Descriptive Astronomy 2010 — 002 (In class)
Syllabus - Pruneau - Winter 2020

- PLEASE READ THE ENTIRE SYLLABUS **BEFORE** WRITING TO OR CALLING THE INSTRUCTOR WITH QUESTIONS ABOUT THE COURSE.

Intended audience:

- General audience including science and non-science majors.
- Minimal knowledge of mathematics (elementary algebra) and sciences.
- Ideal for Students seeking to satisfy their GEN-ED Science requirements.
- Must have access to a computer and be familiar to browser usage.
- Must have email access and read Wayne State email REGULARLY.
- **Must be familiar with the WAYNE STATE Canvas system.**

Synopsis:

This course is an elementary introduction and survey of Astronomy. It covers a very large range of introductory topics including: The Sky, Orbits and Gravity, Earth-Moon-Sun System, Electromagnetic Radiation, Telescopes, The Solar System, Planet Earth, The Moon, Inner Planets, Outer Planets, Minor Bodies of the Solar System, The Sun, The Stars, Stellar Evolution, Relativity and Black Holes, The Milky Way, Galaxies, Quasars and Active Galaxies, Order in the Universe, Big Bang Cosmology.

Course Format:

The course material/content is comprised of

- Reading materials from the **course textbook** (see below)
- **Online materials** delivered through the **Canvas** and the **Norton SmartWork** websites.
  - Canvas:
    - Course Announcements
    - Power point lectures and Lecture Videos
    - Assignments based on the Video Game and Planetarium presentations.
  - **SmartWork** Website via Canvas(Weekly tests and exams),
- Two planetarium shows (Old Main building, main campus)
- **Instructional Video Game**

Instructor:

Professor Claude A Pruneau,

- E-Mail: aa7526@wayne.edu
- Website: https://clasprofiles.wayne.edu/profile/aa7526

- Office: Room 322, Physics Building, Wayne State University
- **Communication via Canvas and email preferred**.

Office Hours:

- If you need to meet me in person, please contact me **by email** to make an appointment, and I will be happy to meet with you at my office or via SKYPE to answer questions or discuss any issues you may encounter.

Canvas System (https://canvas.wayne.edu/)

- Canvas is used for general information and announcements related to the course.
- Canvas is also used to access the instructor's lectures, the e-book, weekly assignments on the material, assignments based on your exploration of the video game, and quizzes on the material covered during the two planetarium shows.

SmartWork

- Most of the quizzes and tests are provided through the W.W. Norton SmartWork system which is now fully integrated in Canvas.

Course ANNOUNCEMENTS:

- Course related general announcements will be carried out through the Canvas system, and by email.
- Logon to the Canvas website to see announcements and read your ***University email*** on a regular basis (e.g. at least every other day) to stay up-to-date with class information.
- ***Make sure your University E-MAIL BOX is NOT FULL.***

In-class Lectures: NONE

There are no in-class lectures within the context of this AST2010 **online section**. However, lecture notes in the form of power points (PDFs) are posted in Canvas. These power points are from lectures that I and other instructors have given in the in-class sections and are part of the required reading for the online section. You may alternatively view the Videos I recorded with these power points.

Textbook (REQUIRED)

- **Astronomy, AT PLAY IN THE COSMOS/ACCESS, Adam Frank, Norton Publishing,**
- **Available at Barnes and Noble on campus**
- **Please buy the bundle version which includes the e-book, SmartWork5, and the video game. I encourage you to get the book hardcopy also…**

Reading and Tests

- Reading and Tests Assignments are given weekly.
  - Main Course Schedule is posted in Canvas.
- Reading material includes chapters from the textbook and lecture notes posted in Canvas.

Video Game

- An instructional video-game is included in the course. Instructions to access and download the software are posted in Canvas.
- The game features several missions. Instructions when to complete these missions will be given in Canvas.
- There will be a short "test", in Canvas, to verify that you have successfully completed each of the missions. The due dates for these tests is posted in Canvas as part of the main course schedule.

In-class Quizzes (Clicker)

- I will have one or few pop-up quizzes in each lecture.
- I will use the iClicker system to collect and grade your work.
- Please procure a "clicker" from B&N as soon as possible (this week) if you do not already have one.
- Instruction to register your clicker will be forthcoming.

Final Exam:

The final exam will be taken in class at a date to be announced soon.

Planetarium Shows

- *Two shows for AST2010 students will be scheduled and presented at the College of Liberal Arts and Sciences planetarium.*
- *These shows are an OPTIONAL part of the course – attendance is taken and I will receive a list of attendees* ***at the end*** *of the semester. Attendance to each show will add an EXTRA CREDIT of 2% to your grade. Attendance to both shows can easily make the difference between, say, an A- and A! That's an easy and fun way to boost your grade!*
- *The planetarium has a limited/small number of seats. Many presentations of each show will therefore be scheduled.*
- *Dates and times of the presentations will be posted on the planetarium website.* http://physics.wayne.edu/~planetarium *and in CANVAS.*
  - **The planetarium is located at the lower level of the Old Main Building.**

- **Please note: Planetarium shows are held with lights turned off. The planetarium door is closed/locked 5 minutes after the official beginning of the show. Make sure you arrive ahead of the scheduled show times.**

Student E-Mails:

- Look for announcements in *CANVAS*.
- Please follow proper etiquette in your emails and address your instructor as "Professor Pruneau" or "Mr. Pruneau". Rude or improper emails will not be answered...
- Please be patient - there are many students in this class…

Evaluation of Learning:

Your final grade in this course will be based on the following items:

Weekly Assignments and Tests:	65%
Pop-up Quizzes (In-class w/ clickers):	10%
Video Game Assignments:	10%
Final exam:	15%
Planetarium Show #1 (Attendance 2%):	2%
Planetarium Show #2 (Attendance 2%):	2%
Total: 100 (required) + 4 (extra credit)%	

Final grades letters will be attributed according to the following table.

A	95 - 100 %
A-	90 - 94
B+	85 - 89
B	80 - 84
B-	75 - 79
C+	70 - 74
C	65 - 69
C-	60 - 64
D	50 - 59
F	otherwise

Laboratory:

- The laboratory is a separate course (AST2011) - graded separately/independently by a different instructor.
- The laboratory course is **OPTIONAL** for most students. Consider taking it if you are required laboratory credits within your specific academic program.
- The astronomy 2010 laboratory manual must be purchased by those registered for Astronomy 2010+2011 for 4+1=5 credits.

- While the lab is not required for all programs, it is recommended.

Observation of the Sky - LABORATORY COURSE ONLY

- Two evenings of observation are usually scheduled during the semester.
- Observations are carried on the roof of the Physics building during clear nights.
- It is extremely valuable to study the manual prior to coming to the laboratory.
- Laboratory reports are due at the start of the following week lab.
- For further details, please inquire with the AST lab instructor.

Important Notes:

- There is a fairly large amount of material in this class.
- It is absolutely critical that you do not wait till the last minute to prepare for the end of chapter tests.
- Read the chapters and take the assignments via CANVAS/WorkSmart5 on a regular basis.

Other textbooks of interest (but not required)

- Foundations of Astronomy, 3rd Edition, Seeds, Backman, Pruneau, Cengage Publishing.
- Voyages Through the Universe, Fraknoi, Morrison, and Wolff, Saunders Publisher.
- The Cosmic Perspective, Bennett, Donahue, Schneider, Voit, Addison-Wesley Publisher.
- The Origin and Evolution of the Universe, Zuckerman, Matthew, Malkan, Jones and Bartlett Publisher.
- Astronomy, A beginner's Guide to the Universe, Chaisson and McMillan, Pearson Prentice Hall Publisher.
- Astronomy Journey to the Cosmic Frontier, J. D. Fix, McGrawHill Publisher, 2nd edition.
- Redshift, B. Walker, Harcourt.
- Discovering the Universe, Comins and Kaufmann III, Freeman Publisher.

General Learning Outcomes

After completing this class, you are expected to …

- Understand the basic cycles experienced by humans
    - Why we have Day and Night
    - Why we have Seasons
    - Why we use a calendar based on 7 day weeks, and approximately 30 day month, and years
- Understand your place in the Universe and the basic hierarchy of the Universe and the various processes that take place within it.
    - Solar System:
        - Why we know the Earth revolves around the Sun
        - Understand the structure of the solar system, and know basic facts about the planets
        - Have basic knowledge of the basic principles that determine the formation of the solar system, and its evolution
        - Understand at a basic level the techniques used by scientists to estimate the age of the Earth at 4.5 billion years.

        - Know there are other solar systems, and understand at a basic level the methods used by astronomers to detect them.
    - Stars:
        - Understand the Sun is a medium size star among several billion others in our galaxy, the Milky Way.
        - Understand the basic classification of stars
        - Understand the basic steps in the birth, evolution, and death of stars
        - Be familiar with some exotic objects such as neutron stars, and black holes.
        - Understand that all elements heavier than helium were synthesized in stars or supernova explosions - which is why astronomers say we are “star dust”
    - Galaxies
        - Be familiar with the basic steps involved in the discovery of galaxies
        - Be familiar with basic classifications of galaxies, their attributes, and evolution
        - Be familiar with the existence of larger structures known as clusters and super clusters.
    - Cosmology
        - Be familiar with the notion that all galaxies are receding from one another and what it means
        - Understand at a basic level the evidence for a big bang
        - Understand at a basic level the techniques used by astronomers to estimate the age of the universe
        - Understand that the notion that the Universe is infinite in size but that we can only see the fraction within the cosmic horizon.
- The question of the origins
    - Have a basic understanding of the evidence for geological ages on Earth, and the biological evolution of species
    - Have a basic understanding of the origins of the Earth and the Solar System
    - Have a basic understanding of the origins and evolution of stars and galaxies
    - Have a basic understanding of the evolution of the Universe since the big bang
- The Scientific Method
    - Understand the basic principles of the scientific method
    - Understand the notions of hypothesis, model, theory, law of nature
    - Understand at a basic level the process whereby scientists use facts, obtained by quantitative measurements of natural phenomena, to compare the merits of models, and formulate an increasingly more accurate model (theory) of nature.
- Basic Scientific Theories
    - Have basic familiarity with physics principles of velocity, acceleration, energy, potential energy, force, pressure.
    - Have basic familiarity with fundamental laws of nature including conservation of energy, conservation of momentum, conservation of angular momentum
    - Have basic familiarity with theories about the structure of matter and forces, including the structure of the atom, structure of the nucleus, existence of several classes of elementary particles, and the fundamental forces that rule them.
    - Have basic understanding of the nature of light and electromagnetic waves, and their properties, including the notions of wavelength, frequency, amplitude, and velocity.
    - Have basic familiarity with the four fundamental forces of gravity, electromagnetism, strong nuclear force, and weak nuclear force.

Specific learning objectives are posted in Canvas and at the beginning of each power point lecture.

Religious holidays

Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their Instructors well in advance so that mutually acceptable alternatives may be worked out.

Note, however, that you are typically given fourteen days to complete each assignment, either homework or exam (post-test and final), so you can most likely organize your study and work schedule and have plenty of time to complete the assignments.

Students with Disabilities

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours or via Skype to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

See the SDS website for more information: http://studentdisability.wayne.edu/

Academic Dishonesty

Plagiarism and cheating (edited statement from the DOSO's web site):

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html).

Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

Cheating:
Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student's test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

Fabrication:

Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

Plagiarism:
To take and use another's words or ideas as one's own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student's access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

Course Drops and Withdrawals:

In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: http://reg.wayne.edu/pdf-policies/students.pdf