

# Math 122 Syllabus; Spring 2005

This course is called Calculus for the Life Sciences and it means it. The design of the course is predicated on your needing calculus as a professional working in the life sciences. The required output skill differ considerably from the more standard engineering type calculus courses.

## **What this course is supposed to teach you –**

1. Speak/read/write in the language of mathematics.
  - class discussions
  - textbook readings & laboratory instructions
  - lab reports

“Mathematics is a language” – J.W. Gibbs (1<sup>st</sup> US scientist of world renown; 1839-1903)

2. Use computers (EXCEL/MAPLE/GRAPHING CALCULATOR) to carry out mathematical procedures.
  - solve equations
  - graph functions
  - optimize functions
  - fit a function to data
  - fit a model to data

3. Enough mathematical modeling to understand and work with models in a biological context. Mathematical modeling is translating between phenomena and mathematics; remember, mathematics is a language.

## **Some strategic suggestions**

All the exams are in the labs. Learn to use the software as flexible tools to do your bidding. It is strongly recommended that you have the software at hand for homework problems as well as labs so you get used to calling on it to check/guide/simplify your work.

Write and rewrite the lab reports. Pay careful attention to LANGUAGE and how mathematical terms are blended with English. Read the textbook prior to lectures and reread after lectures.

## Grading Policy

$$\text{Grade} = \text{Testgrade} + \text{Labgrade} + \text{Homeworkgrade}$$

Testgrade = 50%

Labgrade = 30%

Homeworkgrade = 20%

Homework is done using WEBWORKS. The homework grade counts for 20% of the class grade.

Lab reports are due before the beginning of the next lab period. Lab reports are to be turned in by depositing a hard copy in the “mailbox” in GMCS 422. Lab reports are to be word processed with all answers written in good English using complete sentences and appropriate mathematical jargon. One lab grade (the lowest) will be dropped. Lab reports count for 30% of the grade.

Each test is in two parts: a lab part and a classroom part. In the classroom portion, calculators are only sometimes allowed. In the lab portion, techniques using EXCEL, MAPLE, and GRAPHING CALCULATOR will be tested. TI-92's or TI-89's provide much the same functionality as MAPLE. There will be 2 midterms and a final which is comprehensive and counts double.

The topics we cover will proceed in order through the units on Professor Mahaffy's website (<http://www-rohan.sdsu.edu/%7Ejmahaffy/courses/f04/math122/index.html>) with the omission of the Newton's Method chapter. Additional handouts will be available from my website (<http://www.rohan.sdsu.edu/~psalamon/Math122.html>). We will run out of semester approximately at the definite integral unit.

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