SC 120 Introduction to Astronomy

Spring 2016 | **3 credits**

Prerequisite(s): none

Class Information		Instructor Information			
Days	Daily	**Instructor:**	Dr. Stephen Jeans	**First day of class:**	Mon., May. 02, 2016
Time:	9:00 a.m. - 12:00 noon	**Email:**	sjeans@ambrose.edu	**Last day to add/drop, or change to audit:**	end of the first day
Room:	L 2100	**Phone:**	(403) 284-3630	**Last day to request revised exam:**	n/a, contact instructor
Final Exam day		**Office:**	Science area & A 2158 or L 2078	**Last day to withdraw from course:**	1 p.m. May 05, 2016
NONE - in-class incremental exams throughout the course, discussed first day of class		**Office Hrs:**	by appointment	**Last day to apply for time extension for coursework:**	contact instructor
				Last day of classes:	Fri., May 13, 2016

Textbook: Ghose, S. , Milosevic-Zdjelar, V., and Read, L.A., (2016). ASTRO, Second Canadian Edition. Nelson Education. ISBN-13: 9780176650186 [and includes Printed Access Card (12 Months) for CengageNow]

Course Description:

A survey of modern astronomy and current views on the universe, solar system, and other fundamental cosmic phenomena.

Expected Learning Outcomes:

At the conclusion of the course students will be able to:
(knowledge)
- identify stars, patterns of stars, Earth motion, and natural celestial cycles,
- recall aspects of the long history of astronomy and contributions from key scientists,
- identify basic types of telescopes in use today and how to determine the most significant features,
- explain the nature of light and the types of information that can be extracted from it,
- explain the main life cycle of a star and the balance between energy production and gravitational force,
- outline star death as a process of dwindling energy reserves and varies depending on mass,
- recall historical discoveries leading to an understanding the nature of our galaxy,
- identify the basic structure and nature for common galaxies and the changes that they are subject to,
- understand and theorize about how the universe may have originated and the structure of the universe,
- explain the overall structure of the solar system and a possible fit with a formation hypothesis,
- understand Terrestrial planet basic structure, formation, and comparative planetology,
- understand the differences in the outer solar system planets from the inner solar system,
- identify the basic requirements for life and likelihood of sustainable existence elsewhere,

(skill)
- use a calibrated instrument to determine the distance to a star and identify other star properties,
- enact essential research and practices to become a student of science and of astronomy,

(attitude)
- relate a sense of the vast relative scale of the universe and of the objects within it, and
- express an understanding of the significance and coexistence of science and of faith.

Course Schedule:

A tentative schedule is proposed below, and is therefore subject to change, because of outdoor observing and astronomical learning exercises that may take advantage of clear skies and/or guest speakers interjected at the instructor's discretion. Planned for the course are readings and topics in the following order:

Date	Reading	Topic	Note [essential information for activity, + extras]
05-02	Chapter 01 & 02	Star Patterns, Sky Cycles, and practical exercises	[bring outdoor cool weather attire, wear layers]
05-03	Chapter 03	Astronomy History and Science Development	[bring outdoor cool weather attire, wear layers]
05-04	Chapter 04 & 05	Radiation, Light, Telescopes, and Atoms	+ Chapel 11:30 to Noon, then free community lunch
05-05	Chapter 06 & 07	Star Distances, Star Mass, and Star Structure	+ guest Larry McNish, StarParty 8:30 p.m., cold, wind
05-06	Chapter 08	Star Formation, Star Death, and Stellar Extremes	Week-One Exam [~25 min., multiple-choice based]
05-09	Chapter 09 & 10	Systems of Star Systems and Galaxy Classification	[bring outdoor cool weather attire, wear layers]
05-10	Chapter 11	Astronomical Research Facilities, Cosmology	+ guest Dr. Phil Langill, R.A.O. 8:00 p.m., cold, wind
05-11	Chapter 12	The Universe, and Solar System formation	+ Chapel 11:30 to Noon, then free community lunch
05-12	Chapter 13	Planet Formation, Extrasolar Planets, Terrestrials	remainder of mini-assignments due at class start
05-13	Chapter 14 & 15	Jovian Planets and Plutinos, Astrobiology	Week-Two Exam [~25 min., multiple-choice based]

Requirements:

Assignments

In-class worksheet and/or an exit slip will be expected before a student leaves a class. The content and marking of each day's work will depend on the type of activity. However, exit slips typically consist of two to five questions answered in about 5 to 10 minutes.

A set of take-home mini-assignments, to reinforce classroom learning, are due incrementally throughout the course with a final date of handing-in on the second-last class. Preferred over a single larger term project, these assignments enable students to fully engage in the course material through their own interests and academic pursuits. This set of mini-assignment undertakes science through traditional and some non-traditional media -- alternate media suggestions are welcome, used only with permission of the instructor.

Field Study

When weather permits (e.g., few if any clouds), class work may be taken to the Mahood Commons (Ambrose campus green space) for field work and laboratory experiments. Every attempt will be made to inform students about such opportunities the class before. Watch for an email from your instructor and posting on Moodle for updates about possible outdoor activities before class. It is the responsibility of the student to dress appropriately (mainly for cool-wintery air and cold ground temperatures).

Mandatory component of this course is a campus Star Party and a one-evening Field Study trip to the Rothney Astrophysical Observatory. On class night, students travel together by school-bus to the Observatory where they apply their learning in examining the equipment and processes used in a working research facility. This Field Study experience takes place regardless of weather conditions because guest speakers, the experts in their field, will be on-hand to share their knowledge. Much of the activity is within indoor facilities, but because telescopes must be kept at a temperature equal to the outdoor surrounding air, FACILITIES ARE COLD, so appropriate attire is recommended to stay warm and comfortable. Further details will be shared in class-time.

Cautions and Student Equipment

To experience concepts encountered during this course, participants will be asked to observe and/or take part in multiple demonstrations and laboratory work that will include the use of equipment. Safety is an expectation of each student for themselves, for the well-being of others in the class, and for the preservation of Ambrose facilities, apparatus, and sample materials. When conducting work in the classroom or in the field, be observant of proper procedure and check that others around you are not at risk. Report any concerns or incidents immediately to your instructor.

Attendance:

Class attendance is mandatory. Participation in class activities is mandatory. Points lost through excused absence can be discussed with the instructor and suitable alternate arrangements made at the instructor's digression.

Exit-slip Journal and Assignment marks (30%) -- A component for marking is handed each class, and each component has a count of 5 marks. Points will be summed up at the end of term and divided by two to produce the 30% grade.

Grade Summary:

Grading Schedule

Exit Journal and/or class assignments	30%	
Mid-term written examination	20%	multiple-choice questions, with possible practical component (e.g., diagram)
Assignments	25%	
Final written examination	25%	multiple-choice questions, with practical component (mostly non-cumulative)
Total:	*100%*	

The available letters for course grades are as follows:

Letter grade	Cut-off value	Numeric equivalent	GPA	Description
A+	96	100		
A	91	95	4.0	Excellent
A-	86	90	3.7	
B+	82	85	3.3	
B	75	81	3.0	Good
B-	72	74	2.7	
C+	68	71	2.3	
C	63	67	2.0	Satisfactory
C-	60	62	1.7	
D+	56	59	1.3	
D	50	55	1.0	Minimal Pass
F		49	0.0	Failure

Late assignments may be accepted at instructor's digression -- if contact and arrangements are made, however the mark achieved may be reduced by 5%/day (up to 10%/day if no contact is attempted prior to the due-date-class or if that class is not attended). Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously.
Please note that final grades will be available on the student registration system. Printed grade sheets are not mailed/emailed out.

Class Resources

Some general class resources may be available online through the University Moodle site. Resources to be printed and brought to class will be posted and announced at least a week before. For help on how to access these files please see the computer helpdesk.

Policies:

Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a "Request to Withdraw from a Course" form or by sending an email to the Registrar's Office by the **Withdrawal Deadline;** please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of "W" will appear on their transcript.

Exam Scheduling

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devises in class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office

in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of $50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Note: Students are strongly advised to retain this syllabus for their records.