

Course ID:	Course Title:	Fall 2021
ASTR 120 -1	Introduction to Astronomy	Prerequisite: none
		Credits: 3

Class Information		Instructor Information		Important Dates	
Delivery:	In Class	Instructor:	Dr. Stephen Jeans	First day of classes:	September 8, 2021
Days:	Monday	Email:	sjeans@ambrose.edu	Last day to add/drop:	September 19, 2021
Time:	5:30 to 8:30 p.m.	Phone:	403-410-2000 ext. 6939	Last day to withdraw:	November 22, 2021
Room:	A 1085 "Airhart Theatre"	Office:	L2111	Last day to apply for extension:	November 23, 2021
Lab/Tutorial:	within class and possible added hour Nov. 7 and/or 15	Office Hours:	Mon. 2:00 to 5:00 p.m., or visit anytime, or by an appointment	Last day of classes:	December 13, 2021
Final Exam:	Mon., Dec. 20, in Airhart Theatre, 6:30 to 9:30 p.m.				

Important Dates and Information

For a list of all important dates and information regarding participating in classes at Ambrose University, please refer to the Academic Calendar at <https://ambrose.edu/academic-calendar>.

Course Description

A survey of modern astronomy and current views on the Universe, Solar System, and other fundamental cosmic phenomena. This course includes out-of-class tutorials and field trips including a trip to the Rothney Astrophysical Observatory (RAO).

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 extensive 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,
 - understand Terrestrial planet basic structure, formation, and comparative Solar System planetology,
 - explain the overall structure of the Solar System and a possible fit with a formation hypothesis,
 - explain the main life cycle of a star and the balance between energy production and gravitational force,

- outline star death as a process related to energy use with variations that are mass dependent,
- 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 originated and the structure of the universe,
- 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.

Textbooks

Required: Ghose, S., Milosevic-Zdjelar, V., and Read, L.A., Reid, M. (2021), *ASTRO, 3rd Canadian edition*, Nelson Education. ISBN-13: 9780176857059 (preferred, but previous version permitted also)

Optional: MindTap Instant Access (12 Months/Multi Term), only for those who purchase online access to additional publisher provided materials for *ASTRO, 3rd Canadian edition*, use the following course key: MTPP-BLIQ-6MVK

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:

<u>Date</u>	<u>Reading</u>	<u>Topic</u>	<u>Note</u> (information for that activity)
09-13	Chapter 01	Faith, Science, and the Scale of the Cosmos	
09-20	Chapter 03	Astronomy History and Science Development	
09-27	Chapter 04+05*	Radiation, Light, and the Sun	*first portion of Ch4 required (4.1, 4.4, only)
10-04	Chapter 12	Star Systems (Solar System) and Exoplanets	
10-11		<i>NO CLASS - Thanksgiving Holiday</i>	
10-18	Chapter 13+14	Our Solar System Planets and Moons	
10-25	Chapter 02	Star Pattern, Sky Motion and Cycle, Navigation	practical outdoor activity, bring a coat
11-01	(Ch 1-5, 12-14)	Midterm Exam ~1h, then activity moves outdoors -- cold weather attire, class to 9:00 pm	
11-08		<i>NO CLASS - Fall Break</i>	
11-15	Chapter 04 (all)	Research telescopes, Fieldtutorial RAO* -- outdoor cold weather attire, class to 9:00 pm	
11-22	Chapter 06+07	Star Distance, Mass, Structure, and Formation	Fieldtutorial Paper DUE
11-29	Chapter 08	Star Death, and Stellar Extremes	
12-06	Chapter 09+10	Systems of Star Systems and Milky Way Galaxy	
12-13	Chapter 11+15	Cosmology and Extra-terrestrial Life	Note: Dec 20, 6:30 p.m. is the Final Exam

COVID-19:

Please go to www.ambrose.edu/covid for information on the Ambrose University response to the COVID-19 pandemic. This course is delivered safely “in-class,” see the document **COVID-19_Astronomy.pdf** posted on Moodle. Students are expected to be physically present unless there is any question of the student having travelled from outside the province, been in contact with people who may/do have illness, and/or the student feels ill or exhibits symptoms of a cold, flu, or virus. If absence due to illness or pandemic precaution, then contact your professor for advice on missed course content.

If Alberta Health and/or the University requires our course move online, then details of course procedure change will be sent by email and posted on Moodle. Lessons and assignments may be adapted as needed and revision sent by email and/or posted on Moodle. Therefore, have access to a computer, the internet, and be prepared for a potential shift.

Requirements

Exit Slip

At the conclusion of a week’s class meeting is a brief graded quiz or activity, about five minutes (~5 min.) ~5 questions. This form of feedback works to assist both the course professor and student in gauging progress on new material.

Class and laboratory exercises

To reinforce concepts taught during the term, an in conjunction with the topic of the week, classroom and/or outdoor and/or laboratory exercises are assigned. Typically completed within class time, may be worked on in a small group, and are coached by the course professor, specific activities usually depend on cooperation by the sky and from the weather. Therefore, should all opportunities for outdoor observing be missed, alternate indoor activities will be substituted.

Fieldtutorial Paper

A **FIELDTUTORIAL PAPER** will be demonstrated and discussed in class following the first couple of weeks of class. This assigned term project is due a few weeks prior to the end of the course. Download the **Fieldtutorial-Paper.docx** file from Moodle for more details. There are many alternative ways to research this paper, please inquire.

Attendance

Class attendance is mandatory, lectures will not be provided electronically. Participation in-class activities is mandatory (and/or participation in Zoom class and related activities is mandatory if sent online). Marks/points lost through excused absence can be discussed with the instructor and suitable alternate arrangements made at the instructor's discretion.

Out of respect for the professor and your peers, please turn your cellular phone off during class. Likewise, you may be asked to turn off distracting devices and/or refrain from using your laptop computer for non-class related activities.

Grade Summary:

Grading Schedule

Exit Slip	25%	ten anticipated (~one per class meeting)
Class and laboratory exercises	10%	~2, activity depends on weather (e.g., measure diameter of the Sun)
Mid-term written examination	20%	mix of short questions and practical possible
Fieldtutorial Paper	20%	will be explained in class and posted on Moodle
Final written examination	25%	mix of short questions and practical possible, non-cumulative
Total:		100%

Late assignments may be accepted at instructor's discretion -- 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 by the student prior to the due-date). Missed midterms or final exams, without cause, cannot be made up.

The available letters for course grades are as follows:

Grade	Numeric equivalent	Interpretation	Grade Points
A+	100	Mastery: Comprehensive understanding of subject matter	4.00
A	95		4.00
A-	90		3.70
B+	85	Proficient: Well-developed understanding of subject matter	3.30
B	81		3.00
B-	76		2.70
C+	71	Basic: Developing understanding of subject matter	2.30
C	67		2.00
C-	62		1.70
D+	59	Minimal Pass: Limited understanding of subject matter	1.30
D	55		1.00
F	up to 49%	Failure: Failure to meet course requirements	0.00
P	P/F	Pass	No grade points

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 student registration system. Printed grade sheets are not mailed/emailed out.

Other:

Out-of-classroom activities, equipment use, and supplementary course fees

When weather permits (e.g., few if any clouds), in-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) and to ensure proper protocols for the safety of themselves and others.

To reinforce 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.

A supplementary course fee is charged by the Registrar's Office to cover expenses related this course; the primary cost is associated with transportation on the fieldtutorial. Should the trip become a virtual event, due to the pandemic or other reason, your course professor will discuss reimbursement of a portion of this fee with administration and the Registrar.

Ambrose University Library has a wealth of connections to online materials/sites, please inquire about this resource.

Ambrose University Important Information:

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.

Exam Scheduling

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 Academic Calendar. 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.

Standards of Behaviour in the Classroom Setting

Learning is an active and interactive process, a joint venture between student and instructor and between student and student. Some topics covered within a class may lead to strong reactions and opinions. It is important that Students understand that they are entitled to hold contradictory beliefs and that they should be encouraged to engage with these topics in a critical manner. Committing to this type of "active learning" significantly increases the learning experience for both teacher and student, and reflects the Christian imperative to pursue truth, which lies at the heart of the Ambrose educational experience. However, active discussion of controversial topics will be undertaken with respect and empathy, which are the foundations of civil discourse in the Classroom Setting. Primary responsibility for managing the classroom rests with the instructor. The instructor may direct a student to leave the class if the student engages in any behaviour that disrupts the classroom setting. If necessary, Ambrose security will be contacted to escort the student from class. Please refer to your professor regarding their electronic etiquette expectations.

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. 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.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. The academic calendar can be found at <https://ambrose.edu/content/academic-calendar-2>

Privacy

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.

Coursework Extensions

Should a request for a time extension on coursework exceed the end of the term, a *Coursework Extension Application* must be completed and submitted to the Office of the Registrar. The extension (if granted) will be recorded on the student record. Extensions are granted at the discretion of the instructor and are normally granted for 30 days beyond the last day of the term.

Normally, Course Extension Applications will be considered only when all of the following conditions are met:

- the quality of prior course work has been satisfactory;
- circumstances beyond your control, such as an extended illness or death of a family member, make it impossible for you to complete the course work on time; and
- you submit *Coursework Extension Application* to the Office of the Registrar on or before the deadline specified in the Academic Schedule.

If granted, time extensions do not excuse you from a final examination where one has been scheduled for the course.

A temporary grade of TX will be assigned until a final grade is submitted in accordance with the new deadline. A final grade of F will apply to:

- all course work submitted after the end of the semester unless a coursework extension has been granted; and all course work submitted after the revised due date provided by an approved extension to coursework.

Academic Success and Supports

Accessibility Services

Academic accommodation is provided to Ambrose students with disabilities in accordance with the Alberta Human Rights Act and the Canadian Charter of Rights and Freedoms. Provision of academic accommodation does not lower the academic standards of the university nor remove the need for evaluation and the need to meet essential learning outcomes. Reasonable accommodations are tailored to the individual student, are flexible, and are determined by considering the barriers within the unique environment of a

postsecondary institution. It can take time to organize academic accommodations and funding for disability-related services. Students with a disability who wish to have an academic accommodation are encouraged to contact Accessibility Services as early as possible to ensure appropriate planning for any needs that may include accommodations. Staff can then meet with students to determine areas to facilitate success, and if accommodations are required, ensure those accommodations are put in place by working with faculty.

Ambrose Writing Services

Ambrose Writing services provides academic support in the four foundational literacy skills—listening, speaking, reading, and writing. It also assists students with critical thinking and the research process. Throughout the academic year, students can meet with a writing tutor for personalized support, or they can attend a variety of workshops offered by Academic Success. These services are free to students enrolled at Ambrose University. Academic Success serves all students in all disciplines and at all levels, from history to biology and from theatre to theology. To learn more, please visit <https://ambrose.edu/writingcentre>

Ambrose Tutoring Services

Ambrose Tutoring Services provides support in specific disciplinary knowledge, especially in high-demand areas such as chemistry, philosophy, math and statistics, and religious studies. These tutors also coach students in general study skills, including listening and note-taking. During the academic year, Ambrose Tutoring Services offers drop-in tutoring for courses with high demand; for other courses, students can book a one-to-one appointment with a tutor in their discipline. These services are free to students enrolled at Ambrose University. To learn more, please visit <https://ambrose.edu/tutoring>.

Mental Health Support

All of us need a support system. We encourage students to build mental health supports and to reach out when help is needed.

On Campus:

- Counselling Services: ambrose.edu/counselling
- Peer Supportive Listening: One-to-one support in Student Life office. Hours posted at ambrose.edu/wellness.
- For immediate crisis support, there are staff on campus who are trained in Suicide Intervention and Mental Health First Aid. See ambrose.edu/crisissupport for a list of staff members.

Off Campus:

- Distress Centre - 403-266-4357
- Sheldon Chumir Health Care Centre - 403-955-6200
- Emergency - 911

Sexual Violence Support

All staff, faculty, and Residence student leaders have received *Sexual Violence Response to Disclosure* training. We will support you and help you find the resources you need. There is a website with on and off campus supports – ambrose.edu/sexual-violence-response-and-awareness.

Off Campus:

- Clinic: Sheldon Chumir Health Centre - 403-955-6200
- Calgary Communities Against Sexual Abuse - 403-237-5888

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