Syllabus

ASTR 302: Python for Astronomy (Winter '23)

M-W, 2:30-3:50, PAA 216
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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 (60%) and a Final Project (40%).

When	***Topic***	***Notes***
Jan 4	Getting Started: Why Python for Astronomers?	
Jan 9	Basic Python Refresher	
Jan 11	Group work	
Jan 16	*-- no class --*	holiday
Jan 18	How to be organized and collaborative: git and github	hw1 due
Jan 23	Group work	
Jan 25	Group work	
Jan 30	Interactive Data Analysis: Jupyter	
Feb 1	Group work	hw2 due
Feb 6	SQL Databases	
Feb 8	Group work	hw3 due
Feb 13	Remotely querying astronomical archives	
Feb 15	Group work	
Feb 20	*-- no class --*	holiday

Feb 22	Group Work	hw4 due
Feb 27	Building Web Services	
Mar 1	Project pitches	hw5 due
Mar 6	Project Hackday #1	
Mar 8	Project Hackday #2	
Mar 17		*Final Project Due*