HACC - Central Pennsylvania's Community College

ASTR 103 - Introduction to Planetary Astronomy
Winter 2022/2023
CRN: 2572 – Virtual Learning

Instructor: Robert Wagner	E-Mail: rmwagner@hacc.edu
Office: York Leader 150E	Office Hours: By Appointment (Zoom only) - I am always available by email. I am also available for Zoom appointments. (Zoom Link: https://hacc.zoom.us/j/8816229424)
Office Phone: N/A Please use email or Zoom for contact!	Delayed Opening: Not applicable for Online Classes
Textbook: Astronomy 2nd ed. by Andrew Fraknoi ISBN: 978-1-951693-50-3 You can access the textbook for free: https://openstax.org/details/books/astronomy-2e	Lab: Online simulations - Please note that some simulations may NOT run on a Chromebook or tablet - You will need access to a Mac/PC to run these simulations.

Course Description:

Introduces the solar system with an emphasis on the sun, major and minor planets, the earth-moon system, asteroids, comets, meteors, the Kuiper Belt, and the Oort Cloud. This course covers the physical laws of motion and the properties of light, the origin of the Solar System, and formation of the planets. Laboratory exercises reinforce the concepts discussed in the lectures pertaining to the location and motion of objects in the sky. Nominal use of math is required. A course fee is required. (SCI/LAB)

Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- State three major historical developments in astronomy
- State and describe contributions to astronomy from four different cultures
- List, compare, and contrast three major telescope designs
- List astronomical instruments and their uses for four wavelengths non-visible light
- Identify four types of lunar features and explain the physical processes that created them
- Describe five physical features of the Sun
- Name and explain the process by which the Sun produces energy
- Explain the sunspot cycles and their relation on solar output

- State four differences and similarities between the Terrestrial and Gas Giant planets
- Describe four current features, properties, or characteristics of each planet
- Compare and contrast the evolution of each planet in the solar system
- State the characteristics of Kuiper Belt and Oort Cloud objects.
- State the evidence for meteorite impacts and their effect on the Earth's biosphere

Note: It is possible that administrators and/or technology personnel may enter the course for evaluation and/or technical purposes. Please keep in mind that it is possible that people outside of the class may on occasion see your postings.

Office Hours:

Office hours that I will be available are posted at the top of the syllabus. I will be in my office on the York Campus during these times. I also schedule Zoom office hours each week. I am available for appointments (either on campus or Zoom). Please email me to set up an appointment and allow at east 24 hours to schedule. I am available by email 7 days a week and check email and discussion boards regularly for questions! I will generally respond within 24 hours if not faster.

Textbook Editions & Lab Software:

The textbook we will be using for the course are listed at the top of the syllabus. The textbook is freely available through the link provided so you have easy access to the class starting on day 1! You can purchase the textbook if you prefer a hardcopy, but that is not required for the course. You can also download a Kindle version or pdf version of the textbook for offline reading.

Some of the lab software cannot be installed on a Chromebook. You will need to use a Mac or PC in order to be able to complete some of the lab exercises.

Math in this Class:

The course description tells you that nominal use of math is required. You will rarely see math beyond the 8th grade level here. You certainly may be asked to to basic arithmetic - adding, subtracting, multiplying and dividing. You are also expected to be able to use scientific notation for reading and expressing numbers and calculations. You will need to be able use exponentiation to raise a number to a power. You will see the use of trigonometric functions, but need no trigonometry - you will only need to be able to calculate these with a scientific calculator.

Assignments:

Unit quizzes: (60 points): There will be 4 unit quizzes worth 20 points each, the lowest unit quiz will be dropped)
There will be 4 multiple choice unit quizzes during the semester. Each of these will cover 3 lessons worth of material. There is a 25 minute time limit on the unit quiz. You may take the quiz up to three times (the questions will be different each time!) Your highest grade will be the one recorded in the gradebook.

Midterm Exam: (100 points): The midterm exam will be worth a total of 100 points.

The midterm will covers Lessons 1-6 in the class. It will consist of two parts. Part will be multiple choice questions and the other part will be essay/short answer questions. Plagiarism is unacceptable on short answer/essay questions. If I find an example of plagiarism on your test, you will receive a zero for the entire test

Final Exam: (150 points: The Comprehensive final exam will be worth a total of 150 points)
The final exam will be comprehensive in nature. While it will cover material from the entire course, there will be a larger emphasis on the material that we have covered since the midterm exam. The exam will consist of multiple-choice and short answer/essay questions. Like the other exams, you will have only one attempt on the final. You are free to use any books, notes, etc., for the exam, but you may NOT receive assistance from any other people with the exam! Plagiarism is unacceptable on short answer/essay questions. If I find an example of plagiarism on your test, you will receive a zero for the entire test

Labs/Activities: (240 points - There will be 9 worth 30 points each, lowest grade dropped.)
Lab work is a vital part of any science course. In an online course such as this, you will be responsible for completing the lab work at home or in an online setting. An ungraded discussion board will be set up for the labs so that you can discuss questions/concerns with myself or other classmates. Labs will be due as defined in the course calendar. This can be used for labs and any other class assignments.

Discussions (240 Points - There will be 9 worth 30 points each, lowest grade dropped):
There will be at least 9 discussions assigned during the term. I will propose a question for discussion and each student will be required to post their response by the assigned deadline, generally by Saturday at 6AM unless otherwise noted. You will then have an additional 48 hours after the deadline to post your responses to classmates' posts. Your original post, three responses and reading 75% of the posts are required for full credit. I will always give you a minimum of 24 hours after the discussion board closes to read any late postings. I do require a minimum of 250 words for an initial post and 75 words in a response. Posts with lower then these counts will not receive full credit. Simply meeting the word requirement is not sufficient for full credit as you must say something significant (in the instructor's opinion) in your posts!

Solar Observation Project (160 points):
In this project, you will be making observations of the Sun over the course of the semester. Detailed instructions are provided in the handout available on the class site. This is a semester long project! You need to begin it early in the semester and continue throughout in order to get the best results and a full grade. I will request that you turn in any observations made about once each month. This is so I know how you have been progressing with the observations. Each of these submissions of observations will be worth five points towards your final project grade.

Article Reviews: (50 Points – 50 for each of two reviews, the lowest grade will be dropped)

There will be two article reviews due during the course. Detailed instructions will follow, but the idea is this: You are to pick a magazine article (published within the last year) to review and write a 2-3 page summary and analysis of. The topic for your magazine articles are simply limited to Astronomy, not just the portion of astronomy that we are covering in this course.

Quizzes: (13 Points Extra Credit – 13 quizzes at 1 point each)
There will be a quiz on the material covered in each lesson. These will be timed quizzes with 10 multiple choice questions. You may take the quizzes as many times as you like, and the grade of your first attempt will be recorded.

Homework: (25 Points Extra Credit – There will be 5 worth 5 points each)
Yes, I know… it's everybody's favorite part of the class, right? And, what is it with homework when the whole class is done at home, right? Well, for me homework is a great way to review what you have absorbed from the lectures. These are graded primarily on completion - If you make a reasonable attempt at each question, you will receive most of the points. This can add 2.5% to your final grade and could make the difference if you are on the border of a grade!

Submitting Assignments:

All assignments for this course must be submitted through BrightSpace (D2L) (Emailed assignments will not be graded!). Assignments MUST be submitted in either Word (.doc or .docx) or pdf format for submission.

In an emergency where you are unable to submit through D2L, do email the assignment so that it is verified that it is completed. Then, get it submitted through D2L ASAP. It must still be submitted through D2L by the late deadline in order to receive any credit.

Early/Late Assignments:

Assignments may be submitted early. Assignments that are submitted early may receive a bonus as described below:

48 hours (2 days) or more early - 5% added

96 hours (4 days) or more early - 10% added

This applies to assignments that are graded through the dropbox on D2L - It does not apply to extra credit assignments, discussions, or quizzes/exams. If an assignment is modified, the most recent submission date is what counts for this.

Once the deadline has passed, you will no longer be able to submit assignments for full credit. This is a strict deadline and 6:00am is automatically marked as late! Penalties for late submissions are as follows:

Up to 48 hours (2 days) late – 10% deducted

Up to 96 hours (4 days) late – 25% deducted

Up to 168 hours (7 days) late – 50% deducted

More than 168 hours (7 days) late – No credit given

The deduction is based only on when the assignment was submitted — not when it may have actually been completed. No assignments will be accepted for any credit after the end of the semester - I define this to be the time the final exam for the class ends.

Discussions and the Final Exam may not be made up and are locked at the end of the week.

The Midterm Exam and Unit Quizzes may be completed late with a 25% reduction in credit upon request. This is not automatic - you would need to email me requesting the opportunity to take the exam/quiz late. This must be requested and completed before the Midterm/Quiz is seven days late. This does not apply to the final exam or the extra credit review quizzes which must be completed during the time assigned.

For my classes, excused absences to make up an assignment without penalty are only the following: Extensions approved by Student Access Services for accommodations for a student or a medical excuse provided by your doctor excusing you from work/school for a period of time. Other issues which may cause an assignment to be late (internet/work issues, etc.) are subject to the deductions specified.

Grading Policy:

I will make every attempt to give prompt feedback on all assignments. It is my intention to have ALL assignments and exams graded and returned within one week. I will let you know if circumstances cause a delay in grading. Final Course grades will be determined by the following weighting of the assignments discussed above. There will be a total of 1000 points that can be earned throughout the semester:

Four unit quizzes: 60 points
Midterm exam: 100 points
Final Exam: 150 points
Lab Work: 240 points
Discussion Boards: 240 points
Article Reviews: 50 points
Solar Project: 160 points

Grades will be assigned according to the following scale:

A - 90% - 100% 900 – 1000.0 points
B - 80% - 89.99% 800 – 899.99 points
C - 70% - 79.99% 700 – 799.99 points
D - 60% - 69.99% 600 – 699.99 points
F - 0% - 59.99% 0 – 599.99 points

I do not round grades in this class. I offer a small amount of extra credit and do drop a number of assignments. This automatically rounds your grade several percent. I do not adjust grades beyond that.

Attendance Policy:

Attendance in an online course is measured differently than in a face to face course. A key way that I measure attendance in an online class is through participation in discussion boards and completion of graded assignments. Simply logging into the course is not sufficient to be considered as attending the course. I review attendance weekly and will process drops as needed for students who are no longer participating in the course. Any student who consistently missing assignments will be dropped from the course once 15% of the assignments have been missed. Please contact me in advance if there are issues. I will work with you as best I can when personal issues come up!

Plagiarism/Academic Dishonesty:

You are expected to do your own work in the class. While you may use the text and internet as resources, copying directly from them in unacceptable and constitutes plagiarism. It is not necessarily just copying word for word, changing a few words or leaving out/adding words does not make it right! Note that listing solar observations you did not actually make is also academic dishonesty!
The college academic policy is listed further down on the syllabus. I expect you to adhere to this policy in all assignments completed for the class. My policy in terms of grading is as follows: The first time I find evidence of plagiarism, it is a zero for the entire assignment along with a warning to the student's HawkMail and class email accounts. The second occurrence of plagiarism will result in a zero for the assignment and a letter grade reduction in the final class grade. A third instance is an automatic F grade for the class and removal from the class with that failing grade. (Note: You are ineligible for a "W" grade as per college policy if you are found to have been academically dishonest!) Also, note that I will not drop assignments in which academic dishonesty was found — the "0" will be included in your final grade!

'W' Grade Policy:

As per HACC's policy on attendance and withdraws, you must attend class regularly (actively participate online). You can only withdraw or be dropped from this class during the first 70% of the course meetings (total course hours). No withdraws are possible after 70% of the class has been completed. During the drop/withdrawal period of this course, if you miss more than 15% of the scheduled classes (activities) and you are failing the course, you will be removed from the course for excessive absences and I will assign you an "F". If you decide to withdraw from the class, you can do so through MyHACC and you can receive a "W". If you have been academically dishonest, you will receive an "F" grade if you withdraw or are dropped from the class. The student must initiate the drop to receive a "W". All instructor-initiated drops are with an "F" grade. After the drop/withdrawal period has ended, you will be assigned a grade based on the grades you have earned. You can find the specific deadlines for dropping here: http://www.hacc.edu/NewStudents/RegisterOnlineGuide/Add-Drop-Deadlines.cfm

Class Schedule, subject to change as needed during the semester (Note that the dates given are the start of the week — assignments will be due at the end of each week in which assigned):

Week Starting	Lesson	Reading	Exam	Assignment	Extra Credit
19 Dec	Science & The Universe	Chapter 1		Lab 1, Discussion 1	Podcast EC, Review Quiz 1
19 Dec	History & Gravity	Chapters 2, 3		Lab 2, Discussion 2	Review Quiz 2
19 Dec	Earth, Moon & Sky	Chapter 4	Unit Quiz 1 (Ch 1-4)	First Solar Observations	Homework 1, Review Quiz 3
19 Dec	Radiation & Spectra	Chapter 5		Lab 3, Discussion 3	Review Quiz 4
26 Dec	Astronomical Instruments	Chapter 6		Article Review 1, Discussion 4	Review Quiz 5
26 Dec	Intro to Solar System & The Earth	Chapters 7, 8	Unit Quiz 2 (Ch 5-8)	Lab 4	Homework 2, Review Quiz 6
26 Dec	The Moon & Mercury	Chapter 9	Midterm Exam	Second Solar Observations, Discussion 5	Review Quiz 7
26 Dec	Venus & Mars	Chapter 10		Lab 5, Discussion 6	Review Quiz 8
2 Jan	Giant Planets	Chapter 11	Unit Quiz 3 (Ch 9-11)	Second Article Review	Homework 3, Review Quiz 9
2 Jan	Moons, Rings & Pluto	Chapter 12		Lab 6, Discussion 7	Review Quiz 10
2 Jan	Asteroids, Meteors & Comets	Chapters 13, 14		Third Solar Observations, Discussion 8, Lab 7	Review Quiz 11
2 Jan	The Sun	Chapters 15, 16	Unit Quiz 4 (Ch 12-16)	Lab 8	Homework 4, Review Quiz 12
9 Jan	Solar Observing Project	Additional Materials		Solar Observing Project	
9 Jan	Astrobiology & Exoplanets	Chapters 21 & 30		Discussion 9, Lab 9	Homework 5, Review Quiz 13
9 Jan	Final Exam		Final Exam		

Other Important information:

Refund Schedule:
The refund schedule is available on the HACC website: http://www.hacc.edu/NewStudents/RegisterOnlineGuide/Add-Drop-Deadlines.cfm. Feel free to contact me if there are any questions about the deadlines.

Delayed Opening Schedule:
Delayed opening and cancelled days do not apply to online classes. If there is a specific issue related to weather, you should contact me ASAP and we will see what arrangements can be made. It is too late to contact me once the assignment deadlines have passed. College information for online classes:

1. **Online classes operate as normal during weather-related events. Professors are asked to use their discretion in enforcing assignment deadlines if the event will cause unanticipated childcare, work or other personal challenges.**

Response time:

Instructor will respond to all written queries within 48 hours Monday – Friday. Exams are graded within 1 week of being taken. Every effort will be made to have all other assignments graded and returned within 1 week of the due date.

Attendance Policy

The faculty of the college are concerned with the total education of the individual and his/her future opportunities in their careers. Conceptual knowledge, skill, and proficiency are essential for successful employment and effective citizenship. Equally important are the qualities of dependability and responsibility. Unless advised otherwise by their instructor, students should treat their Science Department classes as they would a career-oriented job they want to keep. Therefore, students are expected to attend all scheduled classes and are responsible for all class-related work and assignments. *Students are also expected to contact the instructor when they are absent from class, prior to or on the day of absence if possible.*

The determination of the attendance policy for each course is the prerogative of the instructor, as stated in the instructor's printed course syllabus, subject to the approval of the Division Administrator, which will be distributed to students during the FIRST class meeting. An instructor may require the student to furnish documentation substantiating that an absence should be considered "excused." Circumstances may cause a student to be absent from a class on occasion, for example; illness, bad weather, accident, etc. The definitions of absence from the College attendance policy are as follows:

Excused absence - An absence that occurred for reasons that were: a) beyond the student's control to prevent, and b) significant enough to prohibit attendance in class. Additionally, for the absence to be excused, the student also must also have contacted the instructor prior to or on the day of the absence. It's important to note that, depending on the number or pattern of prior absences, an absence explained as simply 'personal' and 'family emergency' may not be considered as excused unless sufficient detail is provided to the instructor.

Unexcused absence - An absence that occurred for reasons that were: a) within the student's control to prevent, and b) not significant enough to prohibit attendance in class, even if uncontrollable. *Additionally, an absence may be considered unexcused if the student does not contact the instructor about the absence within a reasonable period of time.*

Excessive Absences: *Excessive absences are when unexcused absences or the failure to participate in academic activities exceed 15% of the total class hours (assignments) that will take place throughout the semester and when the absences preclude the possibility of the student attaining the stated learning outcomes for the course.*

Academic Dishonesty Policy:

ACADEMIC DISHONESTY is defined in Administrative Procedure 594. A partial description of this procedure is given below.

"Academic dishonesty is defined as an intentional act of deception in which a student seeks to claim credit for the work or effort of another person, or uses unauthorized material or fabricated information in any academic work." It includes, but is not limited to:

A. Cheating - giving or receiving answers on assigned material, using materials or aids forbidden by the instructor ... unauthorized possession of examinations....
B. Plagiarism - offering someone else's work, words, or ideas as one's own or using material from another source without acknowledgement.
C. Interference – interfering without permission with the work of another student, either by obtaining, changing or destroying the work of another student.
D. Buying or selling of term papers, homework, examinations, laboratory

assignments, computer programs, etc.

E. Falsifying of one's own or another's records
F. Knowingly assisting someone who engages in A - E above.

Penalties for students found to have committed academic dishonesty include, but may not be limited to, the following:

A. Lowering of a grade or failure for a particular assignment,

B. Lowering of a grade, failure, and/or dismissal from the course.

C. Disciplinary probation-may include a limitation on credits, mandatory repeat of a

course, etc.

D. Suspension from a curriculum.

E. Suspension from the College

STUDENTS IN NEED OF ACCOMMODATIONS:

The Student Access Services Department provides reasonable accommodations, auxiliary aids and support services to students with temporary or permanent disabilities (including pregnant and parenting students) as mandated by

Americans with Disabilities Act, 1990 and Section 504, Rehabilitation Act, 1973 and Title IX of the Education Amendment of 1972. Students in need of accommodations or who would like to know more can contact Student Access Services at this link:
http://www.hacc.edu/Students/DisabilityServices/Contact-Disability-Services.cfm

EEOC POLICY 005:

It is the policy of Harrisburg Area Community College, in full accordance with the law, not to discriminate in employment, student admissions, student access and/or student services on the basis of race, color, religion, age, political affiliation or belief, gender, national origin, ancestry, disability, place of birth, General Education Development Certification (GED), marital status, sexual orientation, gender identity or expression, veteran status, genetic history/information, or any legally protected classification. HACC recognizes its responsibility to promote the principles of equal opportunity for employment, student admissions, and student services taking active steps to recruit minorities and women.

The Pennsylvania Human Relations Act ("PHRAct") prohibits discrimination against prospective and current students because of race, color, sex, religious creed, ancestry, national origin, handicap or disability, record of a handicap or disability, perceived handicap or disability, relationship or association with an individual with a handicap or disability, use of a guide or support animal, and/or handling or training of support or guide animals.

The Pennsylvania Fair Educational Opportunities Act ("PFEOAct") prohibits discrimination against prospective and current students because of race, religion, color, ancestry, national origin, sex, handicap or disability, record of a handicap or disability, perceived handicap or disability, and a relationship or association with an individual with a handicap or disability.

Information about these laws may be obtained by visiting the Pennsylvania Human Relations Commission website at http://www.phrc.pa.gov/Pages/default.aspx#.V2HOujFuNS0.

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