

Syllabus High Energy Astrophysics: ASTR/PHY 332

Lehigh University Department of Physics - Fall 2018

Instructor: **Professor Rosi Reed**

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Text: High Energy Astrophysics, by Rosswog and Brüggén, 2007

Supplemental Text: High Energy Astrophysics, by Malcom S. Longair, 2011

Class Times: MWF 9:10 in RM 512

Office Hours: Tuesday, 2:00 pm – 3:00 pm, and by appointment

Course Requirements: General requirements include:

- Reading assigned materials prior to class
- Attending all classes
- Completing all assignments on time
- See me if you are having trouble!

Grading: Your numerical grade will be determined approximately as follows:

Final Exam 30%

Homework 25%

Paper 15%

Midterm I 15%

Midterm II 15%

You will be allowed to drop your two lowest homework scores

Primary Topics:

Special Relativity Neutrinos Accretion disks

General Relativity Cosmic Rays Black Holes

Radiative Processes Nuclear Fusion Neutron Stars

Gravity Waves Interactions of particles and matter

Initial Competences

Basic knowledge of special relativity, quantum mechanics, multivariate calculus

Final Competences

1. Students understand how special and general relativity effect what we observe in the universe today

2. Students can explain the basic physical processes involving high energy particles and/or creating high energy emission
3. Students will demonstrate an understanding of the basic physics in accretion processes observed for a variety of sources.
4. Students will have insight into current high-energy astrophysics research.
5. Know the methods and observing techniques to study high-energy emission.

Accommodations for Students with Disabilities:

If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, University Center C212 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

The Principles of Our Equitable Community:

Lehigh University endorses The Principles of Our Equitable Community:

<http://www4.lehigh.edu/diversity/principles>

We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.