

## Extragalactic Astrophysics / PHYS-GA 2051 / Fall 2022 / Syllabus

This course teaches the astrophysics of galaxies and quasars at the graduate level.

You can find the course notes at the course web site. Please read the introduction posted on the web site.

Useful textbooks are *Galaxy Evolution* by Cimatti, Fraternali, & Nipoti, and *Extragalactic Astronomy and Cosmology*, by Peter Schneider. A good fraction of my notes are drawn from those books.

Class meets Monday and Wednesday at 11:00am in Room 802 of 726 Broadway.

The classes will proceed as shown on the next page (subject to revision!).

The following are the expectations in the course and classes:

- *Reading:* I expect you to read the provided notes *before* each class. I am likely to call on you in class to ask specific questions about things I think are especially important.
- *Homework:* Each week I will assign one of the questions in the notes we covered. I encourage you to discuss and work on this together. If any subset of you would like to submit as a group, please ask my permission beforehand.
- *Homework Presentation:* I will ask one of you the following week to describe your solution to the class.
- *Review Paper & Presentation:* In the first two weeks of the course, I will assign you each a topic covering a recent finding in extragalactic astrophysics, and you will prepare a short review paper and a presentation for the class. The paper should be formatted in L<sup>A</sup>T<sub>E</sub>X and be about 5 pages of text plus references and (if appropriate) figures. Mid-semester a FULL DRAFT of this paper will be due. I expect to give substantial feedback on the draft in preparation for the final version due at the semester's end. You will each prepare a 10 minute presentation summarizing your review paper.

<i>Sep. 8</i>	Inventory	
<i>Sep. 12</i>	Light I & II	
<i>Sep. 14</i>	Telescopes & Atmosphere	
<i>Sep. 19</i>	Detectors, Images, Spectra	<b>Exercise #1 due</b>
<i>Sep. 21</i>	Distance Ladder	
<i>Sep. 26</i>	Cosmology	<b>Exercise #2 due</b>
<i>Sep. 28</i>	Structure Formation	
<i>Oct. 3</i>	Galaxy Demographics	<b>Exercise #3 due</b>
<i>Oct. 5</i>	Galaxy Morphology	
<i>Oct. 11</i>	Galaxy Scaling Relations	<b>Exercise #4 due</b>
<i>Oct. 12</i>	Stellar Evolution	—
<i>Oct. 17</i>	Stellar Populations	<b>Exercise #5 due</b>
<i>Oct. 19</i>	Stellar Populations	
<i>Oct. 24</i>	Stellar Dynamics	<b>Exercise #6 due</b>
<i>Oct. 26</i>	Stellar Dynamics	
<i>Oct. 31</i>	Stellar Dynamics	<b>Full paper draft due</b>
<i>Nov. 2</i>	ISM & Dust in Galaxies	
<i>Nov. 7</i>	ISM & Dust in Galaxies	<b>Exercise #7 due</b>
<i>Nov. 9</i>	Gravitational Lensing	
<i>Nov. 14</i>	Gravitational Lensing	<b>Exercise #8 due</b>
<i>Nov. 16</i>	Groups & Clusters	
<i>Nov. 21</i>	Star Formation in Galaxies	<b>Exercise #9 due</b>
<i>Nov. 23</i>	Active Galactic Nuclei	<b>May want to reschedule</b>
<i>Nov. 28</i>	Quasars	<b>Exercise #10 due</b>
<i>Nov. 30</i>	High Redshifts	
<i>Dec. 5</i>	Theory of Galaxy Formation	<b>Exercise #11 due</b>
<i>Dec. 7</i>	Feedback in Galaxy Formation	
<i>Dec. 12</i>	Future of Extragalactic Astronomy	
<i>Dec. 19</i>	—	<b>Final paper due</b>