CAMOSUN COLLEGE
School of Arts & Science
Department of Physics & Astronomy

ASTR-102-D01
Astronomy: Stars and Galaxies
Fall 2020

COURSE OUTLINE

The course description is online @ http://camosun.ca/learn/calendar/current/web/astr.html

✷ *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

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1. Instructor Information

(a) Instructor	Dr. James Nemec		
(b) Office hours	Wednesdays from 8:30 to 10:30 am		
(c) Location	Blackboard Collaborate Ultra (available through D2L, direct link, phone)		
(d) Phone		**Alternative:**	
(e) E-mail	nemec@camosun.ca		
(f) Website			

2. Intended Learning Outcomes

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 and evolution of the Universe.
10. Assemble experimental apparatus related to spectroscopy, analyze and interpret data to test astronomical hypotheses and complete written laboratory reports.

3. Required Materials

(a) Textbook (open-source): OPENSTAX ASTRONOMY (available from OPENSTAX website)
(b) Notebook for Lecture and other Study Notes
(c) Some form of pocket or other calculator
(d) Working version of open-source (free) software program “Stellarium”
(e) Working versions of CLEA (Contemporary Lab Exercises in Astronomy) open-source software (can be downloaded to computers running Windows operating system -- if you are using the Linux/Apple/Android o/s then it is possible to run the software remotely using the Camosun computers)

4. Course Content and Schedule

The course will mainly be asynchronous. The main delivery will be through e-mails that will give instruction on doing homework, completing labs, watching videos etc. The work can be done at any time but there will usually be stated deadlines. Any submissions after we have gone over the answers will not be accepted.

Every Wednesday, from 8:30 to 10:30 there will be a Blackboard Collaborate meeting to elaborate on the e-mails and to discuss the course material.

The course content will be drawn from Chapters 1,15-29 in the OPENSTAX Astronomy textbook.

The main videos that will be assigned for viewing will be drawn from the PBS Crash Course in Astronomy. The OPENSTAX textbook also has a set of Powerpoint (PPT) Image Slideshows, a set of Video Lectures, and a file containing internet links to “Brief Astronomy Videos” Another useful source of information is the “iLectureOnline” set of “Astronomy 101” lectures.

Midterm (D01) on Wednesday, October 21, 2020 from 8:30-10:30
Final Exam – to be held in the Final Exam period in December 2020
The exams must be written at the stated times since there will be no make-up exams.

5. Basis of Student Assessment (Weighting)

(a) Labs (30%),
(b) Assignments and Homework (30%)
(c) Review Quizzes (10%)
(d) Exams: Midterm exam will count 10% toward the course grade, and Final exam will count 20%.

6. Grading System

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

The following two grading systems are used at Camosun College:

1. 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		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. 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 at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: 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.