Michigan Tech
Create the Future

UN5390: Scientific Computing I

Fall 2016

Prep Work

Help the instructor understand your learning needs

Respond within a week of receiving this document or by June 15, 2016 – whichever is later.

1. Where do you see yourself at the end of this course? In other words, what is your expectation from this course? Are there specific goals you wish to accomplish in this course OR as a result of completing this course?
2. What is your operating system of choice?

   Windows | Linux | Mac
3. Do you know any programming languages? If yes, assign a numerical score to each language on a scale of 1 to 10 (1 being I just know the name of it, and 10 being I pretty much know everything there is to know about it).
4. Have you heard of (or used) LaTeX document preparation system? If yes, assign a numerical score on a scale of 1 to 10 (1 being I have just heard about it, and 10 being I use it every day for just about everything I do).
5. Have you heard of (or used) a revision control system? If yes, assign a numerical score on a scale of 1 to 10 (1 being I have just heard about it, and 10 being I use it every day for just about everything I do).

Please list the contact information for your research advisor (full name, department and email address). If you don't yet have a research advisor, please list the contact information for the graduate studies director in your department/program. I will work with them to collect a set of problems that are appropriate and in-line with your research interests.

Help yourself make an optimal use of this course

Complete these before the instruction begins. This will be an ungraded but a necessary assignment in Week #01.

1. Read through and understand the syllabus.
2. Set yourself up with a reliable data backup scheme.
3. Learn/Familiarize yourself with the Linux operating system, especially at the command line. You may use the following resources as a good starting point.

   http://cli.learncodethehardway.org/book/ | http://linuxcommand.org/

   Basic commands: `cat`, `cd`, `clear`, `cp`, `date`, `echo`, `finger`, `grep`, `head`, `history`, `less`, `ls`, `man`, `mkdir`, `more`, `mv`, `pwd`, `rm`, `rmdir`, `tail`, `touch`, `vim`

   Intermediate commands: `awk`, `basename`, `bc`, `bzip2`, `chmod`, `chown`, `comm`, `crontab`, `cut`, `df`, `diff`, `du`, `env`, `expect`, `expr`, `file`, `find`, `free`, `gzip`, `hostname`, `id`, `kill`, `killall`, `ln`, `locate`, `paste`, `ping`, `ps`, `rsync`, `scp`, `sdiff`, `sed`, `seq`, `sleep`, `sort`, `ssh`, `tar`, `time`, `top`, `tr`, `ulimit`, `uniq`, `wc`

   Advanced commands: `chgrp`, `groupadd`, `groupmod`, `groupdel`, `ifconfig`, `mount`, `passwd`, `poweroff`, `reboot`, `su`, `uptime`, `umount`, `useradd`, `usermod`, `userdel`

   You may practice these commands in any of the linux machines in many a labs across campus OR by remotely accessing `colossus.it.mtu.edu` or `guardian.it.mtu.edu` via SSH (enter ISO password when prompted).

   ```
   ssh -Y MTU_ISO_USERNAME@colossus.it.mtu.edu
   ```

4. Learn/Familiarize yourself with the `vi`/`vim` editor. OpenVim offers a good interactive tutorial.
5. Learn/Familiarize yourself with a programming language. You can use any language, more than one if necessary, for this course. You choice of languages should be guided by their usefulness to your research endeavors, and their ability to lend themselves for parallelization (e.g., C/C++, FORTRAN, Julia, MATLAB, Python, etc.).

   Note that you are responsible for learning the language – its features, caveats, what it can and cannot do, etc.

6. Learn/Familiarize yourself with the LaTeX document preparation system. The following GitHub repository, https://github.com/MichiganTech/LaTeX_GettingStarted can be a good starting point. Necessary template to submit the assignment, project (status) reports, etc. will be provided by the instructor.

7. Practice/Improve your verbal and written communication skills. Michigan Tech's Multiliteracies Center is an excellent in-house resource. Purdue University's Online Writing Lab is a very good online resource.

8. Practice/Improve the habit of asking for help when necessary, and citing the source of help appropriately in a document.

9. Sign up for a free GitHub account. Preferably, use your Michigan Tech ISO username as the username in GitHub. If you have already signed up and been using GitHub, there is no need to open a new account. Email the instructor your username to receive more reading/practice material.

   (a) Check your email (or the link below), and accept the invitation to join the MichiganTech organization in GitHub

   https://github.com/MichiganTech

   Without this, you will neither have access to the repository that contains the course material nor will you be able to submit assignments/project work.

   (b) Make your profile public

   https://github.com/orgs/MichiganTech/people

   (c) Update your profile

   https://github.com/settings/profile

   Use your full/preferred (yet professional) name for Name, Michigan Technological University for Company, Houghton, MI for Location and a current professional photograph.

   You are representing yourself, me, this course, your advisor, department/program, and the university at GitHub. If you wouldn't use this photograph in LinkedIn profile to apply for a job (in industry/national lab/university), then it is not suitable for your profile in GitHub[1].

   (d) GitHub is providing the university (through my collaboration; worth several thousands of dollars) private repositories for free for educational purposes. The above steps are intended to show them that we are worth the resources they are giving, they should continue to do so, and that we are using them for the right reasons in a professional way.

10. Upon completion of #9, read through the PDFs in `PrepWork/RequiredReading` folder within your GitHub repository. If you add your files to the repository, do so only in the `PrepWork/SandBox` folder. Do not edit and/or remove any other file and/or folder.

[1]Professional profile photograph guidelines: #1 | #2