

PHY 522 – INTERSTELLAR MEDIUM

Meets: Tuesday / Thursday 12:30pm – 1:50pm Physics P130

Instructor: Phil Armitage

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Description: The “interstellar medium” is, literally, the gas, dust and magnetic fields that occupy the “empty space” between stars in galaxies. The goal of the class is to provide a broad introduction to the physics of the ISM, and to provide experience in research skills that are more broadly applicable (such as solving problems numerically, critically reading research literature, and giving presentations). The class is divided into four areas:

- Introduction – the basic structure and observed properties of the ISM.
- Radiative processes – how the ISM is heated and cooled, and how this gives rise to different phases.
- Hydrodynamics – including shocks and coupling to magnetic fields.
- Dynamics – how dense phases of the ISM lead to star formation.

No prior knowledge of the ISM and the dense thicket of astronomical nomenclature that surrounds it will be needed or assumed! Since this is a small graduate class, the precise topics that we cover can be adjusted depending upon the class’ preferences.

Grading: final grades will be based on homeworks (40%), short in-class presentations on relevant papers (20%), and a final project which will involve numerical solution of an ISM problem of your choice (40%).

Office hours: you are welcome and encouraged to stop by my office at any time that I’m in to discuss the class. Afternoons following class (2-5pm) are good times. On Wednesdays and Fridays I am normally working at the Flatiron Institute rather than campus.

Textbooks: no textbook on the ISM is ideal for this class, and none is required. If you feel that you’d like to have a textbook for reference or additional reading, two that I would recommend are:

“The Physics and Chemistry of the Interstellar Medium” (Tielens, Cambridge University Press)

“Physics of the Interstellar and Intergalactic Medium” (Draine, Princeton)

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631) 632-6748. They

will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities>.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.