

# Tutorial: Python for New Programmers on ACES

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High Performance  
Research Computing  
DIVISION OF RESEARCH



# Outline: HPRC Python Classes

- Python for New Programmers
- Python for Programmers New to Python
- Python for Data Scientists
- Python for HPC



You are here

Today: programming basics recognizable in almost every language

# Outline: Today's Class

- Overview of Python
- Getting Started
- Jupyter Notebooks:
  - Jupyter and Hello
  - Elements of Code
  - Control

# Overview of Python

# What Computers Don't

- Computers can't do what you say
- Computers can't do what you want



Disney's *Fantasia* (1940)

# Where to get Python

- Windows, Mac, and Linux all have it in their app stores (for free)
- Python is also **online** for free in various places
  - <https://colab.research.google.com/>
  - <https://replit.com/>

Note: stay away from Python 2 because Python 3 is much better.

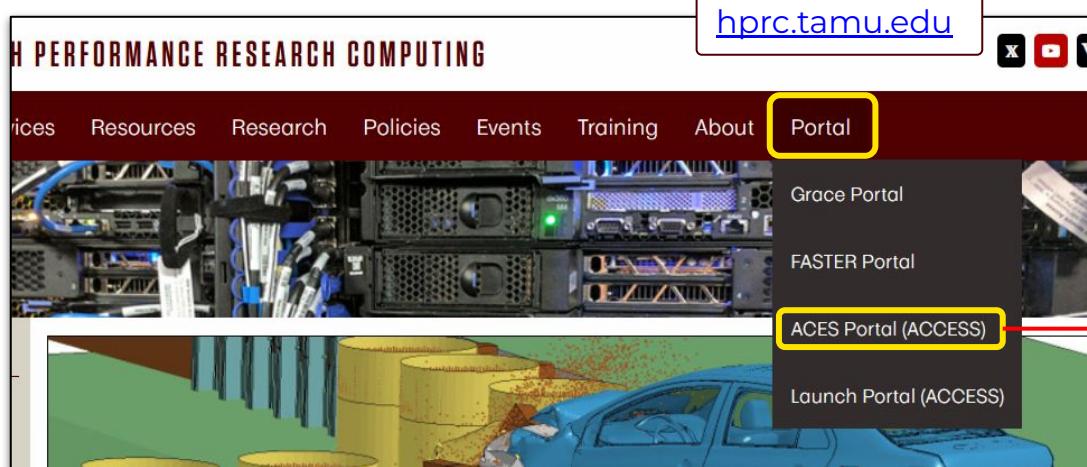
Today we will be using Python 3.11

# Learning Resources

- Slides on the course web page  
[https://hprc.tamu.edu/training/aces\\_intro\\_python.html](https://hprc.tamu.edu/training/aces_intro_python.html)
- HPRC's Knowledge Base  
<https://hprc.tamu.edu/kb/Software/Python/>
- HPRC on YouTube  
<https://www.youtube.com/c/TexasAMHPRC>
- ACCESS Links  
<https://support.access-ci.org/ci-links>

# Getting Started

# Login to ACES Portal

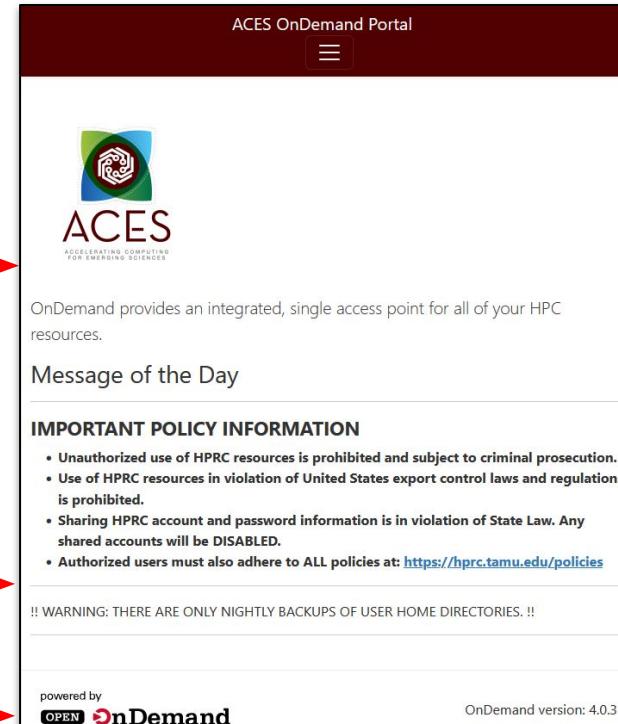


The screenshot shows the HPRC website with a banner for "H PERFORMANCE RESEARCH COMPUTING". The top navigation bar includes links for Services, Resources, Research, Policies, Events, Training, About, and Portal. The "Portal" link is highlighted with a yellow box. A dropdown menu appears, listing "Grace Portal", "FASTER Portal", "ACES Portal (ACCESS)" (which is also highlighted with a yellow box and has a red arrow pointing to the ACES OnDemand Portal screenshot), and "Launch Portal (ACCESS)". Below the menu is a background image of a server rack and a car.

(You will have to log in with ACCESS if you haven't already)

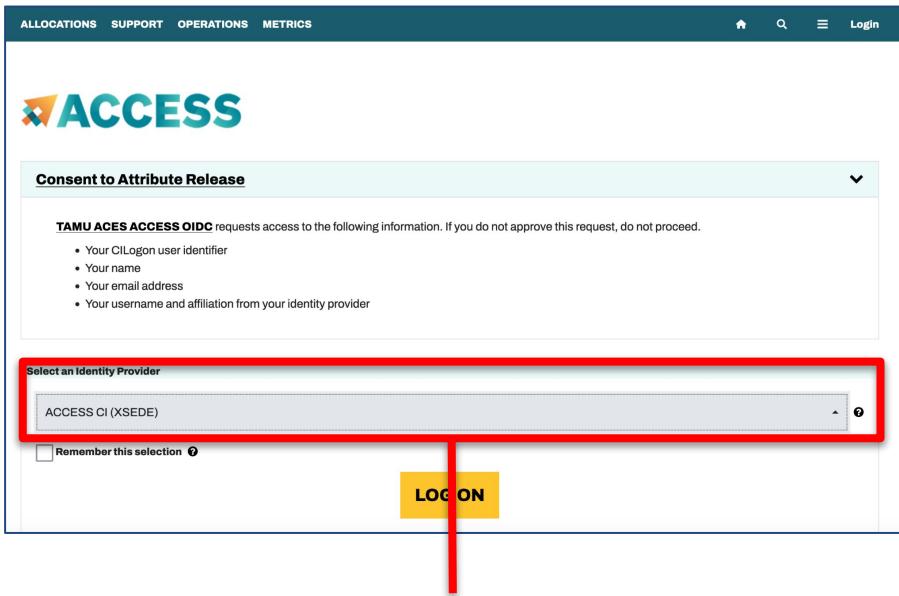
ACES Portal [portal-aces.hprc.tamu.edu](https://portal-aces.hprc.tamu.edu)  
is the web-based user interface for the ACES cluster

Open OnDemand (OOD) is an advanced web-based  
graphical interface framework for HPC users



The screenshot shows the ACES OnDemand Portal. The header includes the ACES logo and the text "ACES OnDemand Portal". The main content area features the ACES logo and the tagline "ACCELERATING COMPUTING FOR EMERGING SCIENCES". Below this is a message: "OnDemand provides an integrated, single access point for all of your HPC resources." A "Message of the Day" section follows. A "IMPORTANT POLICY INFORMATION" section contains a bulleted list of rules, with the last item linking to the policies page. A warning message at the bottom states: "!! WARNING: THERE ARE ONLY DAILY BACKUPS OF USER HOME DIRECTORIES. !!". The footer includes the text "powered by OPEN OnDemand" and "OnDemand version: 4.0.3".

# Accessing ACES via the Portal (ACCESS)



ALLOCATIONS SUPPORT OPERATIONS METRICS Home Search Menu Login

## ACCESS

**Consent to Attribute Release**

**TAMU ACES ACCESS OIDC** requests access to the following information. If you do not approve this request, do not proceed.

- Your CILogon user identifier
- Your name
- Your email address
- Your username and affiliation from your identity provider

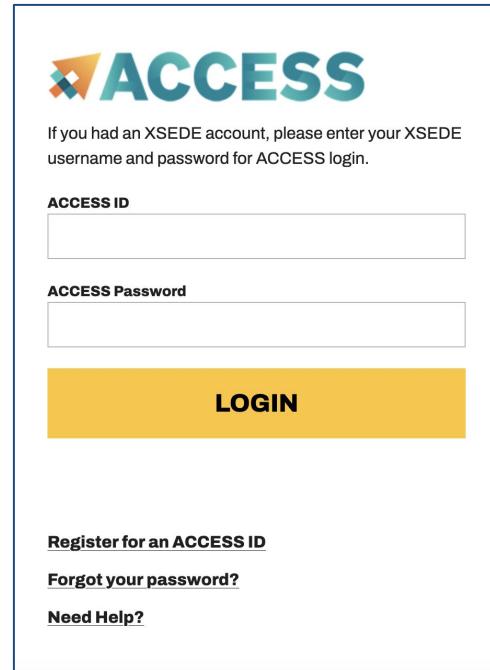
Select an Identity Provider

ACCESS CI (XSEDE)

Remember this selection ?

**LOG ON**

Select the Identity Provider appropriate for your account.



**ACCESS**

If you had an XSEDE account, please enter your XSEDE username and password for ACCESS login.

**ACCESS ID**

**ACCESS Password**

**LOGIN**

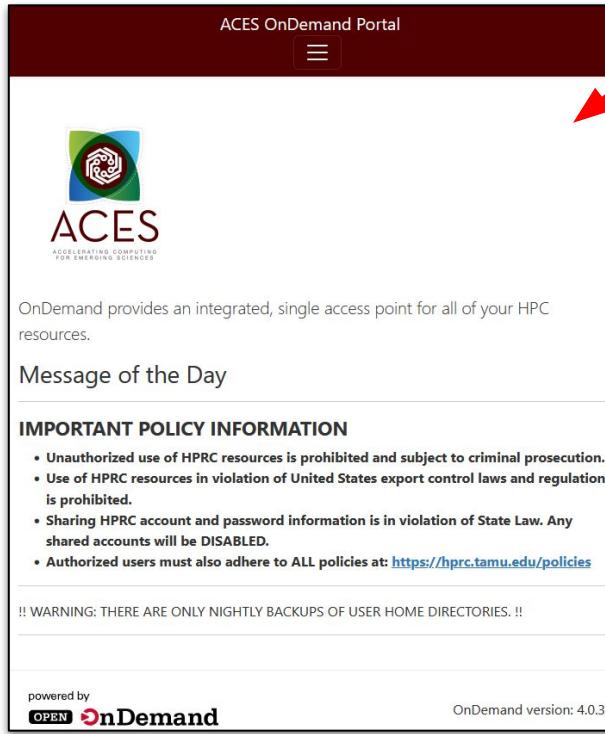
[Register for an ACCESS ID](#)

[Forgot your password?](#)

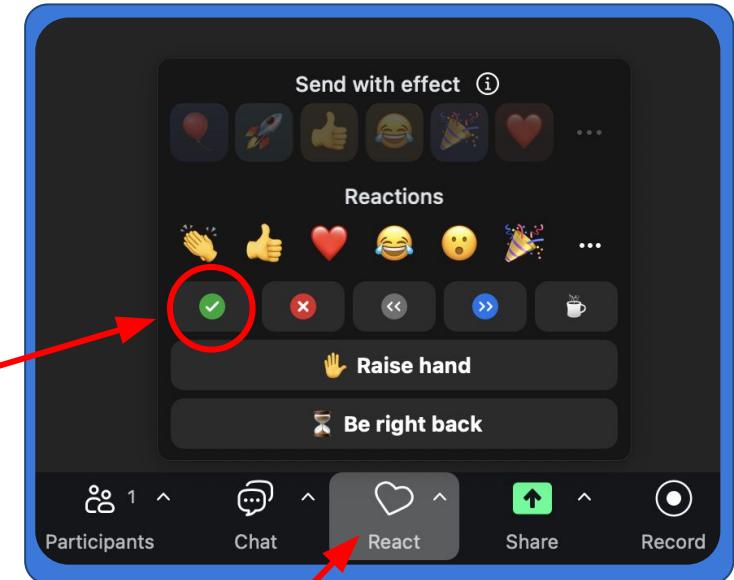
[Need Help?](#)

Log-in using your ACCESS or institutional credentials.

# Login to ACES Portal



Once you're on this screen...



...Click the  
green  
checkmark  
reaction in  
Zoom

(find it here)

# Jupyter Notebook for Python Training

ACES OnDemand Portal   Files ▾   Jobs ▾   Clusters ▾   **Interactive Apps ▾**   Affinity Groups ▾   Chat



ACES  
ACCELERATING COMPUTING  
FOR EMERGING SCIENCES

OnDemand provides an integrated, single access point to ACES resources.

Message of the Day

**ACES Status, January 27**

The pvc queue is now available with many nodes with PVCs composed of multiple fabrics.

**ACES Accounting, January 13**

NOTICE: Accounting on ACES will be activated on Monday, January 13, 2020.

Interactive Apps

- GUI
  - VNC
  - NextSilicon VNC
- Imaging
  - CryoSPARC
  - ImageJ
  - Jmol
  - Paraview
  - cisTEM
- Servers
  - Jupyter Notebook
    - Jupyter Notebook for Python Training**
  - JupyterLab
  - RStudio
  - TensorBoard
  - Tutorials OnDemand

# Jupyter Notebook for Python Training

## Jupyter Notebook for Python Training

This app will launch a Jupyter Notebook server on the [ACES](#) cluster.

Email

This field is optional.

**Launch**

\* The Jupyter Notebook for Python Training session data for this session can be accessed under the [data root](#) directory.

Jupyter Notebook for Python Training (636884) 1 node | 1 core | Starting

Created at: 2025-01-28 09:19:34 CST

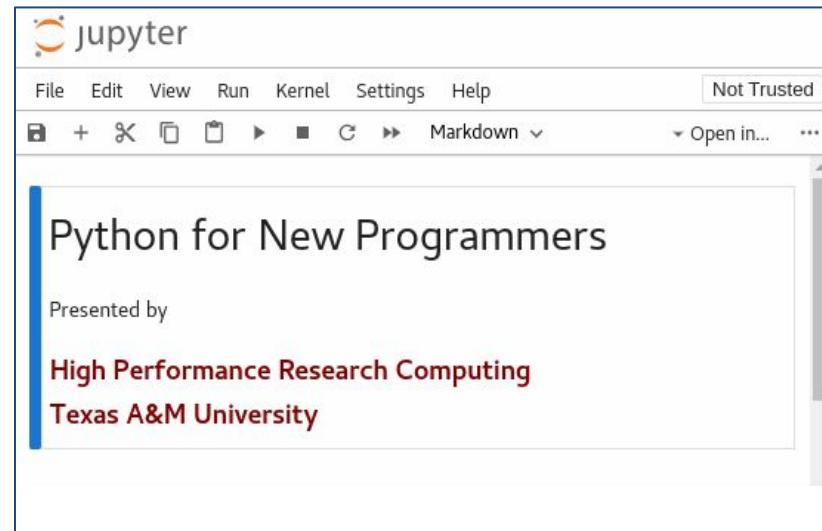
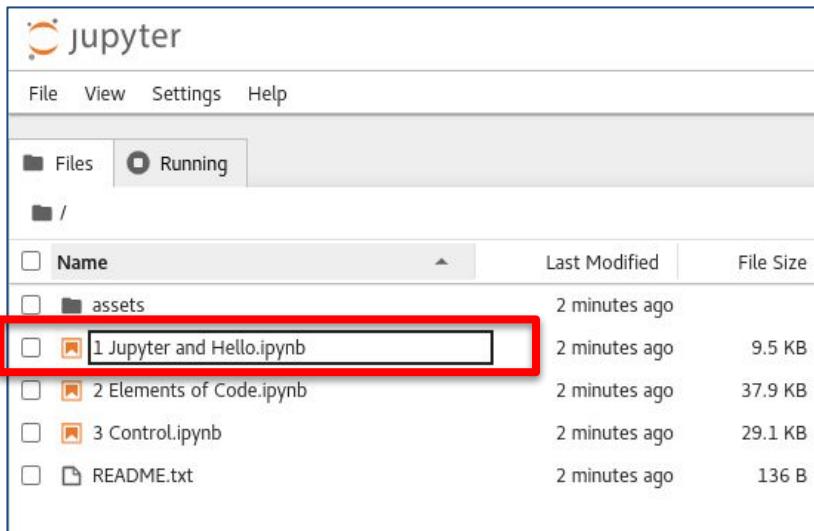
Time Remaining: 7 hours and 9 minutes

Session ID: 428342db-6782-4d59-8bf8-2537d8ee857d

Host: [ac058](#) Delete

**Connect to Jupyter**

# Jupyter Notebook for Python Training





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TEXAS A&M UNIVERSITY

<https://hprc.tamu.edu>

HPRC Helpdesk:

[help@hprc.tamu.edu](mailto:help@hprc.tamu.edu)

Phone: 979-845-0219

*Take our short course survey!*

[https://u.tamu.edu/hprc\\_shortcourse\\_survey](https://u.tamu.edu/hprc_shortcourse_survey)



[https://u.tamu.edu/hprc\\_shortcourse\\_survey](https://u.tamu.edu/hprc_shortcourse_survey)

Help us help you. Please include details in your request for support, such as, Cluster (ACES, FASTER, Grace, Launch), NetID (UserID), Job information (JobID(s), Location of your jobfile, input/output files, Application, Module(s) loaded, Error messages, etc), and Steps you have taken, so we can reproduce the problem.



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