

MATH 482 (001) – Introduction to Real Analysis

Professor: Dr. Brian Barron

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Office Number: GTM 310

Office Hours: MWF 12:30-1:00, TR 8:00-12:30

URL: <http://www.LaTech.edu/~bbarron>

Classroom: GTM 309

Time: MWF 11:00-12:15

Prerequisites: Math 244 as well as either Math 307 or Math 311

Course Goals: The student will learn the calculus of functions of one real variable on a rigorous level. Competence will be demonstrated by satisfactorily completing a series of exams.

Textbook: *Mathematical Analysis – A Concise Introduction* by B. Schroeder, J. Wiley & Sons Inc., Chapters 1-8 and 13 will be covered. For more precise information, please consider the attached schedule of classes.

EXAMINATIONS: There will be three topical exams and a comprehensive final. Each examination will require the student to correctly state definitions and theorems from the covered sections, to prove results from the covered sections, the class, or the homework and to prove heretofore unknown results.

HOMEWORK POLICY: Homework will count for a total of 15% of the grade. Problems are to be handed in every Monday. An effort will be made to have homework returned the next class day after the hand-in date. On handed-in work, please clearly indicate the number of the problem, sort sheets in the order of the problems and staple.

PROJECT FOR GRADUATE STUDENTS: Students taking this course for graduate credit will be required to complete *one* of Exercises 1-30, 2-16, 2-50 or 5-10 as an independent project.

GRADE DETERMINATION POLICY: The course grade for undergraduate students will be calculated as follows: 50 points for homework, 100 points each for each of the three hour exams and 150 points for the final. Graduate students will also complete an additional project worth 50 points.

ABSENCES: Class attendance is regarded as an obligation as well as a privilege. All students are expected to attend regularly and punctually. If a student has to miss an exam, he/she must notify the instructor prior to the exam either in person or by phone. An unexcused absence from an exam will result in a zero on that exam.

STUDENTS NEEDING SPECIAL ACCOMODATIONS & RETENTION OF GRADED MATERIALS: Students needing testing or classroom accommodations based on a disability should discuss the need with the instructor during the first week of class. In the event of a question regarding an exam grade or final grade, it will be the responsibility of the student to retain and present graded materials which have been returned for student possession

HONOR CODE: In accordance with the Academic Honor Code, students pledge the following: Being a student of higher standards, I pledge to embody the principles of academic integrity. For details refer to <http://www.latech.edu/documents/honor-code.pdf>.

MFAT: Undergraduate students can take the Major Field Assessment Test to earn extra points for the final exam. 5 points will be awarded for taking the MFAT, plus all points above a score of 150 will be added to the final exam. Please contact Ms. Linda Odom (linodom@latech.edu) in Keeny Hall 326 for administrative details regarding the MFAT. Five students can take the test at a time. The test takes about 2 hours and the testing center closes 12:00-1:00 and at 5:00.

EMERGENCY NOTIFICATION SYSTEM: All Louisiana Tech students are strongly encouraged to enroll and update their contact information in the Emergency Notification System. It takes just a few seconds to ensure you're able to receive important text and voice alerts in the event of a campus emergency. For more information on the Emergency Notification System, please visit <http://www.latech.edu/administration/ens.html>

Day	Section	Homework
Wed. 11-28-07	1.1. Field Axioms 1.2. Order Axioms	1-1, 1-4 1-12, 1-13
Fri. 11-30-07	1.3. Lowest Upper and Greatest Lower Bounds	1-17, 1-18a
Mon. 12-3-07	1.4. Natural Numbers, Integers and Rational Numbers	1-20, 1-27
Wed. 12-5-07	1.5. Recursion, Induction, Summations and Products	1-33d, 1-42
Fri. 12-7-07	1.5. Recursion, Induction, Summations and Products 2.1. Limits	1-36 2-4, 2-6a, 2-7
Mon. 12-10-07	2.2. Limit Laws	2-10, 2-11, 2-12
Wed. 12-12-07	2.3. Cauchy Sequences 2.4. Bounded Sequences	2-19, 2-23 2-33
Fri. 12-14-07	2.4. Bounded Sequences 2.5. Infinite Limits	2-40 2-44a, 2-45
Mon. 12-17-07	3.1. Limits of Functions 3.2. Limit Laws	3-4 3-9, 3-14
Wed. 12-19-07	3.3. One-Sided Limits, Infinite Limits 3.4. Continuity	3-17, 3-19 3-27
Fri. 12-21-07	3.5. Properties of Continuous Functions 3.6. Limits at Infinity	3-35, 3-36, 3-37 (these 3 are short), 3-40
Mon. 1-7-08	Exam 1: Chapters 1-3	
Wed. 1-9-08	4.1. Differentiability 4.2. Differentiation Rules	4-3 4-4, 4-6
Fri. 1-11-08	4.2. Differentiation Rules 4.3. Rolle's Theorem and the Mean Value Theorem	4-7 4-21a
Mon. 1-14-08	4.3. Rolle's Theorem and the Mean Value Theorem 12.3 L'Hôpital's Rule	4-22
Wed. 1-16-08	5.1. Riemann Sums and the Integral	5-2a, 5-6
Fri. 1-18-08	5.2. Uniform Continuity and Integrability of Continuous Functions 5.3. The Fundamental Theorem of Calculus	5-13, 5-16 5-21, 5-23
Wed. 1-23-08	5.4. The Darboux Integral	5-28
Fri. 1-25-08	6.1. Series as a Vehicle to Define Infinite Sums 6.2. Absolute Convergence and Unconditional Convergence	6-3a,c,d
Mon. 1-28-08	6.2. Absolute Convergence and Unconditional Convergence	6-15, 6-21c
Wed. 1-30-08	Exam 2: Chapters 4-6, Section 12.3	
Fri. 2-1-08	13.1 Taylor Polynomials 13.2 Newton's Method	13-4a, 13-6b 13-10, 13-11
Fri. 2-8-08	13.2 Newton's Method 13.3 Numerical Integration	13-22a, 13-28b
Mon. 2-11-08	13.3 Numerical Integration 7.1. The Algebra of Sets 7.2. Countable Sets	7-3a, 7-4, 7-9d,e
Wed. 2-13-08	7.2. Countable Sets 7.3. Uncountable Sets	7-11, 7-12 7-19, 7-21
Fri. 2-15-08	8.1. Outer Lebesgue Measure	8-2, 8-5
Mon. 2-18-08	8.2. Lebesgue's Criterion for Riemann Integrability	8-7, 8-8
Wed. 2-20-08	Exam 3: Chapters 7,8,13	
Fri. 2-22-08	8.3. More Integral Theorems Cantor sets, a problem with the Riemann integral.	8-21, 8-29a
Mon. 2-25-08	Final Exam: Cumulative	