NAZARENE UNIVERSITY COLLEGE

SC 220 Astronomy

Winter, 2003

Instructor: Dr. Bill Scott

Contacting the Instructor

Class Times: Tuesdays 19:00 – 22:00 **Class Location:** 631

Office Phone:: 220-7424 **Office:**

Office Hours: Available by appointment

Email Address: bill@ras.ucalgary.ca

Course Objectives:

This introductory astronomy course will cover all aspects of modern astronomy. Backyard astronomy, space-based astronomy, the solar system, stars, galaxies and the universe on the largest scale will be discussed.

There is no formal laboratory component. However, an important aspect of the course will be a computerized observational exercise. This exercise requires that students use the desktop planetarium program *StarryNight* which comes with the textbook. The particular activities to be done, and the due date, will be announced in class.

The course material will stress conceptual understanding with minimal 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 are carefully described in the Astronomer's Toolbox@ sections of the textbook. Assignments, a mid-term exam, and the final exam will emphasize descriptive material and an understanding of concepts, but will also contain a few mathematical questions.

Course Requirements:

Reading Quizzes	10%
Assignments	20%
Activity (StarryNight)	10%
In Class Test	20%
Final Exam	40%

Required Texts:

Discovering the Universe - 6th Edition; N.F Comins & W.J. Kaufmann III, Freeman & Co. 2000.

Important Dates:

First day of Winter Session classes: January 6th.
Last day of Winter Session classes: April 13th.
Reading Week: February 16th to 20th.
FINAL EXAM (2 hours) to be scheduled.
Final Exam Period: April 16th - 21st .

Important Notes

- Last day to enter course without permission and/or voluntarily withdraw from course without financial penalty January 16, 2004.
- Last day to voluntarily withdraw from course or change to audit without academic penalty: March 12, 2004.
- It is the responsibility of all students to become familiar with and adhere to NUC Academic Policies, such as the policy on Academic Dishonesty, which are stated in the current Catalogue.
- Class will be held the evening of February 3 (no classes during the day)

Tentative Lecture Schedule:

Jan 6	1	The Night Sky - Units of distance and angular size, seasons, time, lunar phases, eclipses.
Jan 13	2	Planetary Motions - Historical overview, orbital motion, Kepler's laws, Newton's Laws.
Jan 20	3,4	The Nature of Light - Electromagnetic spectrum, black-body radiation, atomic structure, Kirchhoff's laws.
Jan 27,	3	Telescopes - Modern methods in astronomy, reflectors & refractors, CCDs, the universe at other wavelengths.
Feb 3	9	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. **Evening classes not cancelled**
Feb 10	10,11	The Nature and Lives of Stars - The interstellar medium and star formation. The sizes, luminosities and masses of stars. The HR diagram.
Feb 17		**Reading Week**
Feb 24	12,13	The Deaths of Stars - Life after the main sequence and the formation of compact objects. Black Holes. ** Midterm Exam #1 **
Mar 2	14	The Milky Way Galaxy - The size, structure and center of our galaxy. Evidence for dark matter.
Mar 9	15,16	Normal and Peculiar Galaxies Spiral and elliptical galaxies. Quasars, radio galaxies and their central engines. Clusters of galaxies.

Mar 16	17	Evening classes not cancelled, Cosmology - The expansion and fate of the Universe.
Mar 23,		The Solar System - Introduction, the Earth and the Moon, the Terrestrial planets., **Overview of chapters**
Mar 30	5 – 8	The Solar System - the Jovian planets. Comets and asteroids.
April 6	18	The Drake Equation & SETI - Recent discoveries of extra-solar planets. Theories of the formation of our solar system.
April 13		** StarryNight Activity Due **, TBA