Syllabus

ASTR 302: Python for Astronomy (Winter '22)

M-W, 2:30-3:50, PAA 216

Mario Juric <mjuric@astro.washington.edu>

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 5	Getting Started: Why Python for Astronomers?	
Jan 10	Basic Python Refresher	
Jan 12	Group work	
Jan 17	*-- no class --*	holiday
Jan 19	How to be organized and collaborative: git and github	hw1 due
Jan 24	Group work	
Jan 26	Group work	
Jan 32	Interactive Data Analysis: Jupyter	
Feb 2	Group work	hw2 due
Feb 7	SQL Databases	
Feb 9	Group work	hw3 due
Feb 14	Remotely querying astronomical archives	
Feb 16	Group work	
Feb 21	*-- no class --*	holiday

Feb 23	Group Work	hw4 due
Feb 28	Building Web Services	
Mar 2	Project pitches	hw5 due
Mar 7	Project Hackday #1	
Mar 9	Project Hackday #2	
Mar 18		*Final Project Due*