

# PHYS 1404 – Solar System Astronomy

## Spring 2018

Professor: Scott Miller

Email: stm009@shsu.edu

Office: 316 Farrington

Skype: stm009.shsu.edu

Telephone: (936) 294-3266

TA Office: 306 Farrington

TA Office Hours: posted on Blackboard

### Introduction:

PHYS 1404 is an introductory course in astronomy for non-science students. PHYS 1404 combines a 3-credit lecture course with a 1-credit lab course. Both must be taken simultaneously in order to receive credit.

- The lecture component of the course will meet three times a week in 50-minute periods, MWF. During this time, in addition to lectures, you will also be exposed to demonstrations of various kinds as well as participate in daily activities to clarify the material. The material from which the lectures are drawn is described later on in this syllabus.
- The labs will be run separately and meet once per week for two hours each week. Labs do not begin until the week of January 29. Your lab assignments will be graded separately by your lab instructor, but your lab grade will represent 25% of your overall course grade. See the lab syllabus for more details.

### Goals:

While the main objective of this course is to cover most of the areas of modern astronomy at an elementary level using only the most basic mathematics, along the way we will also address a number of other goals, such as:

1. Developing a deeper knowledge of astronomy and be able to effectively communicate this information to others.
2. Increasing your appreciation of astronomy and the advances made in the field.
3. Understanding how advances in astronomy apply to the real world.
4. Understanding the scientific process and be able to observe facts scientifically and critically evaluate them.
5. Learning to work cooperatively with others in a group setting in order to communicate ideas and knowledge while working towards a group goal
6. Strengthening communication and reasoning skills that are valuable in any profession
7. Instilling a joy of science and having fun in the process!

As we discuss the material in this course, we will approach astronomy within the framework of the scientific method: observation, explanation and prediction. While we will cover a wide variety of topics, we will focus on answering the following questions:

1. How do the sizes & distances of objects in our solar system compare?
2. How do the Sun, Moon, planets and stars appear to move across the sky?
3. What causes phenomena such as the seasons and the phases of the Moon to occur?
4. What are some of the basic physical laws of the Universe?
5. How can understanding light help us understand our Sun and the solar system?
6. How did our solar system form? Is this typical, or are we an exception to the rule?
7. How do the planets in our solar system compare?

## Texts and Topics:

All of the information that you need to learn for this course is contained in the online lessons and covered in class. If you would like to use a text as a supplemental resource, then the text that has been recommended for this course is **Astronomy Today: Solar System**, 8<sup>th</sup> edition, by Chaisson & McMillan. The contents of this text most closely match the content of the lessons, although there are some topics that may not be covered in the text.

## Determination of Grade:

In-class Participation	50 pts.
Peer Evaluation (3)	50 pts.
Homework (7 – 1 dropped)	100 pts.
Reading Quizzes (7 – 1 dropped)	200 pts.
Exams (4 – 1 dropped)	300 pts.
Final	300 pts.
<b>Total</b>	<b>1000 pts.</b>

The tentative curve\* for the course is as follows:

100% > A > 85%

85% > B > 75%

75% > C > 60%

60% > D > 50%

F < 50%

The curve may be lowered if necessary, but will never be raised. (i.e., The curve may be changed such that a grade less than 85% is considered an A, but will never be changed such that the cutoff for an A is higher than 85%. The same applies to the other ranges.) Curves for each exam will be posted on the course webpage.

## Student-centered learning

**Team-based Learning:** We will use a team-based learning approach in this class. Permanent team learning groups will be established at the start of the course. Research examining team learning assignments show that group scores are HIGHER than individual scores and that students understand concepts much better as a result of discussing questions and course material in groups. We will use the team learning approach on in-class team learning assignments and quizzes, as described below.

## Description of Assignments:

**In-class Participation:** Participation credit is based on in-class questions, which are answered using Personal Response Systems (PRS), or "clickers". A student receives full credit for the day if 50% or more of the questions are answered correctly. Half-credit is received for a score of less than 50%. The in-class questions are not difficult and usually most of the class (90%) receives full credit on a given day.

During classes you will be working on activities that, while not collected, will greatly assist you in understanding the material. A FIRM UNDERSTANDING OF THESE ACTIVITIES WILL BE ESSENTIAL TO A GOOD GRADE IN THE COURSE. You are encouraged to collaborate with others in class, discussing problems and sharing ideas. Ultimately, though, when you are asked to answer questions, you must do so **in your own words**. You will be responsible for your own understanding of the material. Questions on the group assignments will be incorporated into the exams.

**Reading Quizzes:** At the beginning of every unit, on a Monday, there will be a 10-question multiple-choice quiz. Students will come to class having read the assigned lessons posted on Blackboard. You will first complete the quiz individually, for 50% of the quiz. Immediately following, you will complete the same quiz with your group for the other 50%. The quizzes will cover basic information from the reading material posted on Blackboard. **There are no opportunities for making up the quizzes, so make sure you arrive to class on time. Reading**

**quizzes will begin promptly at the beginning of class. Students arriving five or more minutes after the beginning of the quiz are ineligible to take the quiz for credit, but are encouraged to participate in the group portion.** Five out of six quizzes will be counted.

Appeals: Answers on the quiz may be appealed after the group submission. All appeals must be in writing, must fully explain why the group feels there is a problem with the question and must be agreed upon by the entire group. Appeals must be submitted before the end of class on the day of the quiz. While students are not allowed to use notes during the quiz, students may use any resource they wish to appeal any question for which the group feels the answer is incorrect or the question or answer choices are unclear. If the group's appeal is granted, the scores of all group members will be adjusted. Only the group submitting the appeal will have their score adjusted, if granted, regardless of whether other groups agree with their reasoning.

**Homework:** To encourage students to adequately prepare for the reading quizzes and upcoming units by reading the assigned lessons, homework will be assigned before each unit (for a total of seven homework assignments). Each lesson begins with learning goals; a set of questions you should be able to answer after successfully reading through the lesson. For each unit, the homework will consist of submitting your answers to a subset of these questions.

All homework assignments will be posted on Blackboard. Before each quiz, simply log in to Blackboard and complete the homework assignment by clicking on the assignment and answering the posted questions. Questions will be phrased such that they require short answer responses (i.e., from one to a few sentences, NOT paragraphs). In order to receive full credit, you **MUST** answer in complete sentences using proper grammar and punctuation (this is a homework assignment, not a text or a tweet).

Since computer glitches may happen that are beyond the control of either yourself or the instructor, one homework assignment will be dropped. If, for whatever reason, you are unable to submit a homework assignment, it will simply count as your one dropped assignment. Homework is due by the beginning of class on each day when there is a quiz.

**Exams:** There will be four exams during the semester; their dates are listed on the schedule. Each exam will cover new material presented since the previous exam (the topics will be announced in class). While not cumulative, sometimes material from later lessons relies on your knowledge of earlier material.

**Make sure you are present for the exams** (the dates are listed in the class schedule posted on the webpage). One exam will be dropped. If you miss one exam then it will be your dropped exam. If you miss more than one exam, you will automatically fail the course. There will be no make-up opportunities for the exams.

Students are required to notify me on or before the exam date in the case of unexpected events, such as a serious medical or family emergency or legitimate unavoidable conflicts related to university business. In the case of an unavoidable or a university-excused absence on the day of an exam, the first option will be to simply drop that exam. On rare occasion this may occur more than once. Instances such as this will be handled on a case-by-case basis.

**Final Exam:** There is also a final exam. The final will be held during the final exam week (see <http://www.shsu.edu/dept/registrar/calendars/final-exam-schedules.html> for exact day and time). The final is worth 300 points and will cover the entire semester.

**Any grade discrepancies for any assignment or test must be brought to my attention within a week after the assignment deadline or after receiving your score. Otherwise, no grade changes will be considered.**

## Where to Get Help:

**1. Professor Miller:** While I do not have regularly scheduled office hours, you may schedule an appointment to meet with me either in person or by email. If you use Skype, you can also meet with me online via Skype. You can contact me at the address listed at the top of the syllabus.

You may also ask questions by email (although discussions of homework or exam problems are usually best done in person). If you do email me, or anyone else in regards to this course, please email through Blackboard. It will include course information in the subject line and help the recipient better identify the nature of your email.

**2. TA Office Hours:** The lab instructors for PHYS 1404 hold weekly office hours in 306 Farrington. Their hours are posted on Blackboard. If you have lab-specific questions, it would be best for you to attend the office hours of your lab instructor, but if you have general lab questions, or questions about the lecture, then I encourage you to attend the office hours of any of the lab instructors. They are former students who have successfully completed this course; most of them with me. They are very knowledgeable about the material and can explain it to you from a student perspective. Plus, most of them know how I teach my class and the style of questions I typically ask on exams. They are a valuable resource.

**3. Services for Students Disabilities:** (<http://www.shsu.edu/dept/disability/>).

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and e-mail [disability@shsu.edu](mailto:disability@shsu.edu)). They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Services for Students with Disabilities and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation

can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf>

### **ABSENCES:**

As adults, you are expected to be responsible for your own actions. While there is no penalty for missing class, understand that by missing class you miss out on the opportunity to earn participation points for the day, or worse, may miss a quiz or exam. There will not be any opportunity to make up these missed points, so it is in your best interest to attend regularly. Attendance records will be kept on a daily basis. While absences will not be penalized, in the case of borderline grades, your attendance record will be taken into account.

If you are late to class or need to leave early, please be respectful of the fact that class is in session. Please enter or exit quietly without disruption.

### **STUDENT ABSENCES ON RELIGIOUS HOLY DAYS POLICY:**

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Section 51.911 (a) (2) defines a religious holy day as: “a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20....” A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

### **CELL PHONE POLICY:**

Cell phones are the tools of the devil! (Are you still reading this far?) Seriously, though, no matter what argument you give me, the real reason you want to keep your cell phone on your desk is so that you can text your friends when you get bored in class. This is not only rude to your fellow students; it's also rude to me. Therefore, all cell phones must be stored out of sight during class and set on vibrate. If you are expecting an important phone call, notify me before class begins and I'll take it into account. Otherwise, nothing is too important that it can't wait 50 minutes until class is over.

The first time you have your cell phone out in class, you will be politely asked to put it away. The second time, I won't be so polite. The third time, you'll be asked to leave the class and you will lose participation points for that day.

There may be times when you will be asked to use your cell phone for research purposes. At this time cell phone use is encouraged! Otherwise, your cell phone should be placed out of sight.

### **VISITORS IN THE CLASSROOM:**

Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

### **ACADEMIC DISHONESTY:**

Cheating in any form will not be tolerated. Students are encouraged to work together on activities and homework, but collaboration is different than cheating. Collaboration involves the sharing of ideas, while cheating involves the wholesale use of one person's ideas without the other person's contribution to the work.

In general, the academic dishonesty policy is as follows: The first time a student is accused of cheating, he or she will earn a grade of zero on the assignment. Any future evidence of cheating will result in a failing grade in the course and the student will be reported to the Dean of Students for an official reprimand.

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials. For a complete listing of the university policy, see:

<http://www.shsu.edu/administrative/faculty/sectionb.html#dishonesty>

Definitions of various forms of cheating are listed below.

### **CHEATING**

Cheating is the unauthorized use of information and study guides in any academic exercise. The methods of cheating are varied and well-known. Cheating includes:

1. Copying from others during an examination.
2. Sharing answers for a take-home examination.

3. Using illegal notes during an examination.
4. Taking an examination for another student.
5. Asking or allowing another student to take an examination for you.
6. Tampering with an examination after it has been corrected, then returning it for more credit than deserved.
7. Submitting substantial portions of the same academic work for credit in more than one course, without consulting with the second instructor (and the first instructor if the courses are concurrent at Sam Houston State University).
8. Preparing answers or writing notes in a blue book before an examination.
9. Allowing others to do the research and writing of an assigned paper (for example, using the services of a commercial term paper company).

### PLAGIARISM

Plagiarism is academic theft. It refers to the use of another's ideas or words without proper attribution or credit. An author's work is his/her property and should be respected by documentation. Credit must be given:

1. For every direct quotation.
2. When a work is paraphrased or summarized in whole or in part in your own words.
3. For information that is not common knowledge. (It appears in several sources about the subject).

### COLLUSION

Any student who knowingly or intentionally helps another student to perform any of the above acts of cheating or plagiarism is subject to discipline for academic dishonesty. There is no distinction between those who cheat and plagiarize and those who willingly allow it to occur.