



**School of Arts & Science**  
**PHYSICS DEPARTMENT**  
**ASTR 102-01**  
**Astronomy: Stars and Galaxies**  
**2007F**

## COURSE OUTLINE

The Approved Course Description is available on the web @ \_\_\_\_\_

- Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.

### 1. Instructor Information

(a)	Instructor:	Dr. James Nemec		
(b)	Office Hours:	M, T, Th 11:30-2:30 pm		
(c)	Location:	Fisher 346d		
(d)	Phone:	370-3460	Alternate Phone :	
(e)	Email:	nemec@camosun.bc.ca		

### 2. Intended Learning Outcomes

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

Upon completion of this course the student will be able to:

1. Describe how the Sun works, its structure (interior, atmosphere, corona), its evolution and its future (as a red giant and then a white dwarf).
2. Outline the concepts of radiation (light) and energy, the different states of matter (solid, liquid, gas), and temperature scales.
3. Compare the properties of stars (single, binary and in clusters), including their distances, motions, temperatures (from spectra), masses, flux densities and luminosities.
4. Describe interstellar matter and the formation of stars from gas and dust.
5. Comment on the interiors and evolution of many different kinds of stars (such as red giants, planetary nebulae, novae, Cepheid and RR Lyrae variable stars, etc.) and why mass is the main factor controlling the evolution of stars.
6. Describe and explain the different kinds of stellar deaths and end products, including supernovae, black holes, white dwarfs, and neutron stars.
7. Describe the Milky Way Galaxy, its contents, the massive black hole at its centre, and its evolution.
8. Describe the properties of the different kinds of galaxies, from ordinary elliptical and spiral galaxies to dwarf galaxies and quasars.
9. Outline ideas about the origin of the Universe and how it evolved to its present state (galaxy clusters, voids) as a result of physical laws, with reference to Hubble's Law, the Big Bang model, Einstein's special and general theory of relativity, the creation of elements, dark matter and dark energy.

### 3. Required Materials

(a)	Texts	1) Course textbook: THE UNIVERSE REVEALED by Chris Impey and W.K.Hartmann 2) Astr 102 Lab Notes (available from the Lansdowne Campus bookstore)
(b)	Other	Scientific calculator (any pocket calculator is acceptable)

### 4. Course Content and Schedule

(Can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

(Chapters in “The Universe Revealed”)

04. Matter and Energy in the Universe
10. Detecting Light from Space
11. Our Sun, the Nearest Star
12. Properties of Stars
13. Star Birth, Evolution and Death
14. The Milky Way Galaxy
15. Galaxies
16. The Expanding Universe
17. Cosmology

### 5. Basis of Student Assessment (Weighting)

(Should be linked directly to learning outcomes.)

(a)	Assignments	Labs, Assignments and Homework. <b>[30%]</b>
(b)	Quizzes	Review Quizzes will be given at the beginning of most classes. These will be closed-book tests consisting of several questions/problems that can be done with work-groups of any size. They will be marked immediately after doing the test and a score assigned. You will then have one week to correct any mistakes you may have made and hand in the Quiz for remarking and an upgraded score. After one week no up-grading will be done. <b>[10%]</b>
(c)	Exams	Midterm Exams – there will be two midterm exams, the first on Monday <b>Oct.2,2006</b> , and the second on Monday <b>Nov.6,2006</b> . <b>[2 x 15% = 30%]</b> Final Exam – a comprehensive final exam will take place in December. <b>[30%]</b>
(d)	Other (eg, Attendance, Project, Group Work)	

*It is recommended that between five and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.*

- (a) Students must write review-quizzes, midterm-tests, etc. on the date and time assigned by the instructor. Instructors are not required to provide make-up tests. At their discretion, instructors may waive a test or provide a make-up test only in the event of documented illness or other extenuating circumstances.
- (b) All assigned laboratory exercises must be completed with an overall grade of 60% or better to obtain credit for this course. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances.
- (c) A student who is repeating an Astronomy course does not have to complete the laboratory exercises a second time if an average lab grade of 70% or better was obtained.

### 6. Grading System

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

## Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

### Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
<b>I</b>	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
<b>IP</b>	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. (For these courses a final grade will be assigned to either the 3 <sup>d</sup> course attempt or at the point of course completion.)
<b>CW</b>	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

## 7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

### LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at [camosun.ca](http://camosun.ca).

### STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**.  
It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED