

BASIC ASTRONOMY

Community Education
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Keene HS: Spring, 2007
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SYLLABUS

Introduction

Astronomy, one of the oldest sciences, links our wonder at the beauty of the night sky, our quest for harmony and intelligence in the universe, and our practical necessities of navigation, defense and communications. In this course you will discover how science helps us to understand our most basic questions such as: how do the stars evolve; by what process is the stuff that we are made of produced; when did the universe begin; and what lies at the end of time? These questions lead us not only to knowledge, but to larger philosophical and theological issues as well.

Strategies and Resources

We will use a combination of discussion, demonstration, hands on projects and reading to explore the universe. The main texts used will be Earth Science by Nancy E. Spaulding and Samuel N. Namowitz. Students will be encouraged to use the Internet, which has a wealth of resources for astronomy. Science cannot be learned only by reading and discussion, but also by doing. This will be achieved through outside observation exercises (see below).

Evaluation will be based upon the following criteria:

- Classroom activities: These are designed to help you get hands on experience with the tools of astronomy. These will include constructing simple tools such as a sundial or revolving sky map using common materials such as paper, tape, and protractors. They will also include using more sophisticated tools such as lenses, mirrors, and spectroscopes. There may be an activity worksheet to be completed in class.
- Reading Assignments: Students will be expected to read the assigned sections in the book. You will be given reading note outlines. As you read, you will be asked to jot down a summary of each paragraph. These are to be handed in the week after the chapter is covered in class. The instructor will explain how to write out the answers using two-column notes.
- Quizzes and Tests: There will be one final exam. This will be a open note test. We will spend time reviewing test material the week before. There will be a short quizzes given from time to time. Notes will not be allowed on quizzes.
- Attendance: This is important as the material builds upon itself and students can become lost as the course goes along. **Students who miss more than one class will not pass.**
- Notebook: Students will keep a three-ring binder containing notes, activity worksheets, and handouts. You can use these in tests.

- Literacy: Reading and understanding non-fiction material, especially scientific writing, is the most difficult for students. Even though you may never pick up a textbook again, you will probably have to read and understand things such as medical material, legal documents, and instruction manuals in your life. We will spend some time, especially in the beginning of the course, to help you get the most benefit out of technical writing by doing reading and comprehension exercises in class and at home.
- Videos: When we view a video I will give you a guide sheet with key questions that I want you to be able to answer. We will spend time in small groups writing out the answers to the questions before we begin a follow up discussion. These are considered in-class assignments and will be graded.
- Communication: The best way to contact me is either call me during the day at school or contact me through the school's e-mail. The best times to reach me are 10:30-12 am and 2:05-2:45 M-F.

AGENDA

I. Introduction: The Night Sky	1/23
<u>Activity</u> :	Make a list of words you find difficult to understand and the pages they are on so we can discuss them in class.
<u>Reading</u> :	Earth Science, pp 456-460
II. The Rotation of the Earth and the Measurement of Time	1/30
<u>Activity</u> :	Make a sundial (See sundial template)
<u>Reading</u> :	Earth Science, pp 461-469
III. The Revolution of the Earth Around the Sun	2/6
<u>Activity</u> :	Construct a rotating Star Maps (See Uncle Al's star maps)
<u>Reading</u> :	Earth Science, pp 358-364
IV. What is a Telescope?	2/13
<u>Quiz</u> :	Quiz on Chapters 25
<u>Activity</u> :	The Parts of a Telescope
<u>Reading</u> :	Earth Science, pp 365-371
V. Studying Light	2/20
<u>Activity</u> :	Observing Spectra
<u>Reading</u> :	Earth Science, pp 377-381
VI. Stars and Their Characteristics	3/6
<u>Quiz</u> :	Quiz on Chapters 20
<u>Activity</u> :	HR Diagram
<u>Reading</u> :	Earth Science, pp 382-391
<u>Video</u> :	The Astronomers: "Stardust"

VII. Kinds of Stars and Star Evolution

Activity: Classifying Galaxies

VIII. The Big Bang

3/20

Quiz: Quiz on Chapters 21

Video: Stephen Hawking's Universe: "The Big Bang"

IX. The Solar System

3/27

Activity: Planet Comparison Worksheet (Complete for homework)

Reading: Earth Science, pp 396-404

Video: BMG Video: "The Planets, narrated by Patrick Stewart"

X. The Sun

4/4

Activity: Sunspot Cycles

Reading: Earth Science, pp 412-427

XI. The Planets

4/10

Activity: Pacing Out the Solar System

Reading: Earth Science, pp 433-443

XII. The Moon and Mars

4/17

Activity: Crater Formation: Comparison of Moon and Mars maps (Print maps from Internet)

Reading: Earth Science, pp 444-451

Video: National Geographic: "Asteroids: Deadly Impact"

XIII. Phases of the Moon, Eclipses and Tides

5/1

Activity: Mon Phase Exercise: (Complete for homework)

Video: PBS Home Video: "Spaceflight: One Giant Leap"

XVI. Review for Final

5/8

Quiz: Chapters 22-24

Activity: Review for final exam

XV. Final Exam

5/15

Exam: Exam on course

Biography

Harvey Nystrom, MA, MSW graduated with a BA in Physics for Cornell University and with an MA in Astronomy from the University of Chicago and an MSW from Loyola University, Chicago. He is a teacher of physics at Keene High School, Keene, NH.

01/09/07