**Preparing Your Windows Computer to Run Python Code Using Anaconda and Jupyter:**

**Why Anaconda and Jupyter**

This series of documents covers how to prepare your Windows computer to successfully execute the data analysis tools used in certain MSU extension courses, such as the upcoming “Learn by Example: Data Analysis with Python” canvas course. The goal of this series of publications is not to cover each piece of software in-depth, but instead to cover the essential steps that will enable you to quickly prepare your Windows computer to run python code in jupyter notebooks. It is recommended to proceed through the publications in the following order, as most publications build on the previous publications in the series.

The “Preparing Your Windows Computer to Run Python Code Using Anaconda and Jupyter” series includes the following:

* Why Anaconda and Jupyter (this publication)
* Introduction to Anaconda on Windows
* Introduction to Jupyter Notebooks on Windows
* Optional: Exporting and Importing Conda Environments
* Optional: Using Gitbash and JupyterLab on Windows
* Optional: Introduction to the VS Code Integrated Development Environment (IDE) for Windows
* Title 7

The material covered provides instructions on installing Anaconda for Windows, creating an Anaconda software environment for executing python code, and using a Jupyter notebook for data analysis with python. These tools are widely used today in teaching and research. When you complete this series you will be ready to start analyzing and visualizing data using the python programming language. These tools can also be installed on Mac and Linux computers but instructions for these operating systems will not be covered here.

**What is a Jupyter notebook and why would I want to use it?**

A Jupyter notebook is a free tool that allows you to write and execute code (for example, python), plot figures, and write notes or instructions all inside a single file. For this reason, they are excellent tools to use for teaching, learning, and reproducible research. In my day-to-day as a research scientist my analyses involve data exploration, frequent plotting, writing notes and comments about my code, and documenting the meaning of analysis results. For me, Jupyter notebooks are a one stop shop where I can do all these things and have it all organized within a single file. I also often use them to create short tutorials, computational demonstrations, and learning materials. Jupyter also works seamlessly with Anaconda, which we’ll get into next. *(Show picture of example notebook)*

**What is Anaconda and why would I want to use it?**

Anaconda is a distribution of the python programming language, as well as a valuable package management system. If you aren’t familiar with Python, it is a free open source programming language consisting of the core language plus an extensive library of “packages” that provide extended functionality. Rarely is only the core language used, especially for data analysis and scientific research. This means you often need to access some of the additional packages available. An easy way to access these packages is with Anaconda, which can download core python (also sometimes called base python) along with whatever packages you need, check for conflicts between packages, and install everything into what is called a software “environment”. With Anaconda, you can create as many separate software environments as you want. Building an Anaconda or “conda” environment is good way to keep track all of the software that was required for your data analysis. You are also able to export the building blocks of your environments such that they can be recreated and used by others. Conda environments are also accessible inside Jupyter notebooks.

There are other python software management systems available (for example, mamba or poetry) as well as other ways to install python packages (for example, pip), but we will only cover Anaconda in this series since it is one of the most popular and useful python tools. *(Show picture of Anaconda navigator)*