

**AST 2010**

**Syllabus**

**Winter 2018**

**Course Title: Descriptive Astronomy**

**TEXT:** **Astronomy: At Play in the Cosmos** by Adam Frank, published by Norton; available at Barnes and Noble on campus.

**ISBN: 9780393935226**

**LECTURE:** M W 12:30 – 2:10 p.m.

**LOCATION:** 0101 State hall

**LECTURER:** KARUR R. PADMANABHAN

**OFFICE:** 364 Physics Research Bldg. (666 W. Hancock)

**E-MAIL:** ad2639@wayne.edu

**OFFICE HOURS:** 3-4 pm MW; or by arrangement

**Blackboard/CANVAS:** All exam information, announcements, reading quizzes (time limited) and post lecture questions (time limited) and exam grades will be posted on Blackboard/CANVAS. They need to be completed within the assigned time window.

**LECTURE & READING ASSIGNMENTS:** In order for you to appreciate, learn from, and participate in the discussion of material covered in each lecture, it is recommended that you come to lecture prepared, by having read the related material in your textbook.

**Homework:** Web based homework will be assigned periodically using SmartworksV

**Also Note:** There is a large amount of material presented in this class. Therefore it is strongly recommended that students:

- Not wait until the last minute to prepare for exams;
- Read the chapters in the text book, weekly; stay current;
- Read chapter summaries; try end-of-chapter questions/problems.

#### **Planetarium Visits**

Two visits to the Wayne State University Planetarium will be offered.

As the planetarium has a limited number of seats, many presentations of each of the two different shows will be offered, each over a roughly two week period.

<http://physics.wayne.edu/~planetarium> and on the course website as well. You will be informed of the procedure for signing up and receiving credit for each presentation.

**Astronomy Show #1 will be held February 13-23rd**

**Astronomy Show #2 will be held March 26-April 6th**

Also, if you are interested in attending free public shows, planetarium offers shows every Friday night (except spring break) at 7pm and again at 8:30pm, beginning January 12th. They will keep 20 seats available for walk-in visitors, but we will allow people to reserve the other 40 seats starting the Monday before the show, so they should have no trouble getting in.

Planetarium attendance (bonus)

25 points

#### **Missing Class or assignments due to Excused Absences:**

**Attendance is mandatory** and will be taken every day for all lectures. **Consecutive** absences will imply a penalty in the computation of the final grade: for every extra missed class, 5 points will be subtracted from your total score (in a scale from 0 to 100). In general, there are four acceptable excuses for missing class: illness or medical emergency, family emergencies, religious holiday, and approved university activities (Varsity sports, required club function, etc.).

You are not penalized for excused absences. Advance notice is required for religious holidays and approved university activities. When possible, advance notice for family emergencies is appreciated.

**Cell phone use: *Texting, Internet browsing, or cell phone conversations/ texting will not be allowed during class.*** Such use will trigger a 10 point penalty towards exam points for each occurrence. If you need to make an emergency call, step out of the classroom after informing the instructor.

**EXAMS:** There will be three 60-minute mid-term exams in class, consisting mostly of multiple choice questions where appropriate, it will be at the discretion of the instructor to consider replacement of a low score in one of the mid-term exam with half the points of the final exam. It is not automatic and not to be decided by the student. **All 3 mid-term, reading and post lecture quizzes and final exams must be completed to get a final grade.** You MUST bring your Wayne State ID to the exam and present it to a proctor when asked during the exam. **A group photograph of the class may be taken during each exam.** No electronic devices (other than a calculator) are allowed in the room during the exam (**no iPods, headphones, cell-phones, smart phones, Blackberries, etc.**). You will need a stand-alone calculator (“standalone” excludes calculators on cell phones, for example). Due to size of the class, **\*NO MAKE-UP EXAMS WILL BE GIVEN.\* Final exam is cumulative**  
**Absolutely do not schedule or book any vacation travel before and on the day of the Final Exam.** Generally, emails will receive no response after the final exam until after final grades are recorded.

**GRADING:** Your course grade will be determined by your performance on the three Mid-term exams, Reading and Post lecture quizzes and the Final Exam. The Final Exam will cover the material presented during the entire semester. The overall course grade will be determined on the basis of the following distribution:

Three In-class Exams (100 points each)	300 points
Reading/post lecture quizzes	100 points
Home work-Smart works V	100 points
Final Exam	200 Points
<b>Total</b>	<b>700 points</b>

Final Grade: The cumulative percentage will determine the students earned grade as follows:

A cumulative total Between	Grade	Cumulative Total between	Grade
100% and 91%	A	64% and 60%	C
90% and 85%	A-	59% and 55%	C-
84% and 80%	B+	54% and 50%	D+
79% and 75%	B	49% and 45%	D
74% and 70%	B-	44% and 40%	D-
69% and 65%	C+	39% and 0%	F

**Exam Schedule** (Any changes to the exam schedule will be announced in class and posted on Blackboard)

Exam 1: Monday Feb 5, 2018

Exam 2: Monday Mar 5, 2018

Exam 3: Monday Apr 2, 2018

Final Exam: to be announced (in usual classroom; at usual time)

**There are no make-up exams or exams given early.**

**If you miss two or more exams, your course final grade will automatically be “F” – NO EXCEPTIONS.**

### **Class schedule\*\***

Week	Date/Day	Topic	Reading Assignment
1.	1/8-M	The universe: An introduction, Scientific notation, Distance Units , contents of cosmos	1.1-1.3
	1/10 -W	Celestial Sphere, Rotation of the Earth, Constellations, Motions of Sun and stars	2.1-2.2
2.	1/15-M	No School-Holiday	
	1/17-W	Earthly cycles, seasons Moon and its phases, eclipses	2.3-2.4
3.	1/22-M	Ancient Astronomy	2.5-2.6
	1/24-W	(Greek, Egyptian, Mayan, Hindu, Chinese) Ptolemy, Copernic Brahe, Galileo	3.1-3.4
		Kepler laws and Newton laws and gravity	3.5
4.	1/29-M	EM Radiation, Spectroscopy	4.1-4.3
	1/31-W	Structure of the atom, spectral lines Telescopes, Detectors, problems	4.4-4.5
5.	2/5-M	<b>Exam- 1</b> Origin/overview of the solar system Age, Composition, structure,	5.1-5.3
	2/7-W		
6.	2/12-M	Extra solar systems, theory of planetary formation	5.4-5.5
	2/14-W	The earth, structure, composition Atmosphere, evolution	6.1-6.3
7.	2/19-M	Earth's Moon	6.4
	2/21-W	Moon and Mercury	7.1-7.2
		Venus and Mars Recent info from Mars	7.3-7.4
8.	2/26-M	Jovian Planets (Jupiter, Saturn)	8.1-8.3
	2/28-W	Uranus and Neptune Magnetic fields of Giant planets	8.4 -8.5
9.	3/5-M	<b>Exam-2</b> Moons/Rings of Jovian planets Pluto, Charon and Triton Cosmic Debris, asteroids Meteors, Comets, solar system evolution	not in text
	3/7-W		not in text

10.	3/12-M 3/14-W	Spring break-No class Spring break-No class	
11.	3/19-M 3/21-W	The Sun, its layers, properties Solar activity, Sun's interior, Nuclear energy	10.1-10.2 10.3-10.4
12.	3/26-M 3/28-W	Luminosity, Brightness of Stars Spectra of stars, H-R Diagram, Star mass and diameter Cosmic Distances, H-R Diagram Interstellar Gas and Dust,	11.1-11.2 11.3 11.3 -11.4
13.	4/2-M 4/4-W	<b>Exam-3</b> Stellar evolution-ii Red Giants, Variable stars,	12.1 -12, 4 12.5-12.6
14.	4/9-M 4/11-W	(Adolescence to old age) Death of Stars, Low and High Mass Stars Pulsars and Neutron Stars, Black Holes. Space Time curvature, gravity	13.1-13.3 14.1 -14.4
15.	4/16-M	Galaxies, the Milky Way, Structure and Nucleus	15.1 – 15.4
16.	4/18-W	Types of Galaxies, Properties, Quasars and Active Galaxies	16.1- 16.4
16.	4/23-M	Organization evolution and distribution of galaxies Age of the Universe Hubble Constant, Beginning and model of the universe Inflationary universe	17.1 -17.4 not in text

Commented [P1]:

Commented [P2]:

\*\* Subject to changes

#### A Sample of Other Sources of Interest

##### Textbooks:

Voyages through the Universe, Fraknoi, Morrison and Wolff; Saunders, 2000 Edition; many others (check with me if interested)

##### General Books:

Night watch by Terence Dickinson;

Cosmos by Carl Sagan

##### Magazines:

Sky and Telescope; Astronomy;

Internet: The Astronomy Picture of the Day (APOD); The Space Science Institute (Hubble Space Telescope); NASA

**Attention Students with Disabilities:**

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) 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 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours 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.

Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.