

Introduction to Analysis I
MATH 401-002
Spring 2013

Instructor: Dr. Vignon Oussa

Office: CON 441

Office Hours: MW: 12:00-1:00, F: 1:00-2:30

Phone: 5085311829

Location & Time: CON 465, MWF 9:05 am – 9:55 am

Instructor website: <http://vignonoussa.wordpress.com/real-analysis>

Course Description: This class serves as an introduction to Real Analysis. The main focus of the course is to expose students to the rich rewards inherent in taking a mathematically rigorous approach to the study of basic concepts studied in Calculus. Topics include: Logic and proof techniques, basic theorems on the topology of real numbers, compactness, limits, sequences, continuity and differentiability.

In this course, we will study the concepts that you learned in Calculus at a deeper level. In your calculus sequence, you have most likely learned a variety of techniques and had experience computing limits, derivatives, and integrals. In this course, we will discuss how to prove that the techniques that you have learned in your calculus sequence actually work; and why they work. We will examine definitions with a degree of precision that you have probably not experienced before. A major component of this course will be exposing you to proofs. The beginning of the course will be very similar to some of the topics covered in Math 180. Once we review the basic notions of proofs, we will adapt those techniques to the concepts of Real Analysis. There will be a great emphasis placed on how to write correct, clear and concise proofs.

Prerequisite: MATH 252 or MATH 261; and MATH 202

Required Text: Analysis with an Introduction to Proof, Lay, 4TH Edition

Supplement Textbooks (not required): Whenever I teach a course, I never rely on just one book. Just for your information, I will be taking materials from the following book as well.

1. Free Analysis Textbook [here](#) by William F. Trench
2. Kenneth Ross, Elementary Analysis: The Theory of Calculus
3. Stephen Abbott, Understanding Analysis

Topics:

1. Chapter 1: Logic and Proof
2. Chapter 2: Sets and Functions
3. Chapter 3: The Real Numbers
4. Chapter 4: Sequences
5. Chapter 5: Limits and Continuity
6. Chapter 6: Differentiation

Course Help: I encourage you to come by my office if you have any questions, need help with homework problems, or would just like to talk about the material. If for some reason you are unable to make it to Office Hours, you are welcome to email me to set up an appointment for another time.

The University offers many opportunities for help in mathematics. Here are some suggestions:

- 1) The Academic Achievement Center offers free, walk-in, mathematics tutoring through the Mathematics Services desk.
- 2) Here is a link that you may need: <http://mathservices.net>

Attendance: Experience tells us that students who skip class usually have a difficult time learning the material on their own. Attendance will be taken every day, and each time a student shows up he will receive 1 point towards his/her attendance grade.

Homework & quiz: Homework will be assigned on a daily basis. The list of homework will be posted on the course [webpage](#). You are required to have one separate notebook in which you must keep all your homework. We will have one quiz every other week based on the homework assigned. Since the quizzes will be coming from the homework assigned, in order to do well in the course, you must do your homework. Doing the homework is essential. Remember

'You learn mathematics by doing mathematics'

Exams: There will 3 closed book exams given throughout the semester. **There will be no makeup exams** unless the student misses a class because of unwanted reasons such as a documented illness or the death of a family member. In such a case, the final exam grade will be used to replace the missing test.

Projects: We will have one group project. The project will involve a class presentation, and a written paper which should be typed up using either latex or any text editor of your preference. Instructions will be given about the project during the semester.

Final Exam: A comprehensive final exam will be given. The date of the final exam is **Wed, May 8th. 8:00 AM - 10:00 AM**

Calculation of Final Grades: Your final grade will be calculated as shown below:

Items	Weights
3 exams	35%
Attendance	5%
Homework/quiz	20%
1 Project	5%
Final exam	35%

Letter Grades: The following table will be used to determine your final letter grade. *The cutoffs may be adjusted either up or down.*

Range	Grade
94%-100%	A
90%-93%	A-
87%-89%	B+
83%-86%	B
80%-82%	B-
77%-79%	C+
73%-76%	C
70%-72%	C-
60%-69%	D
0%-59%	F

Academic Honesty: The academic integrity policy of Bridgewater State University will be strictly enforced. This policy can be found in the BSU Student Handbook. Specially, the policy requires that students do not cheat, fabricate, plagiarize, or facilitate academic dishonesty. Students who passively engage in cheating (i.e. allowing others to cheat) may receive the same consequences as the person copying.

Special Accommodations: If you have a health condition or learning disability which may require accommodations in order to successfully complete this course, please

contact Disability Services – Office of Diversity and Affirmative Action:

Disability resources: In compliance with Bridgewater State University policy and equal access legislation, I am available to discuss appropriate accommodations that you may require as a student with a disability. Requests for academic accommodations should be made during the drop/add period, unless there are unusual circumstances, so that appropriate arrangements can be made. Students are encouraged to register with the Disability Resources Office in Boyden Hall for disability verification and determination of reasonable academic accommodations.

Important dates

1. Exam I: Wed, Feb 27th
2. Exam II: Wed, March 27th
3. Exam III: Wed, April 24th
4. Final Exam: Wed, May 8th. 8:00 AM - 10:00 AM