Nazarene University College

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Introduction To Astronomy, SC 220 (UofC Astr. 205)
Winter 2000, Tuesdays, 7:00-10:00 pm
Professor: Dr. Phil Langill
Office hours: Wednesdays, 9:30 - 10:30 am.
Dr. Langill can also be reached at 249-3615, or via e-mail at pplangil@ucalgary.ca

Course Objectives:

This introductory astronomy course will cover all aspects of modern astronomy. There is no formal laboratory component. However, the class will have an opportunity to visit the University of Calgary's Rothney Astrophysical Observatory to view the sky through telescopes and to learn - first hand - about research grade instruments and telescopes. This will take place in the evening on a date to be announced. A field trip to the Calgary Science Center's Discovery Dome may also be planned.

An important component of the course will be observational exercises and related activities. These activities require that students become involved with viewing and recording the appearance and motions of the sky. The particular activities to be done, and their due dates, will be announced in class.

The course material will stress conceptual understanding without mathematical derivation. However, the world behaves in ways that can be understood with simple mathematical and physical concepts. Students can gain an appreciation for this by following straight forward examples which will be outlined in class. Assignments will contain some mathematical work, while the in-class tests and the final exam will emphasize descriptive material and an understanding of concepts.

Course Requirements:		
	Assignments	15%
	Activities	25%
	In Class Tests	25%
	Final Exam	35%

Required Texts:

Astronomy Today - 3rd Edition, E. Chaisson & S. McMillan, Prentice Hall Inc., 1999.

On Reserve:

Discovering Astronomy - 3rd Edition; R. Robbins, W. Jefferys & S. Shawl, Wiley, 1995.

Astronomy: From the Earth to the Universe - 5th Ed. J. M. Pasachoff, Saunders College Publishing, 1998.

Discovering the Universe - 4th Edition; W.J. Kaufmann III & N.F Comins, Freeman & Co. 1997.

Voyages Through the Universe A. Fraknoi, D. Morrison & S. Wolf, Saunders College Publishing, 1997.

The Universe Revealed C. Impey & W. Hartmann, Brooks / Cole, 2000.

Important Dates:

TOTAL LUNAR ECLIPSE: Jan. 20 - 21: ~7:00 pm to ~12:20 am
Last day of Winter Session classes: April 17th.
FINAL EXAM (2 hours) to be scheduled.
Final Exam Period: April 19th - 26th

Tentative Lecture Schedule:

Class Date:	Topics:	Textbook Chapter:
Jan 18	The Night Sky - Units of distance and angular size, seasons, time, lunar phases, eclipses.	1
Jan 25	Planetary Motions - Historical overview, orbital motion, Kepler's laws, Newton's Laws. *** Lunar Eclipse on the 20th ***	2
Feb 1	The Nature of Light - Electromagnetic spectrum, black-body radiation, atomic structure, Kirchhoff's laws.	3 & 4
Feb 8	Telescopes Modern methods in astronomy, reflectors & refractors, CCD's, the universe at other wavelengths.	5
Feb 15	The Drake Equation & SETI - Recent discoveries of extra-solar planets. Theories of the formation of our solar system.	15 & 28
Feb 22	The Sun and Introduction to the Stars - The energy and structure of the Sun, its magnetic cycle and observable features. The magnitude scale and stellar distances.	16 & 17
Feb 29	*Reading Week*	-
Mar 7	The Nature and Lives of Stars - The interstellar medium and star formation. The sizes, luminosities and masses of stars. The HR diagram.	18, 19 & 20
Mar 14	The Deaths of Stars - Life after the main sequence and the formation of compact objects.	21 & 22
Mar 21	The Milky Way Galaxy - The size, structure and center of our galaxy. Evidence for dark matter.	23
Mar 28	Normal and Peculiar Galaxies Spiral and elliptical galaxies. Quasars, radio galaxies and their central engines. Clusters of galaxies.	24 & 25
April 4	Cosmology - The expansion and fate of the Universe.	26 & 27
April 11	The Solar System - Introduction, formation of our planetary system, the Earth and Moon, the terrestrial and Jovian planets. The Drake equation revisited.	Overview of chapters 6 to 14