

## Math101.2 A History of Infinity

**T 1:10 – 2:20 p.m. PPHAC 112**

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**Office hours:** MW 10:30 am - 11:30 pm, W 2:30-3:30, and by appointment

**Required text:** Infinity: The Quest to Think the Unthinkable by Brian Clegg

**Suggested Readings:** (All are on reserve in Reeves Library)

Infinity and the Mind: The Science and Philosophy of the Infinite by Rudy Rucker

Zero: The Biography of a Dangerous Idea by Charles Seife

In Search of Infinity by N. Ya. Vilenkin

### **Course Content**

Human beings have always struggled with the concept of infinity. Philosophers and mathematicians have gone mad contemplating its nature and complexity – and yet it is a concept now routinely used by school children. We will trace the history of this mind-boggling concept from Archimedes to Cantor through the eyes of the mathematician.

### **Course Goals**

Through investigating the development of the mathematical concept of infinity students should develop an appreciation for the beauty and utility of mathematics and its historical development. Consequently, students should gain some insight into what mathematics is really all about and what it is that mathematicians do.

### **Assignments**

Mathematics can only be understood by consistent study and problem solving. For this reason, daily reading and problem assignments will be given and you are expected to have these assignments completed for the next class. You will be called on to give solutions in class, and also are expected to participate in class discussions and ask questions about what you did not understand. These assignments can usually be found on the p-drive in math/Schultheis/Math 101.2/Assignments

### **Quizzes and Exams**

There will be a short quiz or writing assignment each Tuesday. The quizzes will include questions on the reading assignments as well as problems similar to the exercises assigned for homework. There will be two class-hour exams and a final exam.

### **Grading**

Your course grade will be based on quizzes and writing assignments (100 points total), two hourly exams (100 points each), a final exam (150 points), and class participation (50 points). The following grading scale is used for assigning your final grade.

		86 – 89	<i>B+</i>	76 – 79	<i>C+</i>	66 – 69	<i>D+</i>	≤ 59	<i>F</i>
93 – 100	<i>A</i>	83 – 85	<i>B</i>	73 – 75	<i>C</i>	63 – 65	<i>D</i>		
90 – 92	<i>A–</i>	80 – 82	<i>B–</i>	70 – 72	<i>C–</i>	60 – 62	<i>D–</i>		

### Attendance

Class attendance is required. You will lose 20% from your class participation grade for each unexcused absence. If you are sleeping in class, you are not there. If you feel the need to leave class before it is over, even if you come back, you are not there. In other words, in any of these cases you will be considered absent and will lose 20% of your class participation grade. You are responsible for all work covered in class and all assignments, even if absent from class. If you must miss more than one class due to illness or emergency, you should notify the instructor. **There will be no make-up for missed quizzes. Make-up tests are given only in extreme cases. If a student has to miss a test it is the student's responsibility to contact the instructor as early as possible.**

The following Academic Honesty Policy Guidelines are to be followed. Please read them carefully.

### ACADEMIC HONESTY POLICY GUIDELINES MATHEMATICS COURSES

The Mathematics and Computer Science Department 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 must 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 by you instructor for a particular test.

#### Some interesting webpages:

<http://www-history.mcs.st-and.ac.uk/history/HistTopics/Infinity.html>

<http://www.ccs3.lanl.gov/mega-math/workbk/infinity/infinity.html>

<http://www.ccs3.lanl.gov/mega-math/workbk/infinity/inhotel.html>

<http://www.newadvent.org/cathen/08004a.htm>

<http://www.mathacademy.com/pr/minitext/infinity/>

<http://pespmc1.vub.ac.be/INFINITY.html>

<http://scidiv.bcc.ctc.edu/Math/infinity.html>