

ASTR 735: Research Techniques

Day and Time: Wednesday, 2 PM

Instructors:

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Course Description

Astronomy 735 is intended as an introduction to basic techniques that are commonly required for efficient and effective research. One focus of the course will serve as an introduction to computer programming. The course does not assume any previous computer programming experience. Students will learn the basic functionality of IDL with particular attention paid to developing skills commonly required for astronomical research. Students will gain familiarity with the large library of built-in IDL routines designed for scientific research while also learning how to implement routines that are made available by the astronomical community for specific tasks. By the end of the course students will be able to edit and modify routines to suite their particular needs and write programs from scratch when necessary. A parallel focus of the course will be to develop the skills that are used in day-to day research that are not commonly taught in courses. Students will be introduced to basic methods for performing a wide range of tasks that need to be integrated into the students basic skill-set. The course will consist of 10 sessions with each session split into two back-to-back ~30 minute sessions dealing with programming and general research practices, respectively. Because this is the first time this course has been taught, the schedule given below is subject to some adjustments.

Course Schedule

Week #	Programming	Research Practices
1	Introduction to IDL	Introduction to Latex 1
2	Data types, scalars, vectors and structures	Introduction to Latex 2
3	Calling procedures and functions, input/output	Accessing literature, ADS, astro-ph
4	Reading/Writing data	Organizing literature, preparing citations
5	Plotting data, displaying images	Reading Papers
6	Writing programs 1, for loops, if, while and case statements	Writing Papers 1
7	Writing programs 2, input and output, debugging, documentations	Writing Papers 2
8	Statistics and histograms	Writing Proposals
9	Curve fitting	Observing
10	TBD	Presentations and Collaborations