NAZARENE UNIVERSITY COLLEGE

SC 220 Astronomy

Winter, 2005

Instructor: Bill Scott

Contacting the Instructor

Class Times: Monday 19:00 to 22:00 **Class Location:** 809

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 mathematical questions.

Course Requirements:

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

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Required Text

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

Important Dates

First day of Winter sessions classes:	January 5
Last day of Winter session classes:	April 13
Reading Week:	February 14 to 18
Final Exam (2 hours):	To be scheduled
Final Exam Period:	April 15 to 20

Tentative Lecture Schedule

		Textbook Chapter:
Jan 10	The Night Sky Units of distance and angular size, seasons, time, lunar phases, eclipses.	1
Jan 17	Planetary Motions Historical overview, orbital motion, Kepler's laws, Newton's Laws	2
Jan 24	The Nature of Light Electromagnetic spectrum, black-body radiation, atomic structure, Kirchhoff's laws	3,4
Jan 31	Telescopes Modern methods in astronomy, reflectors and refractors, CCDs, the universe at other wavelengths.	3
Feb 7	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
Feb 14	**Reading Week**	
Feb 21	The Nature and Lives of Stars The interstellar medium and star formation. The sizes, luminosities and masses of stars. The HR diagram. **Evening classes not cancelled**	10,11
Feb 28	The Deaths of Stars Life after the main sequence and the formation of compact objects. Black Holes. ** **MidTerm Exam #1**	12,13
Mar 7	The Milky Way Galaxy The size, structure and center of our galaxy. Evidence for dark matter	14

Mar 14	Normal and Peculiar Galaxies Spiral and elliptical galaxies. Quasars, radio galaxies and their central engines. Clusters of galaxies	15,16
Mar 21	Cosmology The expansion and fate of the Universe	17
Mar 28	The Solar System Introduction, the Earth and the Moon, the Terrestrial planets **Evening classes not cancelled**	Overview of chapters
Apr 4	The Solar System The Jovian planets	5 to 8
Apr 11	The Drake Equation and SETI Recent discoveries of extra-solar planets. Theories of the formation of our solar system	18
Apr 18	TBA **StarryNight Activity Due**	TBA

Important Notes

- Last day to enter course without permission and/or voluntarily withdraw from course without financial penalty is January 14, 2005.
- Last day to voluntarily withdraw from course or change to audit without academic penalty is March 11, 2005.
- 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 21 (no classes during the day).