Syllabus

ASTR 302: Python for Astronomy (Winter '26)

Tue/Thu, 10:00-11:20, PAA 210
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ASTR 302, "Python for Astronomy", is a course designed to teach how to effectively use Python for research and astronomical data analysis. We begin with a gentle introduction to key tools and libraries used in astronomy, use these to analyze data (from kilobytes to tens of gigabytes!), visualize (sometimes large) datasets, automate analyses, and apply what we've learned to reproduce results of some key astronomy papers.

This course assumes you know Python and related astronomy libraries at the ASTR 300 level. It will give you the broad foundation needed to proceed to "ASTR 324: Introduction to Astrostatistics and Machine Learning in Astronomy", or ASTR 497 "Big Data in Astronomy: Hands-on with Large Surveys", or independent research projects.

Grading: Homeworks (30%) and a Final Project (70%).

When	***Topic***	***Notes***
Jan 6	Getting Started: Why Python for Astronomers?	
Jan 8	Basic Python Refresher	
Jan 13	Basic Python Refresher	
Jan 15	How to be organized and collaborative: git and github	Zoom: ls.st/zip
Jan 20	git and github, part 2	hw1 due
Jan 22	git and github, part 3	
Jan 27	Interactive Data Analysis: Jupyter	
Jan 29	Databases in astronomy	
Feb 3	Pitch day	hw2 due
Feb 5	project work	
Feb 10	project work	
Feb 12	project work	
Feb 17	project work	Milestone #1

Feb 19	project work	
Feb 24	project work (with Dmitrii Vavilov)	
Feb 26	project work (with Dmitrii Vavilov)	
Mar 3	project work	Milestone #2
Mar 5	project work	
Mar 10	project work	
Mar 12	Project Demo Day!	*Final Project Due*