Portfolio Marking: AMA4004

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One of the components of the assessment for this module is a portfolio of work that you must produce over the course of the semester. This portfolio counts for 20 percent of your final module mark. It should contain:

(A) 10 reports describing what you have worked on each week. These reports are due by 16:00 on Tuesday in weeks 2 through 12 of the semester. See the self study section of the markscheme below.

(B) A computer programming exercise on modelling a lattice system. You can find the markscheme for this exercise online.

(C) Multiple essays on the theory parts of statistical mechanics.

Notice that classes for this module are compulsory and that you will be awarded a mark of zero for the portfolio project if you do not attend 70 percent of the sessions for the module. In addition, notice that your portfolio will be awarded a mark of zero if it does not contain 10 weekly reports, a programming exercise on a lattice system (B) and three essays on statistical mechanical theory.

1 Self study

The first component of the assessment is based on how you have studied for the module. Each week you must use this report to answer the following questions:

- To what extent did you achieve the aims that you set for yourself in the previous week? If you did not achieve your aims what went wrong and what are you going to do differently this week?
- What am I aiming to work through this week? If you achieved all your aims last week how have you made your aims more ambitious this week?

The report should be about **half an a4 page** in length. Please do not give a narative account of what you read/watched/solved during the week. Notice, finally, that I may also email you with specific questions to answer in your report in certain weeks.

Classification	Range	Quality
Excellent	3	The student outlines a clear plan detailing what and when they will study each week. There is evidence that the student thinks about how well their plan has worked at the end of each week and evidence that they have thought how to refine their plans in subsequent weeks. They reflect well on their previous work and feedback and learn by evaluating both positive and negatives. Excellent notes are kept and there is evidence that these are used in subsequent work. They contribute fully to the group and offer peers an opportunity for improved performance.
Good	2	The student outlines a clear plan detailing what and when they will study each week but evidence that they have thought about how well this plan is working is absent. The student reflects on previous work and feedback and learns by evaluating both positive and negatives. Notes are kept but there is no evidence that these have been used in subsequent work. They contribute to the group but there is little evidence that they have responded to the feedback given.
Adequate	1	Some evidence that the student plans what items to study each week. There is some evidence to support reflection although there could be more reference to previous work. Group contribution is inconsistent and offers little opportunity for improved performance.
Fail	0	No evidence of regular self study. No evidence of reflection. Less than 75

2 Statistical mechanics applications project

The second project of the assessment is based on some programming exercises that you must perform. This exercise leads you through some key ideas that we use to understand the simulations that we perform on physical systems. You must produce python notebooks that contain the code that you used to solve these problems. In addition, you should provide some short explanation as to what the code that you have written is doing within the notebook using the markup language. You can find descriptions and markschemes for the projects on the mathNET website. This assignment is marked out of five and the expectation is that you should all be getting close to full marks as getting a high mark in this exercise is mostly a question of following the instructions that are given.

Classification	Range	Quality
Good work	5	The student produces everything that is asked for in the description of the assignment.
Adequate	4	A few small details are missing in the assignment or the discussion of the theory is limited.
Poor	1-3	The student is unable to follow instructions or does not ask for things to be clarified if he/she does not understand.
Fail	0	Student produces no programming work during semester

3 Essays on statistical mechanics theory

The third component of the assessment is based on a number of longer form problems. In answering these problems you will need to write continuous prose answers that have a substantial length. These pieces of continuous prose will contain some mathematics but if your answers contain mathematics with no explanation you will be given a very low mark. The principle aim in writing these essays is for you to demonstrate that you have some physical understanding of the equations that you are writing. All essays should be typeset using latex.

Classification	**Range**	**Quality**
Outstanding	11-12	Student writes an essay on an aspect of statistical mechanics that he/she has investigated independently. The essay is properly referenced and factually correct. Please discuss any topic that you would like to investigate with me beforehand. Furthermore, please note that a poorly argued and pooly structured essay on something that is outside the module content will get a very low mark. In other words, high marks are not automatically awareded for investigating something that was not covered in class. For the highest marks there is an expectation that you use what you have learnt from your self study to solve a problem that you have identified yourself. If you simply reproduce standard derivations that can be found in a textbook this will get a mark of around 8-9.
Excellent	9-10	The student writes a properly referenced essay that is based on one of the worksheets on the mathNET website. Within this essay the hard parts of the questions are answered concisely and with precision.
Good work	4-8	The student writes a properly referenced essay that is based on one of the worksheets on the mathNET website. The student either does not attempt the hard parts of the questions or fails to answer these questions with sufficient precision.
Adequate	1-3	The student manages to answer the easy parts of the questions on the worksheet on the mathNET website. The referencing within the essay is poor, however, and suggests that the student has only consulted the mathsNET website.
Fail	0	The student hands in fewer than three essays on statistical mechanic theory during the course of the semester. Essays are handed in that contain basic grammatical errors and/or spelling errors. Essays are handed in that contain mathematical symbols that are undefined.