

In this program you will be asked to complete a variety of different types of work that will be assessed as part of your evaluation. You should budget a minimum of thirty hours a week for program work (including time spent in the classroom). At the end of the quarter you will submit a portfolio that will include work you've done in the activities listed below.

Lecture

Each week will begin with lectures that introduce or develop themes related to order in nature. Workshops, labs and other program activities will also have lecture components to them. You are advised to take careful and complete notes during these lectures. The readings and textbooks do not cover all the material we will cover in lecture.

Seminar

We will have seminars each Monday on assigned readings. You need to bring the text or handout with you to seminar, having completed the reading and prepared for discussion. For each seminar bring a typed paragraph or two in which you present a theme or question that arose from the reading that you would like to share with the class. The paragraph, which is required for participation in seminar, will be collected at the end of class. You are expected to participate in the seminar discussion in several ways: through conversation, active listening, taking notes and facilitation. You will write three two page seminar response papers based on the readings and a prompt, due weeks, 3 6 and 9.

Computer Lab

Tuesday afternoon computer labs will involve modelling of natural phenomena using spreadsheets or an agent-based modelling environment called Netlogo. Computer labs will typically start with a half hour introduction to software or modelling idea, followed by a session in which you work through a lab handout. At the end of each handout there will often be a short assignment that should be uploaded to the program website by the start of the following week's lab. Evaluation and credit will be based on your lab work and on the completion, effort and quality of your lab assignments.

Physics lab

On Tuesday mornings you will have the opportunity for hands-on physics labs, where you will explore factors that govern some of the physical order we see in the world around us. You should come to lab with a lab notebook, in which you will keep a record of each lab. Your lab notebook will be collected and assessed three times during the quarter.

Mathematics in Nature and Conceptual Physics Workshops, Assignments and Tests

- **Workshops:** Each week you will break up into workshop groups to complete problems and worksheets. The work you do in groups during workshop activities will not be collected weekly for marking. However, this work will be assessed for effort and completeness at the end of the quarter. Therefore, *please complete all workshop questions* after class and arrange your worksheets in a separate component of a three ring binder as part of you portfolio.
- **Assignments:** Practice is an extremely important part of learning mathematics and physics. There will be two homework assignments each week, one in mathematics and one in physics. You should expect to spend 3-4 hours per week per assignment. The homework will be assessed for completeness and effort and some questions will be corrected. After homework is returned to you please keep it in a separate section of a three ring binder as part of your portfolio.
- **Tests:** There will be four tests. Two in physics and two in mathematics. There will be both in-class and take home portions to the tests. Missed in-class tests or late take-home tests will results in loss of credit unless prior arrangements have been made to complete the tests at an alternative time.

