

COURSE SYLLABUS
MATH 1385, SECTION 04
INTRODUCTION TO THE FOUNDATIONS OF MATHEMATICS II
CREDIT HOURS: 3
Spring 2018

CLASSROOM AND SCHEDULE: Tuesday and Thursday, 8:00 – 9:20 AM
Room 431 Lee Drain Building

INSTRUCTOR: Dr. Linda Zientek
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Office Hours: Tues/Thurs, 7:30 – 8:00, 9:30 – 11:30
Other Appointments by special arrangement

COURSE DESCRIPTION:

Basic notions of Euclidean Geometry in two and three dimensions, concepts of congruence and similarity, transformational geometry and measurement. Credit in this course is applicable only toward elementary/middle school certification.

Prerequisites: Math 1384 with a grade of C or better. Credits: 3

COURSE OBJECTIVES: (from TEKS – Educator Standards)

Upon completion of this course, students will be able to:

- Select and use appropriate units of measurement (e.g., temperature, money, mass, weight, area, capacity, density, percents, speed, acceleration) to quantify, compare, and communicate information
- Develop, justify, and use conversions within measurement systems
- Describe the precision of measurement and the effects of error on measurement
- Apply the Pythagorean theorem and proportional reasoning, to solve measurement problems
- Understand concepts and properties of points, lines, planes, angles, lengths, and distances
- Analyze and apply the properties of parallel and perpendicular lines
- Use the properties of congruent triangles to explore geometric relationships
- Use and understand the development of formulas to find lengths, perimeters, areas, and volumes of basic geometric figures
- Apply relationships among similar figures, scale, and proportion and analyze how changes in scale affect area and volume measurements
- Use a variety of representations (e.g., numeric, verbal, graphic, symbolic) to analyze and solve problems involving two- and three-dimensional figures such as circles, triangles, polygons, cylinders, and prisms
- Use translations, reflections, glide-reflections, and rotations to demonstrate congruence and to explore the symmetries of figures
- Use dilations (expansions and contractions) to illustrate similar figures and proportionality
- Use symmetry to describe tessellations and shows how they can be used to illustrate geometric concepts, properties, and relationships

REQUIRED TEXTBOOK AND MATERIALS:

Reconceptualizing Mathematics for Elementary School Teachers. (Third Edition) Sowder, J., Sowder, L. and Nickerson, S. (2017). New York, NY: W.H. Freeman and Company.

Manipulative Materials:

Students enrolled in Math 1385, as learners of mathematics, should be engaged in hands-on activities that allow them to gain experience and familiarity with manipulative materials that are used in EC-8 classrooms. ***Note that the textbook includes a number of manipulatives in cardstock form, including nets of 3-D shapes (and masters of recording paper) that students can cut out or make copies of and have available for work outside of class.***

GRADING:

Grades for this course will be based on the following:

Exam I	22%
Exam II	22%
Exam III	22%
Daily	14%
Final	20%

A = 90 or higher, B = 80 – 89, C = 70 – 79, D = 60-69, F = below 60

ATTENDANCE:

Regular and punctual attendance is expected of every student. As a prospective teacher, you must demonstrate your reliability and conscientious attitude by your faithful attendance. Attendance will be taken every class. Tardies will count against your attendance record (3 tardies = 1 absence). Unless approved by the instructor, leaving class early will count as an absence. If absent or tardy, you are still responsible for all material covered in class, and you will need to check with a classmate about what was discussed. Serious health or family problems that are well documented will be handled individually.

TESTS AND ASSIGNMENTS:

Tests will include problems that are based on the mathematical concepts taught during class. There will be three exams and a final exam administered during the semester. Homework will be assigned daily. It should be kept in a folder with dividers for each chapter.

Quizzes and projects will be administered throughout the semester. Late work will normally not be collected. Quizzes will cover material presented since the prior quiz. For some quizzes, no outside resources are allowed. However, some quizzes will be open-note and open-book. The lowest quiz grade will be dropped. **All students are required to take the final. The Final Exam will be on the day and the time scheduled by SHSU.** However, if you do better on the final exam than one of your previous exams, then the final exam grade can replace a prior test grade. The final exam grade can not be replaced with an earlier test grade. If a student has a 96 or higher in the course prior to the final exam, then they are exempt from the final exam.

Make-up Policy: Unless approved by the instructor prior to the date of a test, there will be no make-up for a missed test. If an exam is missed then the final can only be used to replace the zero. A missed final examination can be made up only by approval of the Dean of the College of Arts and Sciences or a higher administrative official.

STUDENT SYLLABUS GUIDELINES:

You may find online a more detailed description of the following policies. These guidelines will also provide you with a link to the specific university policy or procedure:

<http://www.shsu.edu/syllabus/>

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. *See Student Syllabus Guidelines.*

CLASSROOM RULES OF CONDUCT: In addition to attending class faithfully, students are expected to put forth their best effort in this class. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Students are prohibited from using tobacco products, making offensive remarks, reading newspapers and magazines, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom, *including reading and sending text messages*, shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

CELL PHONE & TEXT MESSAGERS USE: SHSU Academic Policy Statement 100728

Telephones and similar devices have become increasingly a part of everyday life. In the academic classroom, however, during class these devices can be a serious distraction and during tests they can be a serious problem. The technology is constantly changing and evolving. So, the present policy does not specify particular devices or device types. Rather, the policy applies to any device that performs the function of a telephone or text messenger. Failure to comply with the instructor's policy could result in expulsion from the classroom or with multiple offenses, failure of the course.

Students are to turn off all cell phones and electronic devices or put these in a silent mode while in the classroom. Do NOT take these devices out during the class. In the case of an emergency situation for a student, the student should inform the instructor prior to class and should sit near the door to minimize classroom disruptions in the event the student needs to leave to answer the phone. Under **no circumstances are cell phones or any electronic devices to be used or seen during times of examination.** Students may tape record lectures provided they do not disturb other students in the process.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS: University policy states that a student who is absent from class for the observance of a religious holy day must be allowed to take the examination or complete an assignment scheduled for that day within a reasonable time after the absence. Students will be excused to travel for observance of a religious holy day. A student who wishes to be excused for a religious holy day must present the instructor with a written statement describing the holy day(s) and the travel involved. The instructor will then provide the student with a written description of the deadline for the completion of missed exams or assignments.

STUDENTS WITH DISABILITIES POLICY: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. *Any student with a disability that affects his/her academic performance should contact the Office of Services for Students with Disabilities in the SHSU Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786) to request accommodations.* They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Services for Students with Disabilities and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dotAsset/7ff819c3-39f3-491d-b688-db5a330ced92.pdf>

Visitors in the Classroom: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

TENTATIVE SCHEDULE:

Chapter 9 ***Ratios, Rates, Proportions, and Percents***

- Jan 18 9.1 Ratio as a Measure
Jan 23 9.2 Comparing Ratios
 9.4 Issues for Learning: Developing Proportional Reasoning

Chapter 17 ***Polygons***

- Jan 25 16.1 Review of Polygon Vocabulary
Jan 30 16.2 Organizing Shapes (note definition of trapezoid)
Feb 1 16.3 Triangles and Quadrilaterals
 16.5 Issues for Learning: Some Research on Two-Dimensional Shapes

Chapter 16 ***Polyhedra***

- Feb 6 17.1 Shoeboxes Have Faces and Nets! & 17.2 Introduction to Polyhedra
Feb 8 17.3 Representing and Visualizing Polyhedra
Feb 13 Review

February 15 **EXAM I**

Chapter 18 ***Symmetry***

- Feb 15 18.1 Symmetry of Shapes in the Plane
Feb 20 18.1 Symmetry of Shapes in the Plane
 18.3 Issues for Learning: What Geometry Is in the Pre-K-8 Curriculum?

Chapter 20 ***Size Changes and Similarity***

- Feb 22 20.1 Size Changes in Planar Figures
Feb 27 20.2 More About Similar Figures
 20.4 Issues for Learning: Similarity and Proportional Reasoning
March 1 Congruent Triangles – Supplementary Material

Chapter 23 ***Measurement Basics***

- March 16 23.1 Key Ideas of Measurement & Weight, Mass, & Capacity – Supplementary Material

March 8 **EXAM II**

- March 20 23.2 Length and Angle Size
 23.3 Issues for Learning: Measurement of Length and Angle Size

Chapter 26 ***Special Topics in Measurement***

- March 22 26.1 The Pythagorean Theorem

Chapter 24 & 25 ***Area, Surface Area, and Volume & Measurement Formulas***

- March 27 24.1 Area
March 29 25.1 Circumference and Area Formulas
April 3 24.1 Area continued
April 5 25.1 Review

April 10 **EXAM III**

April 12 24.1 & 25.2 Surface Area (Assessed by Take-Home assignment)
April 17 24.2 & 25.2 Volume (Assessed by Take-Home assignment)
25.3 Issues for Learning: What Measurement is in the Curriculum?

Chapter 22 Transformation Geometry

April 19 22.1 Some Types of Rigid Motions (Translations & Reflections)
April 24 22.1 Some Types of Rigid Motions (Rotations)
April 26 22.2 Finding Images for Rigid Motions
22.3 A Closer Look at Some Rigid Motions

Chapter 19 Tessellations

May 1 19.1 & 19.2 Dilations & Tessellations
May 3 Review

FINAL EXAM AS SCHEDULED BY SHSU

Tuesday, May 8, 2018

08:00 a.m. - 10:00 a.m