Sam Houston State University

MATH 1332   **Spring 2018**

College Mathematics

Instructor: Assistant Professor Timothy Trujillo

I am a logician studying combinatorics and the foundations of mathematics. My research focuses on Ramsey theory and its application to combinatorial set theory and the theory of forcing.

- Contact Information:

    Office: LDB 417A   Email: trujillo@shsu.edu

- Office Hours:

    MWF 10:00 am - 12:30 pm

- Class Day/Time: MW   3:00 pm - 4:20 pm
  Class Location: LDB 212

- Textbook: **None**

Course Description:

This course is designed to meet the objectives of **component area 2 of the core curriculum** for non-business and non-science related majors. Topics may include sets, counting principles, probability, logic, linear algebra, linear programming, mathematics of finance, geometry, and calculus. Applications are emphasized.

Texas Core Curriculum Statement of Purpose: Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Student Learning Objectives:

1. **Critical Thinking Skills (CT)** - creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

2. **Communication Skills (COM)** - effective development, interpretation and expression of ideas through written, oral and visual communication

3. **Empirical and Quantitative Skills (EQS)** - manipulation and analysis of numerical data or observable facts resulting in informed conclusions

4. **Teamwork (TW)** - ability to consider different points of view and to work effectively with others to support a shared purpose or goal

5. **Social Responsibility (SR)** - intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

6. **Personal Responsibility (PR)** - ability to connect choices, actions and consequences to ethical decision-making

Grading Procedures:

Midterm Exam 1 (**CT & EQS**)	100 points
Midterm Exam 2 (**CT & EQS**)	100 points
Midterm Exam 3 (**CT & EQS**)	100 points
Final Exam (**CT & EQS**)	100 points
Peer Assisted Review (**COM & TW**)	200 points
Project (**CT, PR & SR**)	150 points
Homework (**EQS & PR**)	100 points
Classwork (**CT, TW & EQS**)	150 points
Extra Credit	*200 points*
Total	1000 points

Points Earned	Final Grade
900 - 1000	A
800 - 899	B
700 - 799	C
600 - 699	D
0 - 599	F
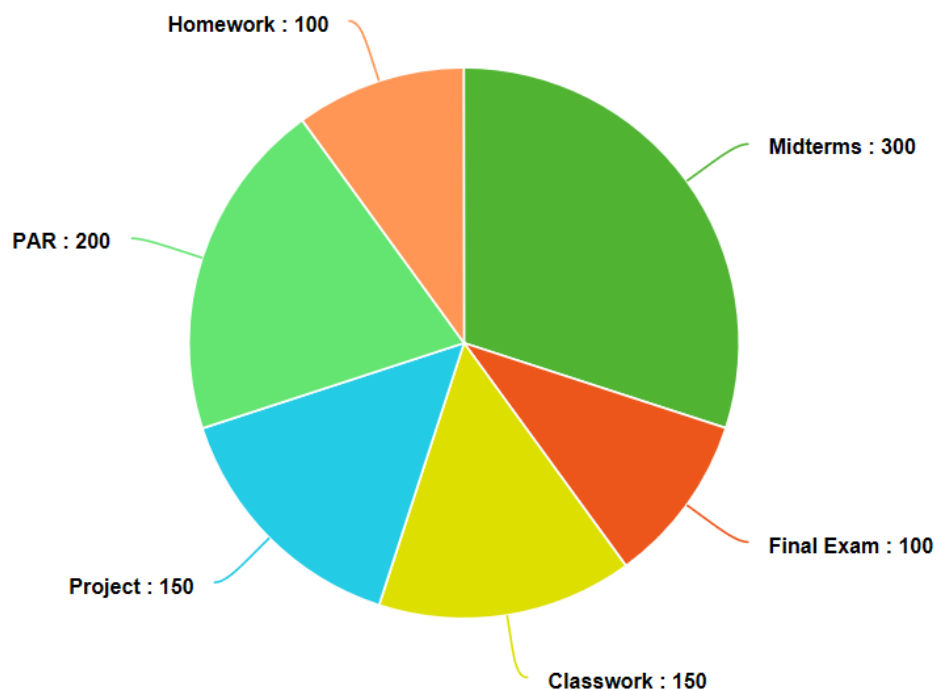
Coursework Return Policy:
Barring any unforeseen circumstances, coursework (including homework and exams) will be graded and returned to students within two weeks. Feedback will be provided on all coursework or solutions will be posted. In general, final exams are not returned to the student nor are solutions posted, but students may schedule an appointment to review their final exam.

Absence Policy:
Attendance and serious interaction with the course material are critical to success in this class. Students should treat this class as they would other professional obligations.

This class meets two days a week for fifteen weeks. Students who have five unexcused absences will have to meet with me to discuss their absences. If they miss class again after this they may have their semester grade lowered by one letter grade (100 points). **Students with ten unexcused absences will receive a failing grade and their remaining work will not be graded.**

When a student misses class for legitimate reasons/emergency situations students may contact the Dean of Students' Office by completing the "**Absence Notification Request Form**" (available in person or online at **www.shsu.edu/dept/dean-of-students/**).
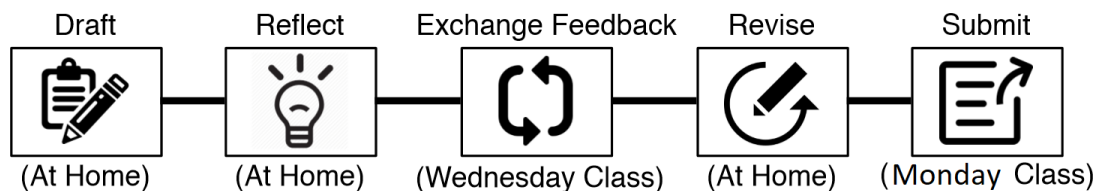
Exams (40% of total grade):
We will have three midterm exams and one final exam throughout the semester. Each exam will be graded on a 100 point scale.

	Date	Topics
Midterm Exam 1	Monday, February 19th	Covers HW 1 - 4
Midterm Exam 2	Monday, March 26th	Covers HW 4 - 7
Midterm Exam 3	Monday, April 20th	Covers HW 7 - 10
Final Exam	Wednesday, May 9th (7:30 pm - 9:30 pm)	Covers HW 1 - 10

Project (15% of total grade):
A project equivalent to the work involved in writing a three page typed report about a mathematical topic. The project will be graded on a 150 point scale. A grading rubric for the final project can be found on blackboard in the project tab.

Project Deadline 1	Wednesday, February 2nd	Topic submitted online (30 points)
Project Deadline 2	Wednesday, February 21st	Topic approved in gradebook (10 points)
Project Deadline 3	Wednesday, March 7th	Three resources submitted online (30 points)
Project Deadline 4	Wednesday, March 28th	An outline of the project (30 points)
Project Final Deadline	Wednesday, May 9th	A final draft of the project (50 points)

Peer Assisted Review - PAR (20% of total grade):

Draft	Reflect	Exchange Feedback	Revise	Submit
(At Home)	(At Home)	(Wednesday Class)	(At Home)	(Monday Class)

Throughout the semester we will have 5 PARs each graded on a **40 point scale**:
- (**10 points**) Completing a rough draft to be reviewed by your peers.
  - **0-3 points** (Student submitted a rough draft but does not meet the minimum requirements.)
  - **4-7 points** (Student submitted a rough draft meeting the minimum requirements.)
  - **8-10 points** (Student has submitted a rough draft that is thoughtful and meets the minimum requirements)
- (**5 points**) Reviewing two rough drafts.
  - **0-3 points** (Student has reviewed one rough draft.)
  - **4-5 points** (Student has reviewed two rough drafts.)
- (**10 points**) Two reviews of your rough draft.
  - **0-3 points** (One review has been submitted with final draft.)
  - **4-7 points** (Two reviews have been submitted with final draft but names of reviewers are missing.)
  - **8-10 points** (Two completed reviews have been submitted with the final draft.)
- (**15 points**) Completing a final draft and responding to feedback.
  - **0-5 points** (Student has updated the draft but the prompt has not been fully addressed.)
  - **6-10 points** (Student has updated the draft and the prompt has been fully addressed.)
  - **11-15 points** (Student has updated the draft, the prompt has been fully addressed, and student has responded to meaningful peer feedback.)

Homework (10% of total grade):
Homework is a one to two page worksheet that will be assigned weekly on Wednesdays. Homework assignments are due at the start of class on the following Wednesday.

Classwork (15% of total grade):
Classwork will be assigned during each class. Students will turn in the assignment at the end of class and a score of 0, 1 or 2 will be recorded for the assignment. A running percentage grade will be computed throughout the semester. Points will be awarded at the end of the semester based on the final percentage. For example, if you obtain a 89.76% at the end of the semester you will be awarded $0.8976 \cdot 150 = 134.64$ points out of 150 points.

Accommodations for ADA: (http://www.shsu.edu/dept/disability/index.html)
Students seeking academic accommodations under the Americans with Disabilities Act (ADA) should register with Students with Disabilities (SSD) Office located in the Lee Drain North Annex building (next to Farrington). In order for students with disabilities to be eligible for academic accommodations and adjustments, they need to provide documentation that shows evidence of a "substantially limiting" disability as defined by the federal legislation noted above. This documentation must be from a qualified professional who is licensed or certified to diagnose the disability in question.

The Sam Houston Academic Success Center:

1. Monday-Thursday: 8:00am - 7:00pm

2. Friday: 8:00am - 7:00pm

3. Saturday: Closed

4. Sunday: 2:00pm - 7:00pm

5. Both the Writing Center and the Math Center are open during normal hours of operation.

The Writing Center at the Sam Houston Academic Success Center is located in Farrington 111. If you wish to attend a session at the Writing Center, please call 936-294-3680.
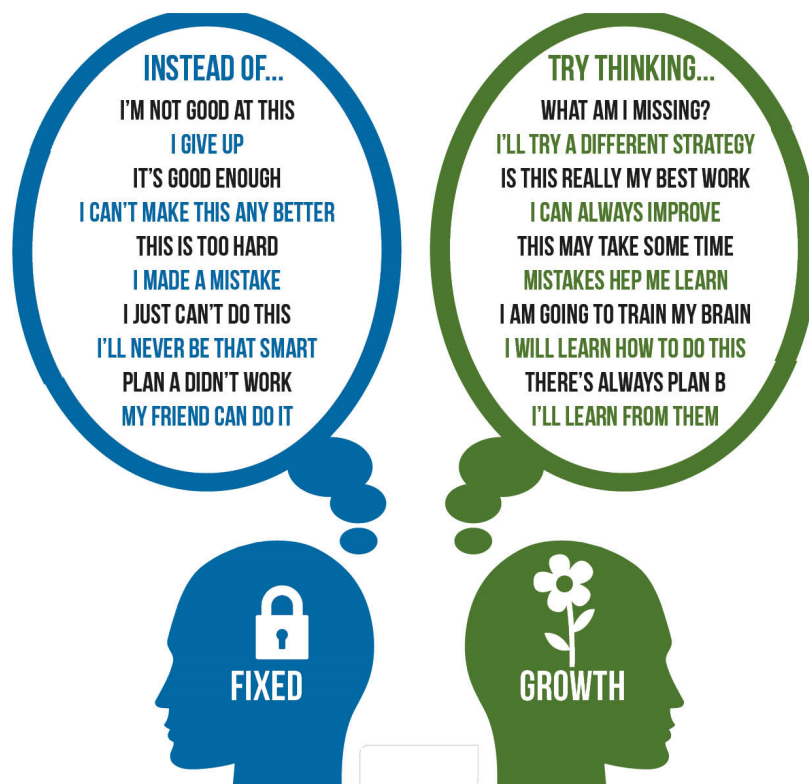**Appointments are required for the Writing Center.**

The Math Center at the Sam Houston Academic Success center is located in Farrington 104. If you wish to visit the Math Center for assistance, you may walk in during any of our normal hours of operation. **Appointments are not required for the Math Center.**

Growth Mindset:

There is scientific evidence that **neural connections grow and become stronger** the more you struggle with learning and correct your mistakes. Based on research by Stanford Professor Carol Dweck and her colleagues, we know that students with a **growth mindset - the belief that intelligence is not just something that you are born with** - have higher levels of success than those with a fixed mindset.

INSTEAD OF...
I'M NOT GOOD AT THIS
I GIVE UP
IT'S GOOD ENOUGH
I CAN'T MAKE THIS ANY BETTER
THIS IS TOO HARD
I MADE A MISTAKE
I JUST CAN'T DO THIS
I'LL NEVER BE THAT SMART
PLAN A DIDN'T WORK
MY FRIEND CAN DO IT

FIXED

TRY THINKING...
WHAT AM I MISSING?
I'LL TRY A DIFFERENT STRATEGY
IS THIS REALLY MY BEST WORK
I CAN ALWAYS IMPROVE
THIS MAY TAKE SOME TIME
MISTAKES HEP ME LEARN
I AM GOING TO TRAIN MY BRAIN
I WILL LEARN HOW TO DO THIS
THERE'S ALWAYS PLAN B
I'LL LEARN FROM THEM

GROWTH

Tentative Course Schedule and Topics:

Week	Topics	Homework	Project
Week 1	Growth Mindset and Syllabus		
Weeks 2-3	**Compound Interest**		
Week 2	Compound interest (PAR 1)		
Week 3	Logarithms and e	(HW 1-Due)	
Weeks 4-7	**Probability Theory**		
Week 4	Gambling and the odds (PAR 2)	(HW 2-Due)	Deadline 1 (2/7)
Week 5	Random variables and expected value	(HW 3-Due)	
Week 6	Buffon's Theorem (**Exam 1 - 2/19**)	(HW 4-Due)	Deadline 2 (2/21)
Week 7	More probability theory		
Week 8-10	**Voting Theory**		
Week 8	Voting methods (PAR 3)	(HW 5-Due)	Deadline 3 (3/7)
Week 9	Fairness criteria	(HW 6-Due)	
Week 10	Arrow's impossibility theorem (**Exam 2 - 3/26**)	(HW 7-Due)	Deadline 4 (3/28)
Week 10-13	**Linear Algebra**		
Week 11	Linear systems (PAR 4)		
Week 12	Matrix multiplication	(HW 8-Due)	
Week 13	Normal equations and the transpose	(HW 9-Due)	
Week 14 -15	**Complex Numbers & Project**		
Week 14	Complex Numbers (**Exam 3 - 4/23**) (PAR 5)	(HW 10-Due)	
Week 15	Work on project in class		
Finals Week	(**Project - Due**) (**Final Exam**)		Project Due