Math 1710 Information
Fall 2013

Syllabus

Schedule and Homework Assignments: Below each date you will find the topic to be covered that day. This is tentative and it may change due to unforeseen circumstances. It is best to check http://www.math.unt.edu/~brand/class/1710/2013Fall/Brand1710.htm often as it will be updated on a daily basis to reflect changes. Homework is to be turned in at the beginning of class on the days indicted. Follow the guidelines at http://www.math.unt.edu/~brand/class/1710/2013Fall/homeworkexp.html when preparing your homework to be graded. 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.

- **August 28**
  Introduction to slope of curves and area under curves
  Browse Chapter 1. This is all review.
- **August 29**
  Introduction to the course
  **Find the slope of the tangent line to the graph or** \( y = 4x^2 + 7x \) **at the point where** \( x = 2 \).
- **August 30**
  Introduction to proof by induction.
  **Find the area bounded by** \( x = 0, \ x = 1, \) **the x-axis, and** \( y = x^2 + 2x \). (Some helpful formulas appear on page 258 of the book.)
- **September 3**
  Continuation of proof by induction
  Homework sheet on induction **Do 1-6,** **Turn in 4 and 5**
- **September 4**
  More on proof by induction
  Do problems 7-13 from the induction handout. **Turn in 8, 12, 13**
- **September 5**
  Introduction to limits.
  Mathematica Limit Notebook
  Read Sections 2.1 and 2.2
- **September 6**
  The formal definition of limit
  Mathematica Epsilon-Delta
• **September 9**  
  Epsilon-delta proofs of limits for polynomials  
  Do all the problems on the induction handout and **turn in 14-18**  
  Page 93 19,20,21,22

• **September 10**  
  Epsilon-delta proofs for other functions (mainly algebraic functions)  
  Limit Homework Sheet Do problems 1-7 and **turn in 1, 2, 4, 6**

• **September 11**  
  What does it mean for a limit not to exist? Formal negation of the definition of limit.  
  Limit Homework Sheet Do problems 8-18, **Turn in 8, 10, 14, 17**

• **September 12**  
  In-class practice of proving limits (**come to class at 9:30**)  
  Limit Homework Sheet Do problems 19-26 **Turn in 19, 21, 23, 24, 25, 26**

• **September 13**  
  Basic properties of limits and definition of continuous  
  Read Section 2.3 and 2.6

• **September 16**  
  Limits involving infinity  
  Read Section 2.4

• **September 17**  
  Introduction to difference quotients and rates of change  
  Read Section 3.1  
  Page 54 7, 17, 19, 21, 27, 37, 45, 49, 53

• **September 18**  
  Basic rules of differentiation  
  Read Section 3.2

• **September 19**  
  Product and quotient rules  
  Read Section 3.3  
  Page 109 11-28, 33, 34 **Turn in 11, 15, 19, 21, 27, 33**

• **September 20**  
  Derivative of sin x and related limits  
  Read Pages 129 through the middle of 131  
  Page 118 7-41 **Turn in 19, 21, 23, 25, 33, 37, 39**

• **September 23**  
  Derivatives of trigonometric functions  
  Read Section 3.4  
  Page 126 7-36 **Turn in 11, 15, 17, 22, 24, 28, 36**

• **September 24**  
  Chain rule  
  Read Section 3.6  
  Page 135 7-32 **Turn in 8, 10, 18, 22, 24, 26, 30, 52**

• **September 25**  
  Implicit differentiation
Read Section 3.7
Page 154 7-46, 56, 57, 58  **Turn in 8, 10, 12, 14, 22, 34, 38, 44, 56**

- **September 26**
  Derivative as a rate of change
  Read Section 3.5
  Page 162 5-26  **Turn in 6, 10, 14, 16, 20, 24**

- **September 27**
  Review for exam 1
  Page 145 11-24  **Turn in 12, 14, 16, 18, 24**

- **September 30**
  Review for exam 1

- **October 1**
  Exam 1

- **October 2**
  Related rates
  Read Section 3.8

- **October 3**
  Maxima and minima
  Read Section 4.1

- **October 4**
  Mean Value Theorem
  Read Section 4.6
  Max-Min Notebook

- **October 7**
  Geometry of the first derivative
  Read Section 4.2 up to the middle of Page 191
  **Page 183** 15, 17, 19, 20, 22, 24, 27, 28, 33, 37, 38, 45, 48, 53, 54

- **October 8**
  Geometry of the second derivative and introduction to graphing functions using
  calculus
  Read the rest of Section 4.2

- **October 9**
  Graphing functions
  Read Section 4.3
  **Page 231** 7, 11, 12, 14, 15, 16, 20, 24, 26, 33

- **October 10**
  Derivative Exam

- **October 11**
  Optimization Problems (Max/Min problems)
  Read Section 4.4

- **October 14**
  More optimization problems
  Page 206 7, 8, 13, 14, 17, 18, 25, 26, 40
• **October 15**  
  L’Hopital’s rule for finding limits  
  Read Section 4.7

• **October 16**  
  Newton’s method  
  Page 213 11, 12, 13, 14, 16, 19, 21, 23, 27, 36, 45  
  Newton’s Method Mathematica Notebook

• **October 17**  
  Derivative Exam

• **October 18**  
  Antiderivatives  
  Read Section 4.8

• **October 21**  
  Review for exam 2  
  Page 257 9-40 odd numbered problems  
  Turn in 12,16,18,24,26,30,34,36,38

• **October 22**  
  Review for exam 2

• **October 23**  
  Review for exam 2

• **October 24**  
  Exam 2

• **October 25**  
  Area using Riemann sums  
  Read Section 5.1

• **October 28**  
  Definite integrals  
  Read Section 5.2

• **October 29**  
  Basic properties of definite integrals  
  Page 262 11, 15, 17, 18, 23, 24, 27, 28  
  Page 276 19, 20, 23, 24, 27, 28, 33, 34, 39, 41  
  Turn in all the specified evens from both exercise sets (Page 262 and 276)

• **October 30**  
  Fundamental Theorem of Calculus  
  Read Section 5.3

• **October 31**  
  Derivative Exam

• **November 1**  
  Substitution in Antiderivatives  
  Page 290 11, 13, 17, 18, 23, 24, 27, 28, 33, 34, 37, 38, 39, 40, 45, 46, 49, 50, 52, 73, 74, 85  
  Turn in the evens from the above list  
  Read Section 5.5

• **November 4**  
  Numerical integration
Read Section 8.6 through the middle of Page 484
Page 308 1, 17, 18, 19, 20, 23, 24, 25, 26, 29, 30, 33, 37, 38, 43, 44, 45, 46, 54, 57, 58, 63, 66
Turn in the evens listed above
Mathematica Notebook

- **November 5**
  Error estimates using numerical integration
  Read the rest of Section 8.6
  Page 488 15, 16, 31, 32, 44, 45
  Turn in 16, 32, and 44

- **November 6**
  Velocity and net change
  Read Section 6.1
  Find how many subintervals it would take to compute the integral form 0 to 1 of \( f(x) = x \sin x \) numerically with an accuracy of at least .00001 using the Trapezoid rule and using Simpson’s rule.

- **November 7**
  Derivative Exam

- **November 8**
  Area between curves
  Read Section 6.2
  Page 323 11, 12, 13, 14, 21, 22, 23, 24, 26, 30, 31
  Turn in the evens listed above

- **November 11**
  Volumes by slicing
  Read Section 6.3
  Page 332 9, 11, 12, 15, 16, 19, 20, 25, 26, 31, 32, 35, 36, 47, 48, 65
  Turn in evens form the above list

- **November 12**
  Volumes by slicing
  Read Section 6.3

- **November 13**
  Volumes by shells
  Read Section 6.4
  Page 344 9, 10, 13, 14, 15, 16, 19, 20, 23, 24, 27, 28, 33, 34, 42, 43, 50
  Turn in the even numbered problems listed above. Also, there is something wrong with problem 50. What is it?

- **November 14**
  Derivative Exam

- **November 15**
  More on volumes by slicing and shells

- **November 18**
  Length of curves
  Read Section 6.5

- **November 19**
  Surface area and introduction to improper integrals
Page 5, 6, 9, 10, 13, 14, 24, 25, 27, 28, 37, 38, 41, 42, 48
Turn in the even numbered problems listed above.

- **November 20**
  Center of mass

- **November 21**
  Review for exam 3

- **November 22**
  Review for exam 3

- **November 25**
  Center of Mass

- **November 26**
  Exam 3

- **November 27**
  Center of Mass

- **December 2**
  Physics and Calculus

- **December 3**
  Review for final

- **December 4**
  Review for final

- **December 5**
  Review for final

- **December 12**
  Final Exam (8:00 a.m.)

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[Return to Neal Brand's homepage](#).
Prerequisite: Math 1720 or equivalent

Book: Analysis with an Introduction to Proof by Steven R. Lay (5th Edition)

Professor: Neal Brand

Office: GAB 417B  M 3:30-5:00,  T 1:00-3:30, W 12:30-2:00,  Th 11:00-12:30, F 12:30-1:30 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 September 30, October 28 and November 25. The final exam is scheduled for Monday December 9 at 1:30 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 math.unt.edu/~brand/class/3000/2013Fall/Sec003.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.

Cell Phones: The use of cell phones to text, talk, browse or anything else is forbidden in this class. Their use is distracting to the user, other students and the instructor.
**Disabilities:** It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office. Their phone number is 940-565-4323.

**Cheating:** Cheating: No cheating will be tolerated. Cheating includes receiving help from anyone or anything that is not specifically allowed on an exam, final, or project. 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. (See the UNT website on academic dishonesty: [http://www.vpaa.unt.edu/academic-integrity.htm](http://www.vpaa.unt.edu/academic-integrity.htm).)

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