INSTRUCTIONS FOR USING MATLAB ON ARC'S *ONDEMAND* PLATFORM

1. Setting up an account & Allocation (faculty only)

(1) Go to ***coldfront.arc.vt.edu***, log in with 2-factor authorization (have your cell phone at hand!).
(2) Go to ***Projects/projects***, click on ***Add a project***.
(3) Complete the ***Title***, ***Description***, and ***Department*** fields. ***Save***.
(4) This will open the ***Allocation*** window. Under ***Users***, you can add your graduate students, once your project and allocation have been approved.
(5) Click on ***Request Resource Allocation***. Under ***Resource*** choose the default Compute (Cluster). Add a brief justification in support of your research project or course.
(6) KEY: Under ***Allocation account***, enter a succint label for your course of research project - that's the label you and your students will need to enter (e.g. **BEASpring2020** for my Bayesian Econometrics course - given below as a specific example).
(7) Select the Allocation type (research or instructional), check the last box on publication & grant informantion (don't worry about it, not relevant for courses, but still needs to be checked).
(8) You should receive an e-mail within 2-3 days informing you that your allocation has been improved. If you don't get it, please contact Bob Settlage at rsettlag@vt.edu - he administers ARC accounts and resource allocations.

2. Accessing and launching Matlab

Once you are logged on to ***OnDemand***, you can see the currently available software by clicking on the Interactive Apps tab - of main interest to us are likely **R** (via **RStudio**) and **Matlab**. The following will use access to Matlab as an example. Procedures for access should be similar for the other programs.

(1) Start by entering *ondemand.arc.vt.edu* in your web browser's address window. Log on to the system via 2-factor authorization (have your cell phone at hand!).

(2) From the *Interactice Apps* menu choose *Matlab* under *Cascades* (name of the ARC cluster we will be using). This will open a pre-launch window with a few fields to fill in.

(3) Under *Account* enter *BEASpring2020*. Under *Number of hours* enter your estimated session length, probably something in the 1-2 hours range. Under Number of cores enter 1, unless your script has parallel computing components (this will be made clear in class), in which case you enter a larger number corresponding to the number of cores requested in your Matlab script (usually something in the 4-8 range for the purpose of this course). Leave everything else unchanged. Click on *Launch*.

(4) In the launch window, WAIT until you see the blue alert *Launch noVNC in New Tab* - this may take a few seconds to a few minutes. Click on launch button when it appears - this

will open Matlab in a new browser tab. Maximize the window (square symbol in the upper right corner).

(5) Note that by default Matlab will be linked to your *home/yourname* directory, as you can see in the white bar directly above the command window. I would leave it that way. See below how to access folders and files nested underneath your *home/yourname* directory.

(6) When you're done with your Matlab session PLEASE close the Matlab window (X symbol upper right hand corner) and your *TurboVCN* browser tab to make computing room for others.

3. Folder and file management

(1) Under *Files* go to your home directory - a **new browser tab** will open with a header saying */home/yourname/*, and, perhaps, a list of folders that are already established in your home directory (especially if you are also listed under other research allocations).
(2) Use the command buttons in the upper right hand corner to create new folders and upload files. For example, I created an **AAEC6564** folder, with sub-folders for **figures**, **functions**, **scripts**, **logs**, and **worksp** (for data files). I then uploaded course-related Matlab materials to the respective folders.

4. Working with Matlab

Running Matlab on ARC/onDemand is pretty much the same as running it on your PC or laptop. There are two important things to remember:

(1) Before running a script, you need to "set the path" so Matlab knows where to look for your files. In Matlab, click on HOME (upper left).
(2) Use the command buttons in the upper right hand corner to create new folders and upload files. For example, I created an **AAEC6564** folder, with sub-folders for **figures**, **functions**, **scripts**, **logs**, and **worksp** (for data files). I then uploaded course-related Matlab materials to the respective folders. Set path. Add with Subfolders. Choose the AAEC6564 folder you created earlier (or any other folder that contains all of your Matlab materials). Click OPEN. You won't be allowed to save the path, so simply close the window and click NO when the save?? window pops up.
(3) The other thing to remember are your file paths. By default, Matlab points at your home directory, for me that's ***home/moeltner***. So if I want to call a file from my ***home/moeltner/AAEC6564/scripts*** folder, I would simply refer to that designation as ***AAEC6564/scripts***. NO c:\\(or such) needed. Same holds for designating log files or saving output and data.
(4) You are now ready to run your script. Open your script by clicking ***Open*** from the ***Editor*** tab, and ***Run*** it. When you're done, you can download your output to your computer going back into the file editor and using the ***Download*** function. Have fun!