MORAVIAN COLLEGE

MA 192.2 B   **History of Infinity**   **Spring 2006**

Course meets: Thursday, 2:20 to 4:00 p.m., Comenius 213
Instructor: Dr. Ann Stehney
Office: Colonial Hall 208   **Telephone:** 610-861-1555   **E-mail:** stehney@moravian.edu
Office hours: Monday 2:30 to 3:30, Tuesday 1:00 to 2:00, Wednesday, 2:30 to 3:30, and by appointment.

Course description: This ½-unit course will take us from the infinitesimal to the infinite, from zero to infinity. The ancient Babylonians invented zero, the Greeks banned it, the Hindus worshiped it, and the Church eventually embraced it to fend off heretics. Infinity is zero's twin. Infinity fascinates; it makes even the unbounded universe seem small; it defies common sense. Like zero, infinity thrives on paradox. We will trace the history of these troubling and intriguing concepts through the eyes of the mathematician and glimpse their appearance in art and literature.

Required texts (both paperback):
1. Charles Seife, *Zero: The Biography of a Dangerous Idea*. Penguin, 2000.
2. Brian Clegg, *Infinity: The Quest to Think the Unthinkable*. Carroll & Graf, 2003.

Course goals: After successfully completing this course, you will
- Understand the relationship between the mirror image concepts of zero and infinity;
- Understand the historical development of these concepts and the many controversies surrounding each of them;
- Recognize the role of zero and infinity in a variety of situations;
- Identify, describe, and resolve classical paradoxes about infinity;
- Be familiar with examples of "the infinite" in the broader culture;
- Distinguish between meaningful and meaningless mathematical statements, as well as between true and false statements, whether presented in words or symbols; and
- Articulate your understanding of these concepts clearly, both orally and in writing.

Attendance, homework, and preparing for class: Mathematics can only be understood by consistent study and problem-solving. For this reason, you are expected to attend all classes and complete the reading and written work that is assigned for each session. You are also encouraged to participate in class discussions and to ask questions about things you do not understand. There is no penalty for not attending or participating, other than the effect on your homework and quiz grades.

The written work will involve various types of activities, including problem-solving and prose writing. Assignments to be graded will be noted in advance and lateness will be penalized. Assignments for practice will be reviewed during the next class as needed; these will not be graded. You are encouraged to study and work together with classmates on these *ungraded* assignments.

Quizzes and exams: There will be weekly quizzes, a mid-term exam on **Thursday, March 2**, and a final exam at the time and place set by the Registrar. No make-up quiz will be available for any reason; however, your two lowest quiz grades will be dropped in calculating your course grade. Make-up exams will be given only in a case of documented illness or emergency.

Grading: Your course grade will be computed as follows:

Graded homework	20%
Quizzes (best 10 of 12)	30%
Hour exam, March 2	20%
Final exam	30%

Classroom etiquette: You are expected to come to class prepared. This means that you have carefully read any assigned material and have worked (seriously) on the assigned problems, and that you are ready to ask and answer questions in class and to work with your classmates on any in-class group activities. The classroom needs to be a place where everyone feels comfortable asking and answering questions, so we will all treat everyone in class with respect. You will turn off your cell phone and other electronic devices and keep them put away during class. Finally, you are expected to be on time for class, stay until class is over, and not leave the room unless there is an emergency. (It is disruptive to everyone when someone walks in or out of the classroom.)

E-mail: You may receive course notices and assignments from time to time by college e-mail. You must check your <u>campus</u> account regularly and be able to read attachments formatted in Microsoft Word.

Extra help: Students are strongly encouraged to ask questions in class and to see Dr. Stehney for help outside of class as much as necessary. Regular office hours are set aside for your benefit. You can make an appointment at other times -- ask me before or after class, send me an e-mail, or call me at the number above. You can also ask quick questions by e-mail or phone.

Special accommodations: If you need accommodation for a disability of any kind, you must work with the staff of the Learning Services Office (for cognitive disabilities) or the Counseling Office (for other kinds of disabilities) to document the disability and to identify suitable accommodation(s). <u>Only professionals in those offices can determine what is appropriate in individual circumstances.</u> Once they provide me with written notice, I will be glad to discuss how to accommodate your situation as discreetly as possible.

Academic honesty policy guidelines for mathematics courses: The Department of Mathematics and Computer Science supports and is governed by the ***Academic Honesty Policy of Moravian College*** as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of members of the Mathematics faculty:

- In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thoughts of others, however, you <u>must</u> acknowledge the source.

- For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the ***Academic Honesty Policy of Moravian College.***

- For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded.

- All in-class or take-home tests and quizzes are to be completed by you alone without the aid of books, study sheets, or formula sheets, unless specifically allowed for a particular test.

ANY CHANGES IN THIS SYLLABUS WILL BE DISTRIBUTED IN CLASS AND BY E-MAIL.