Mathematics 3000.002 Syllabus
Spring 2013

Prerequisite: Math 1720 or equivalent


Professor: Neal Brand

Office: GAB 417B  M 2:30-3:50,  T 10:00-11:50,  W 8:30-9:50,  F 12:30-2:00 and by appointment.
Please use these hours to ask questions of your instructor. Do not just drop in at other times since your
instructor will most likely be busy with other responsibilities. If you need to see your instructor at another
time, make an appointment in advance.

Grading: Grades are based on three regular exams, homework, quizzes, a notebook and a final. The
homework is worth a total of 100 points, each exam is worth 100 points, the quizzes are worth a total or
100 points, the notebook is worth 100 points, and the final is worth 200 points. This gives you a total of
800 possible points. To earn an A it is sufficient to make a total of 720 points, 640 for a B, 560 for a C,
and 480 for a D. You are also required to complete the on-line course evaluation described below.

Course Evaluation: The SETE website will be open later in the semester for you to evaluate the course
(dates to be announced later). You are required to complete an evaluation of the course sometime during
the open period. Although your instructor will receive a list of who completed the evaluation forms before
grades are turned in, he will not receive any other information about the evaluations until after the grades
are turned in. Your instructor will receive no information that would link you to your specific answers or
comments. The university, the mathematics department, and your instructor take your course evaluation
input very seriously.

Homework: Homework will be assigned from the book and handouts. The assignments will be posted on
the web. You are expected to turn in neatly written homework. If the grader has trouble reading the
homework, then the homework will be returned with a zero.

Exams: The exams will be in class and most likely they will be given on February 15, March 29 and April
24. The final exam is scheduled for Monday May 6 at 10:30 in the classroom.

Web Page: From the UNT home page follow through the links through the College of Arts and Sciences,
the Mathematics Department and Neal Brand's home page to find the Math 3000 home page. You will
find homework assignments, and other information concerning this class at that site. The URL is
http://www.math.unt.edu/~brand/CLASS/3000/2013Spring/3000.htm

Extra Credit: Do not expect to be able to do extra credit work to help your grade either before or after the
final exam. There will be no extra credit for this course other than perhaps an extra problem on an exam.
Please do not ask for extra credit work to help your grade. Your best bet to help your grade is to do the
required work at the time it is assigned.

Disabilities: The University of North Texas makes reasonable academic accommodation for students with
disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to
verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to
faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

**Cheating:** No cheating will be tolerated. Cheating includes receiving help from anyone or anything that is not specifically allowed on an exam, quiz or final. For example, calculators are not allowed on exams and using one would constitute cheating. On the other hand, you are encouraged to work together on the regular homework assignments as long as everyone participates and no one just copies the answers. Anyone caught cheating will receive an F for the course. Furthermore, a letter will be sent to the appropriate dean. I expect no cheating in this class.

**Last Comment:** Anything on this syllabus is subject to change at the discretion of the instructor.

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Syllabus

Homework and Reading Assignments: Homework is to be turned at the beginning of class on the days indicated below. Soon after class each day the homework assignments will be posted here. You should do all the homework listed, but turn in only the problems listed in bold face type. The reading assignments are to be completed by the beginning of class on the days indicated. The class discussion will focus on the reading assignment. The schedule below is subject to change.

- **January 14**
  - Introduction to Real Analysis
- **January 16**
  - Read Section 13 through the middle of page 131
  - Read Section 2
- **January 18**
  - Read the rest of Section 13
- **January 23**
  - Read Section 1
  - Page 134 13.1 a, b, c, d, e, f, g, 13.2 a, b, 13.3 a, b (Turn in all of these.)
- **January 25**
  - Read Section 5
- **January 28**
  - Continue with Section 5
- **January 30**
  - Negating statements with quantifiers
- **February 1**
  - Page 8 1.1, 1.2, 1.3, 1.4, 1.7, 1.9, 1.10, 1.11
  - Page 15 2.2, 2.3, 2.5, 2.8
  - Page 47 5.2, 5.3, 5.4, 5.5, 5.8, 5.15, 5.16
- **February 4**
  - Review Section 13
- **February 6**
  - Continue Section 13
• February 8
  Continue Section 13
  Page 135 13.5 a, b, d, e, f, 13.8, 13.11 (Hint: think of a set difference as an intersection.), 13.21 a
  Page 49 5.19, 5.25
• February 11
  Review for Exam 1
• February 13
  Review for Exam 1
• February 15
  Exam 1
• February 18
  Read the remainder of Section 13
• February 20
  Continue Section 13
• February 22
  Continue Section 13
• February 25
  Read Section 14 through Lemma 14.4 and read the statement of the Heine-Borel Theorem
• February 27
  Read Section 11
• March 1
  Continue Section 11
• March 4
  Read Section 12
• March 6
  Continue Section 12
• March 8
  Continue Section 12
• March 18
  Continue Section 12
• March 20
  Read Section 14
• March 22
  Continue Section 14
• March 25
  Continue Section 14
• March 27
  Review for Exam 2
• March 29
  Exam 2
• April 1
  Read Section 6 through the middle of page 53
  Read Section 7
April 3
Continue Section 7

April 5
Continue Section 7

April 8
Definition of continuous functions

April 10
Continue the definition of continuous functions

April 12
Proof that continuous functions with domain \([a, b]\) attain a maximum

April 15
Proof of Intermediate Value Theorem

April 17
Read Section 10 - Induction

April 19
Continue induction proofs

April 22
Review for Exam 3

April 24
Exam 3

April 26
Cardinality

April 29
Review for Final

May 1
Review for Final

May 6
Final exam (10:30 in classroom)

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