

## Spring 2008

## College of San Mateo

Course Syllabus Math 145 Liberal Arts Mathematics

Instructor: Cheryl Gregory

Office phone: 574-6307

Office: 17-170

e-mail: [gregory@smccd.edu](mailto:gregory@smccd.edu) Office hours: 10:10-11:00 M – T; 11:10 – 1:00 F, afternoons by appointment.

**MATH 145 Liberal Arts Mathematics** - Examination of important concepts of mathematics and mathematics as a tool for decision making. Topics and applications may include aspects of history of mathematics, problem solving, counting methods, elementary number theory, sets, Euclidean and non-Euclidean geometry, Platonic Solids, topology, probability, problem solving and logic.

Prerequisite: Satisfactory completion of Math 120 or 123 OR appropriate score on the College Placement Test and other measures as appropriate.

Recommended Preparation: Completion of READ 400 or 405

**Student Learning Outcomes:** The student will be able to:

1. begin to understand some rich mathematical ideas.
2. demonstrate some new skills for analyzing life issues that transcend mathematics.
3. appreciate mathematical perspectives as a way to view the world.

**Course Description:** We will consider some of the greatest ideas of humankind. The great ideas we will explore are within the realm of mathematics - an artistic endeavor which requires both imagination and creativity. In this course, we will experience what mathematics is all about by investigating some beautiful and intriguing issues. Thus, the informal prerequisites for this course are an open and curious mind and the willingness to put aside any preconceived prejudices or dislikes for mathematics.

We will cover roughly six different topics. Although you will be challenged, the overriding theme of the course is to gain an appreciation for mathematics and to discover the power of mathematical thinking in your everyday life. We will follow the text reasonably closely although we will not cover all the material in class.

There will be **3 scheduled tests, 3 out-of-class essays, cumulative final project/presentation, and quizzes/graded in-class activities and HBA activities.**

- You will learn how to make a KeepToolKit e-Portfolio page on which you will present final drafts of your three essays, your final project, and reflections on how your work in this class show progress toward CSM Institutional Student Learning Outcomes. Your KeepToolKit page will be turned in as part of your final project.
- Make-up tests are not usually given. If a student is going to miss a scheduled test because of illness or legal obligation (court appearance, jury duty), the instructor must be notified **prior** to the student missing the test. The student may call, leave a voice mail, or email.
- Quizzes or other graded in-class activities cannot be made up.
- Hour By Arrangement activities include group collaboration and study sessions in the Math Resource Center and writing center support on essay development.

Students are expected to work on homework and reading assignments as assigned. Daily consistent effort is essential. Students should check the homework hints and solutions given in the text. *Clarity of exposition is important*, and **well written, polished solutions** are the goal. For the most part, collaboration on homework with other members of this class is allowed, although solutions must be individually written up and collaborators **should be acknowledged**. Discuss the problems with your study group, utilize the math lab (18-202) to work with a tutor, or visit the instructor during office hours. Homework is due the day announced in class. Late homework is not accepted.

**HBA Assignment** – You are expected to meet with a study group to work on each assignment and review for each test. The ideal location for such groups to meet is the MRC. Form a study group, schedule at least an hour a week to meet and work in the MRC. Remember to sign in on the lab computer each time you meet. Your log of HBA discussions is due on each test date. The following faculty will be best able to assist you: Brown, Gregory, Feinman. Caryn Goldman can also assist you.

**Research Project/Poster-PowerPoint Session:** The only way to really understand mathematics is to learn and discover it on one's own. Thus, students will select a mathematical topic not covered in our class, read and teach themselves any necessary background to understand it, and then investigate the topic. (There will be sufficient text book material for students to choose text topics not formally covered in class for this project) Students are **strongly** encouraged to work together in groups of two or three. By working together, the individuals can learn from each other and share the experience. Each group will write a final paper on their findings and present a poster/power-point talk during a class project session at the end of the semester. Also, each student will write a short individual statement about the experience. Various interim reports will be collected throughout the term.

## Grading Policy:

Test 1	10%
Essay 1	10
Test 2	10
Essay 2	10
Test 3	10
Essay 3	10
Final Research Project and KeepToolKit	20
HBA and class exercises	10
Homework	10
TOTAL	100

Required materials:

**Text:** *The Heart of Mathematics: An invitation to effective thinking*,  
2nd edition, by Edward B. Burger and Michael Starbird

**Pacing of the course and homework assignments:** Each set of homework assignments consists of reading from the text and doing about 10 Mindscapes. Homework will be graded for effort (making a serious attempt at each problem), correctness (progress toward a solution), and organization and presentation. Late assignments are not accepted.

The assignments are listed here:

**Special assignment due second day**—Read Section 1.1 and start Stories 1, 3, 4, 5, 7, and 8 (You may read Section 1.2 (hints), but do not read Section 1.3 (solutions)).

**A 1**—Finish Section 1.1 Stories 1, 3, 4, 5, 7, 8, and also do Stories 2 and 6. Read Section 1.4 and do Mindscapes 6, 7, 9, 14.

**A 2**—Read Section 2.1 and do Mindscapes I.4; II.8, 15.

**A 3**—Read Section 2.2 and do Mindscapes I.2; II.6, 7, 15; III.29, 30.

**A 4**—In Section 2.2, do Mindscapes II.22, 24; IV.36, 37. Read Section 2.3, do Mindscapes I.2; II.7, 12, 14, 15, 24; III.32.

**A 5**—In Section 2.3, do Mindscape III.35. Read Section 2.6 and do Mindscapes I.3; II.6, 10; III.30; IV.40. Read Section 2.7 and do Mindscapes I.2; II.7, 10, 20, 23, 25.

**A 6**—Read Sections 3.1, 3.2, 3.3 and do Section 3.1 Mindscapes I.4; III.16; Section 3.2 Mindscapes I.3; II.14, 16; III.30, 32; IV.36; Section 3.3 Mindscapes I.4; II.11, 13, 14; III.19.

**A 7**—In Section 3.3, do Mindscapes II.9; III.16, 17. Read Section 3.4 and do Mindscapes I.4; II.6, 13. Read Section 3.5 and do Mindscapes I.2; II.6, 9, 10; III.20.

**A 8**—Read Section 4.1 and do Mindscapes I.2; II.8, 12, 15. Read Section 4.3 and do Mindscapes I.3; II.9, 12; III.16, 17, 20. Read Section 4.5 and do Mindscapes I.2; III.16, 17.

**A 9**—Read Section 4.7 and do Mindscapes I.1; II.7, 12, 14; III.16, 18. Read Section 5.1 and do Mindscapes I.4; II.6, 9, 10, 11, 12.

**A 10**—Read Section 5.2 and do Mindscapes I.3; II.6, 8, 9, 25; III.33. Read Section 5.3 and do Mindscapes I.2; II.7, 9, 13; III.26; IV.40.

**A 11**—Read Sections 6.1 and 6.2 and do Section 6.2 Mindscapes I.2; II.8, 12, 13; III.27, 28. Read Section 6.3 and do Mindscapes I.3; II.6, 13, 14, 20, 21.

**A 12**—In Section 6.3 do Mindscapes II.23, 24, 25; III.26, 27; IV.40. Read Sections 7.1 and 7.2 and do Section 7.2 Mindscapes I.2; II.7, 8, 9, 12.

**A 13**—In Section 7.2 do Mindscapes II.18, 19, 20; III.28, 30; IV.40. Read Section 7.3 and do Mindscapes I.2; II.23; III.26, 30, 32.

**A 14**—Read Section 7.5 and do Mindscapes I.2, 4; II.9; III.17. Read Section 8.1 and do Mindscapes I.2; II.8, 10, 16. Read Section 8.2 and do Mindscapes I.3; II.9, 11, 13.

Homework Solutions and other Course Materials are posted on <http://www.smccd.edu/accounts/gregory>