Software Installation Guide

Z620: Quantitative Biodiversity, Indiana University

In order for this course to run smoothly, we all need certain software installed on our computers. This includes basic things such as R and Git, but also other tools we are using such as RStudio and LaTeX.

This guide will explain what each software package is being used for and how to install.

R

During Quantitative Biodiversity, we will be conducting computer analyses (calculations and statistics) and plotting in the R computer environment.

We will be using the latest version of R (v 3.1.2; Pumpkin Helmet). You can download R from the IU CRAN mirror: http://ftp.ussg.iu.edu/CRAN/

1. Open a web browser and naviate to http://ftp.ussg.iu.edu/CRAN/
2. Please select your operating system (Mac, Windows, Linux) For Windows Users: install the base package For Mac Users: install the package for your current version of OS X (if you are unsure, please ask for assistance)
3. The default installation options are recommended for most users

Mac uses please read: The latest version of R no longer comes packaged with an X11 graphics device (you need this). Instead, it relies on the program XQuarts for things such as plotting. If you do not have XQuarts installed, please install. YOu can find XQuarts v2.7.7 here http://xquartz.macosforge.org/landing/

Git

During Quantitative Biodiversity, we will be using version control to manage our text and code documents. This is a key component of the reproducible research component of the course. The version control software we will be using is Git. If you do not have a current Git installation, please do the following:

1. Open a web browser and naviate to git-scm.com/download/
2. Select the appropriate operating system
3. The download should start automatically
4. Open the installer and follow the onscreen directions

On Mac: You will need to make sure you have Xcode Command Line Tools installed.
On Windows: This process will install Git Bash (msysGit). During installation, you will be asked to adjust your **PATH environment**. We recommend that you select the option to "Use Git from the Windows Command Prompt". This will give you the most flexibility with Git. In addition, we recommend that during installation you select "Use OpenSSH" for your secure shell client with GitBash.

During installation, you will be asked how to configure the line ending conversions **On Mac**: We recommend "Checkout as-is, commit Unix-style line endings" **On Windows**: We recommend "Checkout Windows-style, commit Unix-style line endings"

RStudio

During Quantitative Biodiversity, we will be using the RStudio for two purposes: it will be the development environment we use along side R, and we will use RStudio to edit and create markdown files. If you do not currently have RStudio (v 0.98 +) installed please do the following:

1. Open a web browser and naviate to http://www.rstudio.com/products/rstudio/download/
2. Please select and download the appropriate installer for your operating system (Windows, Mac, Linux)
3. Open the installer and follow the onscreen directions
4. The default installation options are recommended for most users

LaTex

During Quantitative Biodiversity, we will be using LaTeX behind the scenes. LaTeX will be used by RStudio and the R package `Knitr` to turn our RMarkdown files (.Rmd) into professional quality PDF files. This will happen each time we use the "Knit" button. But this means that we will need to have LaTeX installed, and we will also need a few packages. If you do not have LaTeX please do the following:

On a Mac:

1. Install Basic Tex: https://tug.org/mactex/morepackages.html
2. Note: this will require you to run the commands below (to install framed and titling)

On a PC:

1. Install Basic MiKTeX: http://miktex.org/download
2. Note: you need to use the MiKTeX package manager to download required style guides

By default, RStudio uses style guides for format our PDF documents. These style guides include framed.sty and titling.sty. We have found that not all LaTeX installations include these style guides. If you do not have them, you will get an error message when you "Knit". To fix this, you need to install the required files.

On a Mac: Type the following in terminal:

```
tlmgr init-usertree
tlmgr --usermode install framed
tlmgr --usermode install titling
```

On a PC: You have two options:

1. Open the MikTeX package manager from Start.
2. Search for and install the following: framed, titling

   OR
3. Type the following in command line (or GitBash):

```
mpm --install framed
mpm --install titling
```