

# Galaxies and Cosmology

**Dr. Siobahn Morgan**

**Phone:** 3-2389

**Course Web site:** <http://www.uni.edu/morgans/cosmos/>

**Textbook:** *Galaxies and the Cosmic Frontier* by Waller and Hodge. You may also want to consult an introductory astronomy textbook for material not covered in this book - especially background information. You may just want to check my introductory course notes - <http://www.uni.edu/morgans/astro/>

**Textbook Web site (updates):** <http://cosmos.phy.tufts.edu/cosmicfrontier>

The textbook has no math in it, but the textbook web site has that material as well as updates in the material. These will be part of the readings for each week. The Endnotes are available at the course website.

**Office:** Latham 108

**email:** [Siobahn.Morgan@uni.edu](mailto:Siobahn.Morgan@uni.edu)

**AIM:** siobahnmorgan

This is a ½ semester class, and will meet until February 28 (7 weeks). There is a TuTh lecture at 1:00 PM – 2:50 PM in LAT 101.

Course schedule – rough order of readings and scheduled test dates

Week 1 – Chapters 1, 2, Endnotes: 1 - 8

Week 2 – Chapter 3, Endnotes: 9 - 15

Week 3 – Chapters 4, 5, Endnotes: 16 - 17

Week 4 – Chapter 6, Endnotes: 18 - 21

Distribution of Test 1, draft of term paper due

Week 5 – Chapters 7 - 9, Endnotes: 22 - 23

Week 6 – Chapters 10 - 12, Endnotes: 24 - 27

Week 7 – Chapters 13 - 15, Endnotes: 28 - 29

Distribution of Test 2, term paper due

Your grade will be based upon the following distribution -

Tests - 50% (2 of these)

Homework - 25% (5 of these)

Term Paper – 25% (1 of these)

There are two tests, both of which will be take-home. The first one will be distributed on February 5 and **due February 12**. The second will be distributed on February 26 and due on **March 3**.

The tests and homework assignments will all involve math, at the pre-calculus level, so make sure you have fresh batteries in your calculator.

**Term papers:** The deadline for turning in your term paper is **Thursday February 28, 3:00 PM**.

Students are required to turn in a rough draft by **February 7** – you can e-mail it if you want to. This will be returned to you as soon as possible with comments and corrections, and counts for 10% of your total paper grade.

Paper length: **around 5 pages** (could be a few pages more but not much less).

Format: **1” margins all sides; double spaced, 12 point font, Times New Roman**

Include on the first page a **Title, Author, Abstract** (the abstract should be a very short summary of the main conclusions of the paper, not a summary or outline of the paper).

If you want to use section headings or subheadings, that’s fine though not required.

References must be included and properly cited within the text. You can use whichever referencing system you are comfortable with.

References that you can use – any of the astronomy journals in the library, including *Astronomy*, *Sky & Telescope*, *Mercury*, *Publications of the Astronomical Society of the Pacific*, *Astronomical Journal*, *Astrophysical Journal*, general science journals such as *Science*, *American Scientist*, *Scientific American* or *Nature*, and books, including the *Annual Review of Astronomy & Astrophysics*. Do **not** use any popular media magazines, such as *Time*, *Newsweek*, *National Geographic*, etc. If you are uncertain about a source, ask. Website references must be from a reputable source, not from personal websites or unknown organizations. Papers with only website references are not acceptable.

Papers should cover some aspect of galaxies and cosmology (duh) and be based upon scientific articles. Do not write biographies or historical papers on a topic. Possible topics could be comprised of the following, or some aspect of the following –

Sgr A*	Superluminal Motion
Milky Way spiral structure	Ring galaxies
Globular Clusters	Starburst galaxies
Cold versus Hot Dark Matter	Results of the COBE satellite
Dark Matter surveys	Results of the WMAP satellite
Radio surveys of our galaxy or others	Results of the HDF
Estimations of the Hubble Constant	String theory (as it pertains to the Universe)
Local Group galaxy characteristics	Inflation
Galaxy evolution	Cosmogony
Galaxy collisions	Cosmic metal abundances
Galactic cannibalism	Cosmic time scales
Active Galactic Nuclei	SN I surveys
The Great Attractor	The Cosmological Constant
Quasars	Vacuum Density Energy

This list is by no means complete. If you have a topic and it isn’t included above, ask me if it is appropriate. One way to find a topic is to go to recent copies of any of the journals listed above and see if there are any relatively short papers that interest you. That could be the starting point for your own paper. You may also want to look at the recent papers in the **arXiv.org** website (there is a link for this at the course website).