Fall 2016 *** MTH 300 – Section 101 *** Course Syllabus *** Dr. Ari Aluthge (Pronounced: A-luth-gay)

Course Number: MTH 300 – Section 101 (CRN: 3057) – 4 credit hours.
Course Title: Introduction to higher Mathematics
Textbooks: Mathematical Proofs (a transition to higher mathematics) by Chartrand/Ploimeni/Zhang

Prerequisites: MTH 230 – Calculus II (C or better)
Class Meeting Times: MTWR: 1:00 pm – 1:50 pm Classroom: Smith 511

Instructor: Dr. Ari Aluthge (Pronounced: A-luth-gay)
Office: Smith Hall 714 Phone: 696 3050 Email: aluthge@marshall.edu
Office Hours: MTWR: 10:00 am – 11:30 am or by appointment

University Policies: By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Read about: Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment.

Course Description: A transition between elementary calculus and higher mathematics with emphasis on techniques of proof.

Objectives of the Course*:*
1. To prepare students to read, evaluate, and construct proofs and counterexamples in mathematics.
2. To give students a chance to engage with fundamental concepts of abstract mathematics, including functions, relations, cardinality, the natural numbers, and the real numbers.
3. To expose students to the practices, attitudes, and beliefs common to the mathematics community.
4. To Provide opportunities for students to reflect on their own attitudes and beliefs about mathematics. Encourage the development of beliefs that support success in mathematics.
5. To support the development of students' oral communication skills using collaborative assignments and in-class presentations (board work).
6. To support the development of your written communication skills using a variety of written assignments.

Course Contents: Most of Chapters 1 through 12 in the textbook.

- Basic topics in set theory and logic
- Direct proofs and proofs by contrapositive (and contradiction)
- Mathematical induction
- Equivalence relations, functions, and cardinality of sets
- Proofs in number theory and calculus (time permitting)

Learner Outcomes: Upon completion of this course, students will

- Exhibit an understanding of mathematical logic.
- Exhibit an understanding of a variety of proof writing techniques.
- Construct formal proofs of propositions that address concepts discussed during the course of the semester.
- Present their work clearly and concisely in both written and oral form. Organization and logical flow will be the secrets to success in meeting this objective.
- Recognize and appreciate various approaches to the same problem.
- Formulate mathematical conjectures and prove or disprove them.

Practicing Learner Outcomes: Students will practice the above learner outcomes by

- reading and studying the textbook.
- coming to class and listening to the lectures and participating in classroom discussions.
- studying and collaborating with other students in the class.
- reading and studying related (and reliable) material found on the internet and related textbooks found in the library and on the internet.
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Assessing Learner Outcomes: Above learner outcomes will be assessed by a combination of

- Daily attendance and class participation
- Homework assignments and board work
- Three in-class tests
- Semi-comprehensive final exam

Your Grade:

- Homework and boardwork– 200 points
- Three tests and the final exam (semi-comprehensive) – 450 points
  (Each test is 100 points and the Final Exam is 150 points).
- Attendance and class participation – 50 points (1 point a day)
- Total – 700 points
- Letter grade: A = [630, 700], B = [560, 630), C = [490, 560), D = [420, 490) F = [0, 420)

Make-up Exams and Missing Assignments: Make-up tests will be given for excused absences only. Students must verify their absences with the Dean of Students. No make-up homework will be given.

Important Dates: Test 1: Mon, Sep 19 Test 2: Mon, Oct 17 Test 3: Mon, Nov 14
Final Exam: Tuesday, Dec 13, 12:45 pm – 2:45 pm (same room).
Last day to withdraw an individual (fall semester) course: Friday, October 28
Last day to withdraw completely (fall semester): Friday, Dec 9.

MUonline: Information about the course (syllabus, homework and boardwork assignments, course related material) will be posted on MUonline course website for this course.

Tentative Weekly Schedule:

Week	Coverage of material and other assignments
August 22 - 25	Chapter 1
Aug 29 – Sep 1	Chapter 1, Chapter 2
September 6 - 8	Chapter 2, Chapter 3
September 12- 15	Chapter 3. Review
September 19- 22	Exam 1 (on chapters 1, 2, 3), Chapter 4
September 26- 29	Chapter 4
October 3 - 6	Chapter 5
October 10 - 13	Chapter 5, Chapter 6, Review
October 17 - 20	Exam 2 (on Cha 4, 5), Chapter 6
October 24 - 27	Chapter 7, Chapter 8
Oct 31 – Nov 3	Chapter 8
November 7 - 10	Chapter 9, Review
November 14 - 17	Exam 2 (on Cha 6, 7, 8), Chapter 9
November 21 - 24	Thanksgiving break – No classes
Nov 28 – Dec 1	Chapter 10
December 5 - 8	Chapter 11, Review for the final exam
December 12 - 15	Final Exam (semi-comprehensive) on December 13, 12:45 pm – 2:45 pm

Free Tutoring: Free tutoring will be available in Music Smith 115 starting August 29, 2016.
You can find more details about the tutoring lab at: http://www.marshall.edu/math/tutoringlab.asp
Cell Phones: Please turn off cell phones before entering the classroom. This will not be tolerated.