Nazarene University College

SC 220 *Introduction to Astronomy* (3)
Winter 2002

Instructor: Dr. Phil Langill
Office: 6th Floor
Office Hours: Wednesdays, 9:30 - 10:30 am
Office Phone:
Class Times: Tuesdays, 7:00-10:00 pm
Location: Room One
Email Address: pplangil@ucalgary.ca

Required Texts

Discovering the Universe - 5th Edition; N.F Comins & W.J. Kaufmann III, Freeman & Co. 2000.

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 computerized observational exercises and related activities. These exercises require that students use the desktop planetarium program *StarryNight* which comes with the textbook. 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	20%
	Activities	20%
	In Class Test	20%
	Final Exam	40%

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.

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

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

Important Dates

First day of Winter Session classes: January 15th.
Last day of Winter Session classes: April 16th.
Reading Week: February 18th to 22nd .
FINAL EXAM (2 hours) to be scheduled.
Final Exam Period: April 18th - 23rd

Tentative Lecture Schedule

Class Date:	Topics:	Textbook Chapter:
Jan 15	The Night Sky - Units of distance and angular size, seasons, time, lunar phases, eclipses.	FI & 1
Jan 22	Planetary Motions - Historical overview, orbital motion, Kepler=s laws, Newton=s Laws.	2
Jan 29	The Nature of Light - Electromagnetic spectrum, black-body radiation, atomic structure, Kirchhoff=s laws.	4
Feb 5	Telescopes Modern methods in astronomy, reflectors & refractors, CCD=s, the universe at other wavelengths.	3
Feb 12	The Drake Equation & SETI - Recent discoveries of extra-solar planets. Theories of the formation of our solar system.	FII & 18
Feb 19	*Reading Week*	-
Feb 26	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.	9 & FIII
Mar 5	The Nature and Lives of Stars - The interstellar medium and star formation. The sizes, luminosities and masses of stars. The HR diagram.	10 & 11
Mar 12	The Deaths of Stars - Life after the main sequence and the formation of compact objects. Black Holes.	12 & 13
Mar 19	The Milky Way Galaxy - The size, structure and center of our galaxy. Evidence for dark matter.	14
Mar 26	Normal and Peculiar Galaxies Spiral and elliptical galaxies. Quasars, radio galaxies and their central engines. Clusters of galaxies.	15 & 16
April 2	Cosmology - The expansion and fate of the Universe.	FIV & 17
April 9	The Solar System - Introduction, the Earth and the Moon, the Terrestrial planets and Jovian planets.	Overview of
April 16	The Solar System - Comets and asteroids. The Drake equation revisited.	chapters 5 to 8