

Mathematical Origins of Life

Program Components

Throughout the quarter you will be asked to complete a variety of different types of work that will be assessed as part of your evaluation. So that you know what to expect at the outset, these are listed below. You should budget about thirty hours a week for program work (including time spent in the classroom).

Discrete Mathematical Biology

This portion of the program will be in a lecture/workshop format. We will be working mostly from the text book, *Mathematical Models in Biology*, by Allman and Rhodes, but I will supplement the material on occasion from other sources. I will use the following tools to assess your learning:

- **Workshops:** From time to time 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 each 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 your portfolio.
- **Homework:** Practice is an extremely important part of learning mathematics. There will be homework assignments each week. You should expect to spend roughly five 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 two tests: a mid term and a final. There will be both in-class and take home portions to the tests. Missed in-class tests or late take-home tests will result in loss of credit unless prior arrangements have been made with me to complete the tests at an alternative time.

Modeling Emergent Phenomena with NetLogo

We will meet once a week for a three hour computer lab on Modeling Emergent Phenomena with the programming language NetLogo. The lab will start with a half hour lecture to introduce the biological phenomena that we will model. This will be followed by a lab in which you work through a lab handout that involves some new aspect of NetLogo and its implementation in creating a new model. At the end of each worksheet there will be short homework assignment that will be due at the start of the following week's lab. There will be no tests in this component of the program. Evaluation and credit will be based on your lab work and on your homework assignments.

Seminar: Origins of Life

We will have seminars each Monday on readings from the seminar text. Each student is expected to come to class having completed the reading and being prepared to discuss it. For each seminar bring a typed paragraph which discusses a theme or question that arose from the reading which you would like to discuss with the class. We will use your writing as a basis for discussion and I will collect it at the end of the class. Evaluation and credit will be awarded based on attendance and participation in the seminar.

Individual Project

Each student is expected to do some independent project work. This is an opportunity for you to explore some related subject matter that interests you. You should budget a minimum of five hours per week for this activity. At the end of the quarter you will submit a ten page paper and give a thirty minute presentation to the class. I will hand out a more detailed explanation of the project expectations, some project ideas and time line for various deadlines in a separate sheet.