

Course Information

Course Number/Section	NATS 1311.001.16F
Course Title	From the Cosmos to Earth
Term	Fall 2016
Days & Times	MW 2:30 - 3:45 PM
Room	SLC 2.303

Professor Contact Information

Professor	Dr. Marc Hairston
Office Phone	972-883-2826
Email Address	hairston@utdallas.edu
Office Hours	JO 5.404 Wednesdays 4 – 5 PM <i>Note: I am borrowing this office from Dr. Pamela Gossin in Arts and Humanities for office hours. My real office is WT 2.702 over in WSTC (aka Siberia West) and I don't want to you risking your neck running across Waterview's six lanes of traffic. OTOH I am available there by appointment.</i>

Course Pre-requisites, Co-requisites, and/or Other Restrictions

No prerequisites. Introductory course. Some mathematics will be used in class but only simple problem solving may be required on exams.

Course Description

Introductory course in astronomy using physical principles to explain the origin, nature and development of the solar system. Topics include the geocentric model of the solar system developed by the Greek Astronomers and its evolution into the heliocentric model of Copernicus and Galileo; laws of planetary motion: force of gravity and its effects; how we explore the universe; properties of the planets and their moons; our star, the sun and its process of energy production; stellar formation and life cycle; and the origin and fate of the universe. Not necessarily in that order.

Student Learning Objectives/Outcomes

Upon completing this class, students will:

- Be able to explain how our ideas of the solar system evolved over time.
- Be able to discuss how we learn about the universe.
- Be able to describe how the sun produces its energy.
- Be able to discuss the evolution of stars.
- Be able to understand how science works as a process; how scientists conduct inquiries, evaluate evidence, and ultimately come to a scientific understanding of the universe.

Required Textbooks and Materials

1) *The Cosmic Perspective 7th Edition* (older editions are OK if you can find them)
Bennett, Donahue, Schneider, and Voit

Publisher: Pearson
ISBN: 13:978-0-321-83955-8

2) *Coming of Age in the Milky Way*
Timothy Ferris
ISBN: 978-0-06-053595-7

3) Various on-line readings (see below)

Assignments & Academic Calendar & reading assignments

NOTE: This schedule is somewhat tentative and may be revised. Changes will be announced in class and updated on eLearning. The current schedule on eLearning supersedes what is written here.

ALSO NOTE: There will be occasional on-line readings (usually associated with breaking unforeseen astronomical news) added during the semester. These will be announced in class and posted to eLearning. Students are responsible for keeping up with those readings as well and the material in them may appear on exams.

Week # 1 Aug 22-24

Mon – Introduction

Wed – motions of the sky, seasons, archeoastronomy

Bennett ch 1-2; Ferris ch. 1

Week #2 Aug 29-31

Mon – ancient astronomy vs. Copernicus

Bennett ch 3 (through Copernicus); Ferris ch 2-3

Wed – Galileo, Kepler, and Newton

Bennett rest of ch 3; Ferris ch 4-6

Week #3 Sept 5-7

Mon holiday

Wed – Motion, energy, and gravity

Bennett ch 4

Week #4 Sept 12-14

Mon – Light and telescopes

Bennett ch 5

Wed – Earth and its atmosphere

Bennett ch 9.1-9.2, 9.6; 10.1-10.2, 10.6; Ferris ch 12

Week #5 Sept 19-21

Mon – Other terrestrial planets (Mercury, Venus, Mars)

Bennett ch 9.3-9.5; 10.3-10.5 (basically the rest of chapters 9 and 10)

Wed – **first exam**

Week #6 Sept 26-28

Mon – Jovian planets (Jupiter, Saturn, Uranus, Neptune)

Bennett ch 11

Wed – Comets, asteroids, dwarf planets (Ceres and Pluto), Kuiper Belt Objects

Bennett ch 12

Week #7 Oct 3-5

Mon – Formation of our Solar System

Bennett ch 8

Wed – Exoplanets (other planetary systems)

Bennett ch 13

Week #8 Oct 10-12

Mon – guest lecture by Dr. Pamela Gossin (*tentative date*)

Wed – Astrobiology: Life here and maybe out there too?

Bennett ch 24; Ferris ch 13, 19

Moon Phase Assignment due in class

Week #9 Oct 17-19

Mon – Introduction to relativity (both special and general)

Bennett ch S2 and S3; Ferris ch 10

Wed – Particle physics

Bennett ch S4; Ferris ch 15-16

Week #10 Oct 24-26

Mon – the Sun

Bennett ch 14

Wed – **second exam**

Week #11 Oct 31-Nov 2

Mon – Stars and their classification

Bennett ch 15

Wed – Birth of stars

Bennett ch 16

Week #12 Nov 7-9

Mon – Life and death of stars

Bennett ch 17; Ferris ch 14

Wed – Stellar graveyards (including black holes)

Bennett ch 18

Week #13 Nov 14-16

Mon – Milky Way

Bennett ch 19; Ferris ch 9

Wed – Galaxies and the beginning of cosmology

Bennett ch 20; Ferris ch 11

Sunrise/sunset observation assignment due in class

Week #14 Nov 21-23

Thanksgiving break, no classes

Week #15 Nov 28-30

Mon – Galactic evolution and active galactic nuclei

Bennett ch 21

Wed – Birth of the Universe

Bennett ch 22; Ferris ch 17-18

Week # 16 Dec 5-7

Mon – Fate of the Universe (okay, we've reached the edge of the Universe, so what do we do next?)

Bennett ch 23; Ferris ch 20

Wed – **Final**

Class Materials

After their use in class, copies of the most significant power point slides I will use in class will be posted in eLearning (go to eLearning on the UTD home page). Log in and go to the section devoted to this class, NATS 1311, Section 001.

Readings

There is a fair amount of reading for this class (though less than say a literature or history class). You are expected to have read the assignment for the day of that class **before** you come to class, and I will sometimes pull quiz questions from that day's readings. Because of all this, *reading ahead is strongly encouraged!*

Semester Project

There will be two long-term outside-of-classtime projects for this course. One will be a moon observing assignment that starts the first week of class and be due on October 12 (Wed). The second will be a sunrise/sunset observing assignment that will start the first week of class and is due on November 16 (Wed), the last class before Thanksgiving break. I will go over the details of the assignments during the second class on Aug 24.

Examinations and quizzes

There will be 2 exams and a final exam. Each exam will cover the material from that portion (roughly 1/3) of the class. In other words the final will NOT be cumulative. (Don't thank me. I don't have a TA and I don't want to grade a cumulative final any more than you want to take one.)

The final exam will be held the last day of class for reasons I will explain in class.

Short quizzes (one or two questions) will be given frequently during many class periods. Quiz material will cover the currently discussed topic as well as material from previous classes.

You will be responsible only for the material covered in class, whether or not it is in the textbook. Therefore it is imperative that you attend all classes so you will have access to the material on which you will be tested.

Grading policy

Each exam will each count 20% of the grade (60% total)

Attendance and quizzes will count 20% of the grade.

The outside-of-class projects during the semester will count 20% of the grade (10% for each assignment).

Final grading will be on a curve so that the average class grade will equate to approximately a B-.

Improper deportment in class, if serious enough, could result in the reduction of your final grade.

Course & Instructor Policies

Make-up exams

There will be no make up exams, except for prearranged serious interferences that you can document PRIOR to the date of the exam. Email Dr. Hairston your request for missing the exam and the reason BEFORE the exam is given.

Quizzes can NOT be made up. Quizzes will be given at random times during each class. If you miss a class you will miss the quiz for that class.

Extra Credit

None

Special Assignments

None

Class Attendance

Highly encouraged. Quizzes may be given any time in any class period and may NOT be made up for any reason. Attendance will be taken by having you turn in a question at the end of each class. The combination of attendance and quizzes will count for 20% of your grade.

Classroom Citizenship

For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regards to all class interactions.

Disruption of class will be grounds for reduction in your grade.

Technology may be used in Learning Mode ONLY. In other words use of your laptops and phones during class is ONLY for something class related. No texting, phone calls, Facebook, twitter, working on homework for another class, etc. We're only together for an hour and some twice a week and we need to focus on the subject material during that time.

Be on time for class. (I tend to give the pop quizzes first thing.) Do not leave early. Do not rustle papers in preparation to leave before class is over. Often the most important thing I have to say about that day's lecture (which just might be on the pop quiz in the next class) will be said in the last 60 seconds and I'd really hate for you to miss it because of all the distractions and noise.

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Field Trip Policies / Off-Campus Instruction and Course Activities

None. (Although you will be required to travel with the Earth on about 32% of its annual revolution around the sun during the semester. Failure to do so will affect much more than just your grade.)

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD printed publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Series 50000, Board of Regents, The University of Texas System, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391) and online at <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html>

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work

done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic Dishonesty: any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective. Ten points to Hufflepuff if you're still reading this far.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see <http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm>

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts. You really should eat better and get more exercise too.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The Office of Student Accessibility is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Student Accessibility is located in room 3.200 of the Student Services Building. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Student Accessibility is:

The University of Texas at Dallas
800 West Campbell Rd., SSB 32, Suite 3.200
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of Student Accessibility. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Student Accessibility to notify them of your eligibility for reasonable accommodations. Student Accessibility can then plan how best to coordinate your accommodations.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Student Accessibility provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions and timelines are subject to change at the discretion of the Professor.