Description
Infinity is one of those words that everyone knows and uses, but what does it really mean? Was Buzz just talking nonsense when he said “To infinity and beyond!” or is it actually possible?

Puzzles and challenges surrounding infinity have intrigued the greatest thinkers at least as far back as the ancient Greeks, leading to significant contributions to philosophy, theology, and mathematics.

Both its ability to work at an intuitive level to evoke powerful (metaphorical) imagery and its inherent references beyond what we can reach lend it a sense of mystery.

This course will trace the historical development of infinity. Understanding that mathematics was not always a separated discipline, but that it emerged from people’s efforts to understand the world around them, and that their other ways of understanding also shaped their mathematics, will be an integral part of the course. We will also spend time exploring the 20th century revolutions in understanding the nature of the infinite in logic and mathematics as a result of the work of Georg Cantor, and how that impacted the world.

Texts

  - Amazon.com: $32.72 (new) $6.71 (used)
  - Google shopping best price: $3.78
  - Otterbein Bookstore: $n/a (new) $24.75 (used)

*A Brief History of Infinity: The Quest to Think the Unthinkable*, Brian Clegg, Constable Press, 2003. (Required)
  - Amazon.com: $16.99 (new) $0.01 (used)
  - Google shopping best price: $6.99
  - Otterbein Bookstore: $12.00 (used)

*The Everyday Writer with 2009 MLA Update*, Andrea A. Lunsford, Bedford/St. Martin’s, 2009. (Recommended)

Other readings will also be assigned via Piazza.

Read the text materials carefully before class so you are prepared to ask questions and to actively participate in discussions. Of course, you should read the material again very carefully later and relate your reading to the reflections/discussion from class.
Welcome to The First Year Experience program. This program is designed to guide your transition into Otterbein’s classrooms and communities. There are two parts to this program. The first is the curricular piece, which is this course where we will explore the goals of the FYE and also the I.S. program through a particular topic. The topic varies by professor and discipline. But all the courses share the same FYE goals and a subset of I.S. goals. The second piece is the co-curriculum where we will explore the network of resources available to you on the Otterbein campus all designed to help support your Otterbein Journey. Ultimately, the program encourages you to explore yourself and world, your beliefs and values, and your educational and professional goals. It also asks you to think about what it means to be responsible to yourself, to Otterbein, and to local and global communities.

FYE Objectives

1. To connect you to the resources that promote belonging, wellness, and success in the first year.
2. To inspire intellectual curiosity and to introduce you to the richness and rigor of an Otterbein education.
3. To develop skills essential to academic success and lifelong learning.
4. To promote engaged living and learning and to explore commitments to campus, local, and global communities.

(Ihttp://www.otterbein.edu/public/Academics/SchoolsUniversityPrograms/UniversityPrograms/First_Year_Experience/mission_goals.aspx)

I.S. Objectives

1. To inspire intellectual curiosity about the world as it is and a deeper understanding of the global condition.
2. To assist students in cultivating intercultural knowledge and competencies.
3. To promote active and critical reflection on the human self in its full range of contexts.
4. To challenge students to critically examine their ethical responsibilities and choices in both local and global contexts.
5. To encourage purposeful public engagement and social responsibility.

(http://www.otterbein.edu/Files/pdf/is/IS_Mission_statement_and_goals.pdf)

Course Objectives

- You will encounter a variety of beliefs and understandings of the nature of infinity. [FYE-2, IS-1, IS-2]
- You will explore and analyze the bidirectional influences between mathematics and philosophy, theology, & culture. [IS-2, IS-3]
- You will confront the aesthetic qualities common in mathematical thinking and it's relation to the world. [FYE-2]
- You will reflect on the nature of mathematical inquiry. [FYE-3]
- You will examine and identify the philosophical and theological dispositions that have helped and hindered mathematical advancement at different points in history. [IS-1, FYE-2]
- You will confront and wrestle with the unintuitive and paradoxical inherent in infinite systems. [IS-3]
- You will articulate the finite limitations of humanity and being human. You will also reflect on your experience of the infinite and notions of unboundedness and eternity as they apply to human endeavors. [IS-3]

Co-Curricular Programs

The co-curricular model of the FYE program is designed to support the FYS curriculum and to support incoming students through their transition to Otterbein. The programs and events are designed to encourage student engagement in campus life and to help connect students to campus resources and services. A complete list of the programs available this semester can be found at http://www.otterbein.edu/public/Academics/SchoolsUniversityPrograms/UniversityPrograms/First_Year_Experience.aspx.

In order to satisfy the FYE component of the course, each student will be required to attend five (5) events that are approved as FYE co-curricular programs, including:
Common book convocation (October 18)

At least three events that require registration on the FYE web-site

One additional event

For each program in which you participate you are to write a one-to-two page, typed, response paper. Your response paper should reflect on either how the event/workshop connected to one or more of the FYE/IS Objectives or on how it connected to a theme we are discussing in class. Some events will have more obvious connections than others, so you will wish to choose carefully. Feel free to ask me for suggestions of events.

*Please note, it is your responsibility to attend five programs and to turn in your response papers. While hopefully you will enjoy going to these events, beware: IF YOU DON’T COMPLETE THIS CORE REQUIREMENT, YOU CAN’T PASS THE COURSE.*

Selecting Events

- You may choose any workshop/speaker or event that appears in the official FYE list referred to above.
- You may also substitute other events (on or off campus) as long as I have approved them in advance.
- You may also attend a worship service of a religious background (faith/denomination) that is significantly different than what you were raised with and count it as an event.
- You may not count something which is scheduled into one of your regular classes or which you are required to attend for another class.

Turning in Response Papers

You are required to turn in your responses in a timely manner. These papers are due at the next class meeting after the event you attended (for example, if you go to a performance on a Monday night, your paper would be due in class on Wednesday). If you attend an event the night before a class meeting, however, you may turn in your paper an extra class later (for example, you go to a lecture on Tuesday night, you may turn in the paper the next day if you choose or wait until Friday). Response papers turned in later than what is described above will not be accepted. No papers will be accepted after the last day of class, so be sure to plan ahead for an event occurring during week fifteen.

Including your papers in your reflective journal would be entirely appropriate in most cases (see below). However, this does not mean you should not also submit them separately to satisfy the above requirement.

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**Common Book Convocation**

All FYS 1023 students are required to attend the Common Book Convocation on **Tuesday, October 25, at 3pm in Cowan Hall**. Kristen Iversen, author of this year’s common book *Full Body Burden: Growing Up in the Nuclear Shadow of Rocky Flats*, will be speaking to the entire Otterbein community. A response paper (see above) is required for this event.

In addition the Theater 1000 class will be performing interpretations of themes from this year’s common book on **Wednesday, October 26, at 11am in the campus center pit theater**. This is an optional event, but is strongly encouraged. It does count as a separate event from the convocation so attending both gives you 2 out of the 5 required.

*Due to these two events, FYS 1023 will not meet on Wednesday, October 26.*

**Peer Mentor**

Each FYS course has a *peer mentor*, a student leader who will assist the instructor in meeting the goals of the course and the FYE program. The peer mentor for FYS 1023 this fall is Taylor Hyatt, a senior Biochemistry and Molecular Biology major. Rachel will be helping to facilitate a variety of aspects of the course, from discussions on readings on infinity, to developing ePortfolio submissions, to
coordinating co-curricular experiences, etc. The peer mentor will not be attending every class meeting, but will be in the classroom 1-2 times per week. Feel free to contact her with questions.

**ePortfolio**

We will be using Digication.com’s ([https://otterbein.digication.com](https://otterbein.digication.com)) ePortfolio system in this course. You will be asked to submit certain assignments to your ePortfolio, beginning with your common book writing assignment. Your portfolio will be a resource that you continue to develop and add materials to during your entire Otterbein education. An ePortfolio is a great way for you to showcase your work in a variety of contexts, and can eventually provide components of your resume. More information about Digication will be provided separately.

**Work Load**

"Students are expected to spend three hours per week (including class hours) in study for each semester hour of credit attempted." (Otterbein University Bulletin) Since FYS 1023 is 4 Semester Hours, 168 hours of study/time is expected: 56 hours in class (4 hours per week), and 112 hours beyond class hours (8 hours per week), for reading, reflection, study, discussion, and writing, as well as engagement in FYE activities.

**Participation**

We learn in a social context. Therefore, we need each other. This need is the reason we have classroom meetings. **Attendance is required.** If you miss class you are expected to find out what happened in class from me, or from a classmate. You are also required to present a written note to me explaining your absence. You should make a positive contribution to this class by offering your opinion, sharing your learning and research, and by listening to what others have to say. I expect you to come and see me several times if I can help you in any way. Don’t rely solely on e-mail; talk to me in person; we’re part of a small college campus community of learners.

Each time you are absent without *advance* permission, you will lose 1% of your grade up to a maximum of 3% (taken from the participation category). Each student is expected to participate in the class discussions throughout the semester. To this end, all assigned readings for each day should be completed before the class period in which they are discussed.

*A reading/writing course is *not* a solo flight!  
*Mathematics is *not* a spectator sport!  
*Active involvement and discussion are vital in learning.*

**Academic Misconduct Policy**

All members of the Otterbein College community of learners are expected to follow the rules and customs of proper academic conduct. Proper conduct includes avoiding academic misconduct as defined in the Student Life Handbook. Students are encouraged to study together and to work together on assignments and projects, consult other books and sources, and ask for hints, suggestions, and help. Participants in these discussions usually enjoy the benefit of deeper and greater learning. However, all work submitted for evaluation that is based on discussions with others must be your own work; created with your own hands and fingers while thinking it through. You also must give due credit to all relevant sources of help and information. Documentation is critical.

Any work submitted for evaluation that includes work done by another, copying of another's work, or the result of following another's step-by-step keystrokes and mouse clicks, is a case of academic misconduct. When academic misconduct is found in any assignment or examination you submit, you will receive a zero grade for that assignment or exam. The misconduct will also be reported to the Office of the Academic Dean. If a previous academic misconduct offense is on your record, you will receive a grade of F for this course and a referral to the judicial system.

**Disability Statement**

Otterbein University is committed to ensuring that students with disabilities have access to an education. In order to receive appropriate accommodations in my class, you must first be registered with the Office for Disability Services (823-1618 or Lmonaghan@otterbein.edu). Please meet with me as soon as possible to discuss your needs and accommodation requests. If necessary, we can work cooperatively with the Disability Services Coordinator to determine optimal accommodations in this course.
Course Schedule

Weeks 1-2: Introduction to the Course; Bloom’s Taxonomy; I.S. Goals

Weeks 2-8: Negative Infinity (B.C. – Before Cantor)
   - Potential vs. Actual
   - Time & Space
   - Divinity
   - Form & Number
   - Mathematization
   - Catastrophes

Week 9: $\aleph_0$ (George Cantor)
   - Transfinite numbers: Ordinals & Cardinals
   - Set theory
   - Mysticism

Weeks 10-14: Positive Infinity (A.D. – Absolute est Deus)
   - VLN (Very Large Numbers)
   - Name Worshippers
   - New Paradoxes

Week 15: And Beyond…

Final Exam
Assignments

Participation (15%) (1) Approximately once every two weeks a new discussion thread will be started (by me) on piazza.com. You are required to participate in at least half of these discussions in a substantive way. This means making at least two posts that contribute new thoughts or ideas or that respond constructively to what others have said. These can draw from or be related to entries in your journal (see below). Each discussion thread will be open for three weeks, after which no additional contributions will be accepted.

(2) Once or twice a week our class time will be devoted (at least in part) to discussion of the readings, or follow-ups to piazza discussion threads. You are expected to have read the assignments and be prepared to contribute thoughtfully to these discussions.

FYE (5%) Each of the five FYE event papers (see above) will contribute 1% to your total grade.

Journal (25%) You are to keep a reflective journal throughout the quarter. This journal will be turned in three times: once after the third week, once after the eighth week, and a final version at the final exam. The goal is for this to be an exercise in doing philosophy, doing theology, and developing along all the dimensions of Bloom’s taxonomy (see week 1). Your journal should be maintained as a Microsoft Word document (single spaced), with page numbers and cleanly formatted entries that include dates and titles. More detailed information about the journal requirements will be provided separately.

Homework (15%) A variety of small assignments will be made that give you the opportunity to work with the ideas introduced in class and the readings.

Essays (10%) There will be several short essays assigned on specific topics or readings. The requirements for these papers will be provided when they are assigned.

Exams (30%) There will be one midterm exam (week 8) and a final exam (week 16). They will cover lecture material, readings, and questions regarding homework. Make-ups will be scheduled only for documented emergencies. If you can document that you have three or more exams scheduled for the same day I will attempt to arrange for an alternate time only if given at least a week's notice.