

PHY 523 — Galaxies
SYLLABUS

Instructor: K. M. Lanzetta

Office: 456 Earth and Space Sciences

Office hours: To be assigned and by appointment

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Course description: This course provides an introduction to galaxies and extragalactic astronomy. Topics include galaxy morphologies, stellar luminosity function, galactic chemical evolution, age/metallicity relationship, globular clusters, dynamics of collisionless systems, galaxy kinematics, Oort constants, cosmic distance scale, interstellar absorption lines, interstellar emission lines, 21 cm hyperfine transition, dispersion and rotation measures, interstellar dust, bremsstrahlung, X-ray emitting plasmas, neutral and atomic Hydrogen content of galaxies, active galaxies and QSOs, QSO absorption lines, intergalactic medium, cosmic chemical evolution, photometric redshift measurements, high-redshift galaxies, and galaxy formation and evolution.

Class format: Classes will be held as synchronous Zoom meetings.

Texts: The required text for the course is *Introduction to Galaxy Formation and Evolution: From Primordial Gas to Present-Day Galaxies* by Cimatti, Fraternali, and Nipoti (2020, Cambridge University Press, ISBN-13 978-1107134768). Other useful texts include *Galactic Dynamics* by James Binney and Scott Tremaine (1987, Princeton University Press), *Galactic Astronomy* by James Binney and Michael Merrifield (1998, Princeton University Press), and *Galaxy Formation* by Houjun Mo, Frank van den Bosch, and Simon White (2010, Cambridge University Press).

Homework: Homework will be assigned regularly.

In-class presentations: We will read several classic papers on topics related to galaxies and extragalactic astronomy over the course of the semester. Each student will be responsible for preparing and delivering a short (roughly 15-minute) presentation on two or three (depending on enrollment) such papers over the course of the semester.

Grades: Grades will be based on homework (65%), two mid-term examinations (25% each), and a final examination (25%).

Americans with Disabilities Act

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services, ECC Building, Room 128, 631–632–6748. They will determine what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity

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 are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology and Management, Nursing, Social Welfare, and 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 web site at <http://www.stonybrook.edu/uaa/academicjudiciary/>.

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. Health Sciences Center (School of Health Technology and Management, Nursing, Social Welfare, and Dental Medicine) and 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.

Electronic Communication

Email to your University email account is an important way of communicating with you for this course. For most students, the email address is `firstname.lastname@stonybrook.edu`. *It is your responsibility to read your email received at this account.* For instructions about how to verify your University email address, see

<http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>.

You can set up email forwarding using instructions described at

<http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail>.

If you choose to forward your University email to another account, we are not responsible for any undeliverable messages.

Religious Observances

See the policy statement regarding religious holidays at

<http://www.stonybrook.edu/registrar/forms/RelHolPol\%20081612\%20cr.pdf>.

Students are expected to notify the course professors by email of their intention to take time out for religious observance. This should be done as soon as possible but definitely before the end of the add/drop period. At that time, they can discuss with the instructors how they will be able to make up the work covered.