Doane University

Syllabus

Course Information

Astronomy 103
Descriptive Astronomy
HPJA 2018 (January 15 - March 10)
3 Credit Hours

Instructor Information

Shawn Langan
Doane University

Contact Information

Office: Available via online office hours with Zoom
Email Address: shawn.langan@doane.edu
Fax: Scan and email

Communicating With the Instructor

This course uses a "three before me" policy for student to faculty communications. When questions arise during the course of this class, please remember to check these three sources for an answer before asking me to reply to your individual questions:

1. Course syllabus
2. Announcements in Blackboard
3. The course discussion board

This policy will help you in potentially identifying answers before I can get back to you and it also helps your instructor avoid answering similar questions or concerns multiple times.

If you cannot find an answer to your question, please first post your question to the Q & A questions discussion board. Here your question can be answered for the benefit of all students by either your fellow students who know the answer to your question or the instructor. You are encouraged to answer questions from other students in the discussion forum when you know the answer to a question in order to help provide timely assistance.

If you have questions of a personal nature such as relating a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, you are welcome to contact me via email or through Zoom. My preference is that you will try to email me first. I will usually respond to email from 8am to 5pm on weekdays, please allow 24 hours for me to respond.

If you have a question about the technology being used in the course, please contact the Doane University Help Desk for assistance (contact information is listed below).

Course Catalog Description

A study of the structure and evolution of the universe with emphasis on the solar system, stellar evolution, galaxies, cosmology, and planetary systems.

Course Objectives

1. Recognize features of the night's sky and visualize the motion of celestial objects
2. Place astronomy in a historical context
3. Utilize fundamental physics concepts as they apply to astronomy
4. Apply fundamental scientific principles to our solar system and exoplanets
5. Apply fundamental scientific principles to our sun and other stars for the purpose of understanding their structure and behavior
6. Apply fundamental scientific principles to our galaxy and other galaxies for the purpose of understanding their structure and behavior.

Course Textbook and Materials

Modified Mastering Astronomy should only be purchased through your Doane Blackboard account.

Required

Modified MasteringAstronomy with **eText** – Instant Access – The Essential Cosmic Perspective

Bennett et al., 8th Edition

© 2018 | Electronic Package | ISBN-13: 978-0-13-460210-3

Online purchase price: $59.95

Optional

You must purchase access to the mastering astronomy homework system, but you are welcome to purchase the hard copy textbook in place of the e-text:

The Essential Cosmic Perspective - 8th edition

Bennett et al.

ISBN-13: 978-0134446431

ISBN-10: 0134446437

Hardware Requirements:

Computer webcam and microphone or a smartphone

Optional Hardware:

Smartphone with camera or digital camera

Learning Objectives

Course Objectives

At the completion of this course students will be able to:

1. Recognize features of the night's sky and visualize the motion of celestial objects
2. Place astronomy in a historical context
3. Utilize fundamental physics concepts as they apply to astronomy
4. Apply fundamental scientific principles to our solar system and exoplanets
5. Apply fundamental scientific principles to our sun and other stars for the purpose of understanding their structure and behavior
6. Apply fundamental scientific principles to our galaxy and other galaxies for the purpose of understanding their structure and behavior.

Module Objectives

Module I:

a. Catalogue celestial objects into appropriate categories and state the fundamental nomenclature used in astronomy
b. Place astronomy in a historical context and relate how astronomy has developed into a physical science over millennia
c. Gain orientation for observing the night sky
d. Recall basic observations of the night sky
e. Convey the motion of celestial objects in colloquial terms and predict object's positions based on this knowledge

Module II:

a. Apply fundamental physics principles to the motion of objects
b. Utilize fundamental physics equations related to gravity
c. Model motion and gravity in terms of energy
d. Define light and characterize light in terms of physics concepts
e. Describe how the changing properties of light and matter are observed in an astronomical context

Module III:

a. Define basic characteristics of earth and utilize the earth's motion to explain seasons
b. Define and predict the phases of the moon
c. Distinguish among the characteristics of the terrestrial planets
d. Distinguish among the characteristics of the Jovian planets
e. Define our solar system's holistic characteristics, and how that applies to its formation

Module IV:

a. Describe the history of the search for exoplanets
b. Use fundamental physics principles to define methods for detecting exoplanets
c. Use fundamental physics principles to define characteristics of exoplanets
d. Explain the implications of recent findings of exoplanets
e. Describe the future of exoplanet searched and it's relationship to life in the universe

Module V:

a. Describe the basic properties of our sun
b. Explain nuclear fusion as a source of the sun's energy
c. Describe the energy processes occurring in our sun
d. Reiterate solar imperfections and their underlying causes
e. Explain the physical connection between the sun and the earth

Module VI:

a. Describe stellar properties and how they are measured
b. Categorize stellar temperatures and luminosities and explain the need to do so
c. Illustrate and utilize sample HR Diagrams to discover stellar properties
d. Fully explain and illustrate the stellar life cycle for any stellar mass
e. Explain and describe the end states of stars depending on their mass

Module VII:

a. Explain the overall structure of the Milky Way Galaxy and the physical implications thereof
b. Describe the characteristics of groups of stars and why they are important in our galaxy
c. Distinguish between the two populations of stars in our galaxy
d. Define and utilize the Hubble Tuning Fork Diagram to classify our galaxy
e. Generalize galaxy classification via morphology and relate this to the Hubble Tuning Fork Diagram

Module VIII:

a. Relate the physical properties of galaxies to the Hubble tuning fork diagram.
b. Define and utilize various methods to measure the distance to distant galaxies
c. Apply galaxy characteristics to the structure of the universe as a whole
d. Describe basic cosmological structure and the big bang theory
e. Describe the expected life cycle of the universe

Course Requirements

Online Course

This is an online course and therefore there will not be any face-to-face class sessions. All assignments and course interactions will utilize internet-based technologies.

Attendance Policy

You should plan to work on this course everyday. This means that you must have a reliable and consistent internet connection throughout the duration of the course. It is strongly recommended that you not take any vacations during this course. This is a condensed, fast-paced course and it would be extremely difficult to catch up after a prolonged absence.

Course Preparation and Participation

Preparation for class means reading the assigned readings & reviewing all information required for that week. *Attendance* in an online course means logging into the Blackboard and on a regular basis and *participating* in the all of activities that are posted in the course.

Studying and Preparation Time

The course requires you to spend time preparing and completing assignments. A three-credit course requires 144 hours of student work. Therefore expect to spend approximately 18 hours a week preparing for and actively participating in this 8-week course.

Computer Requirements

This course requires that you have access to a computer that can access the internet. You will need to have access to, and be able to use, the following software packages:

- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader
- Adobe Flash Player
- Google Docs or other word-processing software
- Java - installed and enabled

These programs are free and fairly easy to install. Your instructor can help you with basic questions regarding these items. You are responsible for having a reliable computer and internet connection throughout the course.

Email and Internet

You must have an active Doane University e-mail account and access to the Internet. *All instructor correspondence will be sent to your Doane* University *e-mail account.* Please plan on checking your Doane Gmail account regularly for course related messages.

This course uses Blackboard for the facilitation of communications between faculty and students, submission of assignments, and posting of grades. The Blackboard Course Site can be accessed at http://bb2.doane.edu

Campus Network or Blackboard Outage

When access to Blackboard is not available for an extended period of time (greater than one entire evening - 6pm till 11pm) you can reasonably expect that the due date for assignments will be changed to the next day (assignment still due by midnight).

Late or Missed Assignments

ALL assignments must be finished and turned in to complete the course. Unless the instructor is notified BEFORE the assignment is due and he or she provides an opportunity for the student to submit an assignment late, points may be taken off for a late assignment.

Grading Policy:

Module Discussions (VLOG) – You will be required to post one VLOG (video blog) answer to a course moderated discussion question by Wednesday 11:59 p.m. CST, of each week. This discussion question will relate to the topics of the week, and therefore you should use a scientific rationale when replying to the discussion question.

By Sunday 11:59 p.m. CST of each week, you must reply to TWO other discussion posts from your classmates, of that same week. Your response may be in agreement or refute the post, but it must be based on a scientific rationale. All replies must be respectful to the original person's opinions.

Any VLOG or replies that are posted after the deadlines will receive 10% deduction from their grade for that week, for each day that it is past the deadline.

Homework – Homework assignments will be due Sunday by 11:59p.m. If you are late with a homework assignment, you will receive a 10% deduction on the late assignment, for each day that it is past the deadline. **It is strongly encouraged that you work on these assignments each day.** Any homework assignment of 50% or higher will receive full credit. Any homework assignment of less than 50% will receive zero credit.

Module Projects - All weekly projects are due by 11:59 p.m. CST on the Sunday of the week that it is assigned. These projects come in many forms, as directed in the video lecture. If you are to create a document, save it as a pdf and upload to Blackboard for grading. If you are to create a video, save it to YouTube under your Doane account, and copy the link into Blackboard for grading. Any weekly project that is submitted late, will receive a 10% deduction in the grade for each day it is past the deadline.

Submitting Assignments
All assignments, unless otherwise announced by the instructor, must be submitted via Blackboard. Each assignment will have a designated place for submission.

Drop and Add dates
If you feel it is necessary to withdraw from the course, please contact your advisor for full details on the types of withdrawals that are available and their procedures.

Subject to change notice
All material, assignments, and deadlines are subject to change with prior notice. It is your responsibility to stay in touch with your instructor, review the course site regularly, or communicate with other students, to adjust as needed if assignments or due dates change.

Academic Integrity
Doane University expects and requires all its students to act with honesty and integrity, and respect the rights of others in carrying out all academic assignments. Academic dishonesty, the act of knowingly and willingly attempting or assisting others to gain academic success by dishonest means, is manifested in various measures. Gehring, et al, (1986) suggests that four categories of academic dishonesty exist[1]:

a. Cheating
b. Fabrication
c. Facilitating academic dishonesty
d. Plagiarism

For more information on academic integrity, please visit the website:
http://catalog.doane.edu/content.php?catoid=4&navoid=191

Course Grading

Grades and Grading Scale
Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

A	100 – 90
B	89 – 80
C	79 – 70
D	69 – 60
F	59 and below

Your final percentage will be assessed with the following criteria.

Discussion Board -	30%
Homework -	30%
Projects -	40%
TOTAL	**100%**

See the requirements for the specific Assignments on Blackboard.

How to Succeed in this Course

- Check your Doane email regularly
- Log in to the course web site daily
- Communicate with your instructor
- Create a study schedule so that you don't fall behind on assignments

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate transition from high schools and community colleges, in-service training for faculty and staff, resolution of accessibility issues, community outreach, and collaboration between all Doane University regarding disability policies, procedures, and accommodations.

Student Conduct Statement

Students are required to adhere to the behavior standards listed in **Doane University Policy Manual**

Appropriate classroom behavior is defined by the instructor. This includes the number and length of individual messages online. Course discussion messages should remain focused on

the assigned discussion topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion. Inappropriate discussion board messages may be deleted if an instructor feels it is necessary. Students will be notified privately that their posting was inappropriate.

Student access to the course Send Email feature may be limited or removed if an instructor feels that students are sending inappropriate electronic messages to other students in the course.

Technical Support Contact Information

For technical assistance 24 hours a day, 7 days a week, please contact the Doane University Technology Office Help Desk:

Phone: 402-826-8411
Email: helpdesk@doane.edu
Web: http://www.doane.edu

Syllabus Disclaimer

The instructor views the course syllabus as an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes face-to-face, via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.