

Astronomy 2801 – Observing the Stars - Fall 2025

Have you ever looked through a telescope and wondered at the Universe? Or seen a beautiful telescopic image and wanted to try your own hand at taking pictures of astronomical objects? In this course, students will learn to control and use research-grade robotic telescopes located around the globe, to take images of deep-sky objects themselves, and then to use modern tools and techniques to make measurements from these images for scientific study. This course will teach students how to take and process images of the night sky the way professional astronomers do.

Note this course has a strong computational component: you will be expected to have access to either a Mac or Windows computer.

Astronomy 2801A/B - Observing the Stars

The properties of stars, the building blocks of the universe, and how we obtain their characteristics. The night sky, coordinates, detectors, telescopes, stellar magnitudes and fluxes, spectra, interaction of light and matter, Hertzsprung-Russell diagram, stellar evolution, and the Sun. Introduction to astrophysics, order of magnitude estimates, astronomical nomenclature and observations.

Antirequisite(s):

Prerequisite(s): ([Physics 1202A/B](#) or [Physics 1402A/B](#) or [Physics 1502A/B](#), or the former Physics 1029A/B or the former Physics 1302A/B); ([Calculus 1000A/B](#) or [Calculus 1500A/B](#) or [Numerical and Mathematical Methods 1412A/B](#) or the former Applied Mathematics 1412A/B) and ([Calculus 1501A/B](#), or [Calculus 1301A/B](#) with a minimum mark of 60% or [Numerical and Mathematical Methods 1414A/B](#) or the former Applied Mathematics 1414A/B), or the former Applied Mathematics 1413. [Integrated Science 1001X](#) with a minimum mark of 60% can be used in place of [Physics 1202A/B](#) and [Calculus 1301A/B](#).

Corequisite(s):

Pre-or Corequisite(s):

Extra Information: 3 lecture hours, 1 tutorial hour, 0.5 course.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Instructor:

Paul Wiegert
Professor

You can reach me via e-mail at pwiegert@uwo.ca. When contacting me by e-mail, please use your UWO e-mail account. Other accounts (such as hotmail and gmail) are often tagged as spam and may not reach me.

Office Hours: My usual office hours will be announced on the OWL website, and are expected to be held in-person. You are welcome to drop by at the posted times. If the usual office hours time is not convenient, you can also send me e-mail if you would like to arrange a meeting.

Teaching Assistants: The TA(s) for this course, their contact info and their office hours will be posted on the course web site.

Format: This course is expected to take place primarily in person, however it may transition to an online format if required.

All course material will be posted to OWL: <https://westernu.brightspace.com/> Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class. If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

The integrity of the course and the privacy of its participants is expected to be preserved. It is illegal to distribute, share in any public domain, or sell any course materials without prior written consent of the instructor.

Contingency plan for an in-person class pivoting to 100% online learning

In the event of an emergency that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme may change; any changes will be communicated through the OWL website. Any remaining assessments will also be conducted online as determined by the course instructor.

Course materials:

Textbook: The required textbook is Fraknoi, Morrison & Wolff's Astronomy (OpenStax). This online textbook will be accessed through the course OWL website for a small fee (expected to be \$US 9.99 or less). Paper copies of the textbook can be ordered through the openstax.org website for an additional fee but are not required.

Tutorials: There will be weekly tutorial sessions. The University scheduling system should have ensured that you do not have a schedule conflict, but if you do find you have one, please contact your instructor as soon as possible. Attendance at tutorials is mandatory. Teaching Assistants will also be present to help you complete the weekly tutorial worksheets

Gradescope: Written assignments in the course such as the tutorial worksheets will be submitted via the [gradescope.ca](https://www.gradescope.com) website. Gradescope will accept scans or photos of handwritten assignment pages. These will be accessed by the TAs to grade, and marks and feedback will be returned to the student via Gradescope.

Lectures: There are weekly lectures.

Computer: Students are required to have either a Mac or Windows computer. Much of the hands-on component of this class requires computer processing and analysis.

Zoom: At this time lectures and tutorials are expected to be in-person. However, if a change to online learning becomes necessary, participation in online activities will require a webcam/microphone and a stable internet connection. If you anticipate any problems along these lines please contact your professor. A link will be provided to any zoom events, which should be clicked on and the zoom app downloaded at the appropriate time. Students do not need to create a separate Zoom account.

Professionalism and netiquette: It is expected that students will display the same standard of behaviour in all online interactions as they would in the regular classroom. Video interactions will be done in respectful language, in a quiet environment, without the presence of non-class members in the background, in appropriate clothing, etc. Failure to abide with these requirements may result in the barring of the student from such interactions and the loss of any associated marks. For a refresher on netiquette see <https://www.rasmussen.edu/student-experience/college-life/netiquette-guidelines-every-online-student-needs-to-know/>

Methods of Evaluation:

Grading:

Tutorial worksheets [weekly]: 20%

Midterm: 20%

Research project: 20%

Final exam: 40%

Midterm: The midterm is expected to take place during the usual class time on Tuesday October 28 2025. Details about the midterm and any changes to the time/place (if needed) will be announced in class.

Research project: This course is directed towards teaching you how to use a modern telescope and analyze the results. Your research project will involve planning the observing strategy for a target assigned to you by the professor, programming the required actions into the telescope controls, monitoring the collection of the data as it is being taken, retrieving the final images from the observatory server, analyzing the results, and presenting them. The format of the Research Project presentation will be announced in class, but is expected to include a written project and a poster presentation, with 50% of project marks for each.

Please note: The Department of Physics and Astronomy may, in exceptional cases, adjust the final course marks in order to conform to Departmental policy. Final grades will be rounded to the nearest integer, and grades ending in 9 (eg. 69) are not automatically “bumped up” by 1 mark.

General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Examinations scheduled during official examination periods
- The Research Project

When a student mistakenly submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

Tutorial assignments that are not submitted by the deadline will be accepted late up to 48 hours after the due date without penalty. Assignments received more than 48 hours after the deadline will receive no marks.

If a student misses the midterm, the marks will be transferred to the Final Exam. There is no makeup midterm.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

Essential Learning Requirements

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

- completion of the Research Project with a minimum mark of 50%

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

Deadline with a No-Late-Penalty Period

Assignments. Students are expected to submit each of the tutorial assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. Should students submit their assessment beyond 48 hours past the deadline, the assessment will receive a mark of zero. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period of 48 hours.

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Calculators are permitted during midterm and final exam. Any model calculator may be used with the exception of a wifi-enabled device. Smartphones may not be used.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.

This course outline is subject to change. Last updated Tuesday, June 24, 2025.