

## Homework Assignment #1

**Notice that Sign-Up times for individual meetings (3.) are already Thur, Jan. 23 (rest due: Monday, Jan. 27, at the beginning of class)**

1. Read the Course Information. Do you have any questions about the course? Answer to this question should be “done” and/or any questions.

Main purpose of this homework is to get you quickly immersed into your main project. Therefore there is only 4. which gets you started on computer simulations itself. We will get you fully immersed into python programming on Thursday in class.

2. Start looking for the topic of your project. A first version of your bibliography will be due in a week (Jan. 29). In class you will present on Jan. 29 shortly your first ideas and findings. For your search use the Web of Science etc. (as shown in class). You might also want to start with 6. of this assignment, in case you come across a model you find very interesting. Your written answer to this question should include references for the papers/books you found and summarize (keywords fine) the main topic you plan to work on.

3. Sign-up for an individual meeting on our webpage:

<http://www.eg.bucknell.edu/~kvollmay/phys338.s2025/> )

Purpose of these meetings is to ensure each one you help for finding your research topic for the semester long project. Please come prepared to your meeting which means working on 2. of this homework assignment. Please be ready to give me an update on your ideas and for papers etc. you already found, and be ready to show to me all info you found so far e.g. have paper(s) and book(s) you found, so that I can give you most efficient help.

Here instructions for how to sign up (I hope these are still updated enough):

- click on the **Sign-Up** link on our webpage in the section **Assignments**, this will launch your browser and take you to the appointments page,
- review and select the time that works best for you,
- when the dialogue box opens, click on ”save”
- choose ”view/edit in Google calendar,” not ”stay here”
- Google will fill in your name and add the meeting to both of our calendars

4. To get ready for programming familiarize yourself with Linux. Work through the “Linux Exercise” (even if you know linux already). In case you are completely new to Linux and/or computers, please let me know, so that we can schedule an additional meeting with me to get you started on linux. (Answer to this question should be “done”.) I will check that you all have `~share.dir/` and that you have set the permission right. On Tuesday we will start programming, so you will need to have done this Linux Exercise (even if you are an advanced linux user).

5. Read chapter 1 of M. Newman’s *Computational Physics*. You can copy a pdf-file of this chapter with:

```
cp ~kvollmay/share.dir/inclass2025.dir/NewmanCh1.pdf .
```

where the period means that you copy the pdf file into your current working directory.

To look at the pdf-file you use

```
evince NewmanCh1.pdf
```

Write a one or two sentence summary.

6. To give you a quick overview about our textbooks, choose **one** of the following sections (In case you already have seen one of the models, e.g. the Ising model of §15.5, then do not choose it.):

Gould & Tobochnik: (§8.1 & §8.2), §12.1, §13.3, §14.3, §14.4, §15.5, §18.4

Describe with two or three sentences the discussed model. (In sections with more than one model, e.g. §13.3, you may describe only one of the models, e.g. the Eden model.) There is no need to understand how to program the discussed model. Main task here is to give you a flavor of the huge range of possible computer simulation models (and to gain appreciation for your textbooks). You might even find your main project topic as one of the discussed models.

7. **Comments:** Do you have any comments about last class and/or this course in general?