturer in Physics, ISU Department of Physics. Check my website for office hours. Note: no office hours on exam days.

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**MATERIALS:** *Explorations: an introduction to astronomy*, Third Edition (updated), by Thomas T. Arny, a scientific calculator (the TI-30Xa that is used in labs is the *calculator de jour* in this department), internet access (the website for this class is: <http://www.physics.isu.edu/~hackmart/phys152.htm>). There is a great deal of information about this course not contained in this syllabus that may be found there.

**OBJECTIVES:** To introduce the student to science and scientific thinking, to introduce the rudiments of how scientists think that space, time and the universe are put together, to promote critical thinking.

**GRADING:** This course will be graded on a point system. In general you may acquire points from the following sources:

1. QUIZZES - A short (usually 5 - 10 minute) quiz will be given many class periods. Questions will be selected from lecture material and sections in the text covering material relevant to what is currently being discussed in class. All quiz points count toward the final total and there are no makeup quizzes given. These may be given anytime during the class period.
2. EXAMINATIONS - Four hourly exams will be given. A calculator rule is in effect for all exams (see the website). All examination points count toward the final total and no makeup exams will be given. You will not be permitted to take an exam if you arrive after the first person to finish leaves. You must supply a student ID to be admitted to an exam. See the website for details. Exams are not returned to you. If you wish to see your exam after it has been graded you should stop by my office where I will be happy to go through it with you
3. FINAL EXAM – A comprehensive final will be given. Calculator rule is in effect. The makeup final will be an oral/essay exam administered by appointment. You will not be permitted to take the final exam if you arrive after the first person to finish leaves.
4. CLASS PRESENTATION/SHORT PAPER – A 10 - 15 minute presentation before the class on a topic mutually agreed upon by you and me. You must submit lecture materials and a short paper of approximately 2000 words. This paper and presentation must be crafted entirely by you and used only for this class, i.e., no “double dipping”. The paper, presentation, and any a/v materials submitted for points become the property of the instructor of this course and may not be used for any further purpose without their explicit written permission. This will generally not be granted. See <http://www.physics.isu.edu/~hackmart/152annouc.htm> for more information. **Note: There will be no presentations this semester.**
5. POTPOURRI – TBA, but I am well known for awarding points based on class discussion, response to email discussion, etc.

**Available Points:** Quizzes are worth 5 - 20 points each, exams are worth 50+ points each, the final exam is worth 100+ points, class presentations are worth 50 points.

<b>Totals:</b> Exams	200+ points
Quizzes	150+ points
Final	100+ points
Presentation	50 points (?)
Potpourri	30 points (?)

minimum **530 + points available** (last semester about 700 points were available)

Final grades will be based upon the following scale:

"A" > 400 points  
"B" > 325 points  
"C" > 250 points  
"D" > 175 points

These cutoffs *will not change*. Any student accumulating a total of 350 points or more before the end of the semester will be excused from the final exam and awarded a grade of "A" in the course.

**ATTENDANCE:** My attendance policy is that I have none. I believe that our class time will be informative and will be useful to you. But if you choose not to attend class or if for some reason you are unable to attend class that's OK with me. As there are numerous opportunities for you to make up lost points from quizzes and exams, and many extra points built into the grading structure, there will be no makeup quizzes or exams. None, nada, zilch. Please don't ask about makeups. Note that a good many points in this course are based on class participation either directly or indirectly.

**WHAT THE CLASS IS ALL ABOUT:** PHY 152 is an introduction to astronomy and perhaps even to science (at any real level) for some of you. It is also a goal V course at ISU and as such is quite special. Why? Because this may be the only exposure that those of you who are non-science majors have to how scientists think and work and that is a huge component of general intellectual inquiry. That is why you are here.

We will cover a wide variety of topics in what might seem like fairly rapid succession for some of you. I don't expect you to know much about astronomy, physics or mathematics (though if you do it's a bonus). I *do* expect you to be willing to read, listen and learn.

Although this course is predominantly *qualitative* in nature and has no formal mathematical prerequisite, a comprehension of high school general math is expected (the equivalent of MAT 015). *You will encounter some remedial math in this class.* This is simply unavoidable in this or any science class. If, for instance, we want to discuss something even as mundane as the distance to the sun we have to use some numbers to do it: a mean distance of 93,000,000 miles,  $149.6 \times 10^6$  km, 1 AU. We will have to examine some graphs. This is all math! There is simply no other way to describe things *quantitatively* in science that is not impossibly clumsy. We simply have to grapple with some simple math and that's that. I believe that for most of you this will not be a challenge. If, however, you are someone who is anxious over anything bigger than a license plate number PHY 152 may not be right for you.

Now the good news! Homework will not be assigned, collected or graded. Your only assignments outside of class are reading, study, and a paper or presentation prep if you choose to acquire points in that manner. If you attend class regularly, pay attention during lecture, participate in class discussion, read the textbook *before* coming to class, and put forth a reasonable amount of effort, I believe that you will find this course rewarding and not very difficult.

During the course of the semester we will discuss issues that may challenge strongly held personal beliefs that some of you may possess. That is part of what higher education, in general, is all about, i.e., exposing you to new ways of thinking about the world (and beyond). I am sorry for the discomfort this may cause some of you but unapologetic about the process itself. I also tend to be a strong advocate for the scientific/critical point of view. You should feel completely free to disagree with any POV I express on these topics, and to express your disagreement as long as you are aware that I will respond in kind.

**ACADEMIC INTEGRITY:** A vital part of your college experience is developing a good set of personal and professional ethics. We, as faculty, are painfully aware that a good number of you view college as a means to an end and ethical lapses as, at best, necessary to level the playing field and at worst, only bad if you get caught. We know all of this because it's what you tell us when you do get caught. No matter how prevalent you think cheating is it is simply wrong for you to either participate in it or not to report those you know are doing it.

It is very unfortunate that every year we catch students cheating in lower division courses such as PHYS 152 and 153. Please be forewarned that your instructor, lab supervisor, and the Department of Physics all take an extremely dim view of cheating. Everything in the structure of this course is designed to help you succeed on your own with a good honest effort. Because you have many opportunities to accrue points in this course I will consider any incident of cheating grounds for dismissal from the course with a grade of "F." Please understand that I am completely serious about this.

What constitutes cheating? Basically if you have to ponder the ethics of what you are doing you are probably already over the line. If you are unclear about what constitutes cheating please either ask me or consult the ISU student handbook: (<http://www.isu.edu/references/st.handbook/>). From the handbook:

### 3. Academic Dishonesty

*Dishonest conduct is unacceptable. In cases of academic dishonesty, such as cheating or plagiarism, students will be dismissed from class, given failing grades or otherwise disciplined by the faculty member. Before students are allowed to repeat the course, they must submit a petition to, and obtain approval from, the Scholarship Requirements Committee or the designated official of the college having jurisdiction over the course. Faculty members are responsible for deciding academic dishonesty cases which occur in their classes, except when a case involves additional violation of University policies. Such other violations may be resolved under the Student Code of Conduct, Rights, Responsibilities and Judicial Structure or other applicable procedures.*

(See *The Idaho State University Faculty and Staff Handbook, Part 6, Sec. IX, page 6.9.1* for definitions of cheating and plagiarism.) [http://www.isu.edu/references/fs.handbook/part6/6\\_9/6\\_9.html#dishonest](http://www.isu.edu/references/fs.handbook/part6/6_9/6_9.html#dishonest)

Specific acts of academic dishonesty in this course (not a complete list):

- Possession of old quizzes or exams
- Possession of current quizzes or exams
- Plagiarism on written assignments
- Any communication with anyone besides the instructor or proctor during a quiz or exam
- Any audio/video recording without permission of the instructor
- Handing in a quiz, exam or assignment other than your own.

**PHYS 153 LAB:** PHYS 153 is the lab course designed to accompany PHYS 152. Although it is not mandatory that you take 152 and 153 concurrently it is a very good idea. You cannot receive goal V credit for Astronomy without taking both PHYS 152 and 153 before graduation.

**ADA:** From the ADA office: "Our program is committed to all students achieving their potential. If you have a disability or think you have a disability (physical, learning disability, hearing, vision, psychiatric) which may need a reasonable accommodation, please contact the ADA Disabilities & Resource Center located in Graveley Hall, Room 123, 282-3599 as early as possible"

**New to ISU:** Many of you are freshmen new to both ISU and University life. Please do not hesitate to contact me via email if I may be of help to you in negotiating the lay of the land. I am probably not the person you ultimately need to help you with whatever problem you encounter outside of class but I can point you in the right direction.

**ADDENDA:** A syllabus spells out the terms of a contract between us and is necessarily cast in formal language in order to be precise. Don't let it worry you too much. I have generally had a lot of fun with my classes. I am a big one for having fun. I like teaching a lot. I will do everything I can to make this course interesting. Don't be afraid of asking questions in class or to email me with questions or comments about anything on your mind. (Note: I am notoriously brief in email responses but that is a function of trying to answer hundreds of emails weekly. Please don't take it personally). My office door is generally open. If you are having a problem with this course (or with anything else for that matter) do not hesitate to come by. I hope that you all do well. Best of luck.