



COURSE OUTLINE

1. **Course:** ASPH 401, Galactic Astrophysics - Fall 2020

Lecture 01: MWF 14:00 - 14:50 - Online

| Instructor | Email | Phone | Office | Hours |
|---------------|--------------------|------------------------|--------|-------------|
| Dr Rene Plume | rplume@ucalgary.ca | contact via email only | SB 517 | W - 9-10 am |

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

1) **All lectures are pre-recorded** and you can watch them in your own time, at your own pace. The **lectures are all located on D2L in the "Pre-recorded Lectures"** section under the "Content" menu item. The lectures vary in length but I tried to keep them all to between 20-30 minutes to reduce the "boredom factor".

2) **One class per week will be LIVE via ZOOM.** This will be a Q&A tutorial in which you can ask questions and I will attempt to answer them via an electronic whiteboard. This live tutorial will be **every Wednesdays at 2pm - 3pm** (normally scheduled class time). Attendance is NOT mandatory, simply sign in if you have questions or just want to listen. **Connection info is given in the "Weekly ZOOM Tutorial"** section under the "Content" menu item.

Course Site:

D2L: ASPH 401 L01-(Fall 2020)-Galactic Astrophysics

Note: Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Physics 229 or 325; Physics 355; Mathematics 376 or 375; and Astrophysics 213 or 305.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

| Component(s) | Weighting % | Date |
|-----------------|-------------|---|
| Assignments (4) | 75 | Dues dates posted on D2L |
| Final Exam | 25 | To be scheduled by the registrar's office |
| | | |

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

| | A+ | A | A- | B+ | B | B- | C+ | C | C- | D+ | D |
|---------------------------|------|------|------|-----|-----|------|------|-----|-----|------|------|
| Minimum % Required | 95 % | 90 % | 85 % | 80% | 75% | 70 % | 65 % | 60% | 55% | 50 % | 45 % |

This course has a registrar scheduled final exam.

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

Recommended Textbook(s):

Spärke & Gallagher, *Galaxies in the Universe: An Introduction*. Cambridge.

7. **Examination Policy:**

All exams will be closed book exams. Formulae sheets will be provided as part of the exam material. Any kind of calculator is allowed (even programmable ones).

Exams are meant to be done individually without communication or help from other students or outside resources. I rely on your honour as a student to adhere to these rules.

The final exam (date TBA) will be a "take home" exam which you will have 24 hours to complete. The start time will be determined by the registrar's office.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

10. **Human Studies Statement:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics & Astronomy, Dr. David Feder by email phas.ahugrd@ucalgary.ca or phone 403-220-8127. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

Syllabus

- Part 1 - Review of ASPH213/305 (notes are provided but this is not covered in class)
- Part 2 - Introduction to the Milky Way & Radiative Processes
- Part 3 - Mapping the Milky Way

- Part 4 - Motions of the Stars
- Part 5 - Spiral, Elliptical, & "Other" Galaxies
- Part 6 - Expansion of the Universe and Galaxy Clusters
- Part 7 - Large Scale Structure of the Universe
- Part 8 - Active Galaxies (if time permits)

Course Incomes:

- Material from ASPH213/305 such as understanding of magnitudes, flux, intensity, distance determinations, orbital motion, astronomical coordinate systems, stellar composition and spectral types.
- Material from PHYS 229 / 325 such as Electromagnetic waves, Blackbody radiation, Photoelectric Effect, X-rays and Bragg Diffraction, Compton Scattering, Atomic Structure, The Bohr Model, and Atomic Spectra
- Familiarity with calculus (including single, double and triple integrals) and differential equations (including partial differential equations)

Course Outcomes:

- Students will develop a physical perspective on the origin of galaxy scaling relations such as the Tully-Fisher relation, the Faber-Jackson relation, and the Far-infrared/radio correlation
- Students will analyze observations of the optical surface brightness distribution of galaxies in relation to the star formation history and the distribution of baryonic mass
- Students will understand the relation between metallicity and star formation history as a function of location in a galaxy and along the Hubble sequence
- Students will apply the collisionless Boltzmann equation to stellar dynamics of the solar neighbourhood and of spheroidal stellar systems.
- Students will examine structure formation in an expanding universe

Electronically Approved - Aug 20 2020 16:53

Department Approval