

**INSTRUCTOR:** Michael Miron  
**Email:** [mmiron@sienaheights.edu](mailto:mmiron@sienaheights.edu)

**PHONE:** 517-921-8457  
**OFFICE:** SCI 33A

**OFFICE HOURS:** 9:00-10:00 A.M. Monday-Friday or by appointment

**TEXT:** *Precalculus; Fairus/DeFranza*

**REQUIRED MATERIALS:** TI-Nspire is used in class..if you know how to use a TI-84, it will suffice.  
Folder or Loose-Leaf Notebook and Paper

**COURSE DESCRIPTION:** This is a course in algebra and trigonometry geared to prepare students for the calculus sequence. Analytical, graphical, and numerical tools will be developed to work with polynomial, rational, irrational, exponential, logarithmic, and trigonometric functions.

**COURSE CONTENT & METHODS:** Our major goal will be to familiarize ourselves with some of the important tools for understanding and working with functions.

Chapter 1 – Linear and Quadratic Functions and their graphs

Chapter 2 – Composition and Inverse Functions

Chapter 3 – Polynomial and Rational Functions

Chapter 4 – Trigonometric Functions

Chapter 5 - Exponential and logarithmic functions

### **Resources available for learning**

- Math Tutoring Lab: Science 26
- Classnotes and other resources will be available on line
- Canvas: This is our LMS (Learning Management Systems). Your grades and assignments will be listed and recorded here. You will also find posted on the Canvas calendar additional resources. You will be given instruction to log on the first day of class.

### **ATTENDANCE:**

Regular, prompt attendance for each class meeting is expected and essential for success in this course. Since arriving late (or leaving early) disrupts the flow of learning, more than two such instances may be converted to absence(s). More than five (5) absences may result in lowering the earned grade by 10% (a complete letter grade).

Assigned work is always posted on engrade in advance. In case you do miss a class it is your responsibility to complete all assigned work, and be prepared to hand it in no later than one day after it is due. You are responsible for completing all course work in a timely manner, *even if you have been absent from class for any reason, including illness and athletic events.*

### **III. Methods of Instruction:**

In class students will be introduced to the concepts, theories and applications of precalculus introduced from presentations, activities and reading. Working examples, activities, and projects will develop skills in problem solving and computation. Expect many short quizzes, assessing your understanding of homework assignments. Students will keep a notebook of worked examples and written homework assignments. Students are expected to be active participants in discussions. Successful completion of this course requires substantial out of class study time (the “Rule of Thumb” is 2-3 hours outside of class for every hour in class). Hence, PLAN on studying 6-9 hours a week for this class. There are no exam make-ups without prior approval. Students are encouraged to form study groups. I love quizzes!

You should anticipate a short quiz at the beginning of any class. These will be related to the assigned homework. If you have questions about the homework, get them answered prior to the class. I am available on most days before and after class to help with homework. Any missed quiz must be made up prior to my returning the graded quizzes to the class. That is usually at the beginning of the next class meeting. At the end of the semester your 5 lowest quiz scores will be eliminated.

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**ASSESSMENT:** Several forms of assessment will be used to provide evidence of your learning in this course: Exercises and worksheets, skill quizzes, unit tests and cumulative exams. Course grades are a summation of these assessments.

#### Methods of Evaluation Student Achievement/Progress

Method	Percent
Assignments, quizzes,	30
Exams (4-5)	50
Final Exam (comprehensive)	20

#### Assessments are judged by the following scale:

90% - 100%	<b>A</b>	Outstanding scholarship
80% - 89%	<b>B</b>	Substantially above average scholarship
70% - 79%	<b>C</b>	Average, competent scholarship
60% - 69%	<b>D</b>	Below average scholarship
Below 60%	<b>E</b>	Insufficient scholarship to warrant a passing grade

Your course grade will be based on:

Assignments/Quizzes	30%	Grading is by the usual scale:	A – 90%-100%
Tests	40%		B – 80%-89%
Final Exam	30%		C – 70%-79%
			D – 60%-69%

#### On getting through the course

1. The Mathematics Tutoring Lab (Science 26... **264-7882**) will be staffed by "Work-study math tutors", some of whom will tutor statistics. A schedule will be posted outside Science 26. Please be prepared when requesting help. The tutors will **not** do your homework for you, nor will they read the text for you. They are very happy and willing to help students who have put some effort into their work prior to coming for support.
2. *Successful completion of this course requires a substantial amount of out of class study.* [Recall, 2-3 hours outside of class for every hour in class]. Students are encouraged to form study groups. Homework is assigned every class period and it is expected to be completed before the next class period unless otherwise stated.
3. **Complete honesty is expected in written work with proper acknowledgements to sources.** Any student engaged in any act of academic dishonesty may receive a failing grade and reported to the appropriate university authorities. Honesty with oneself and with others is of utmost importance in life. The work you do in this course should reflect your honesty and integrity. In practical terms, this

means that you should be honest with yourself about how much time you spend on homework, how well you understand the material, and the level of reliance you have on others to complete the assignments. For example, you are encouraged to work with others on homework; merely copying someone else's work and turning it in as your own does not enhance your understanding and is dishonest. If you do work with others on the homework, write down on your assignment the names of the students you worked with. If there is clear evidence that a student has committed fraud to advance his/her academic status (for example, cheating on an exam or quiz), your instructor will be obliged to deal with the matter in accordance with the Academic Dishonesty Policy found in the *SHU Undergraduate Catalog*. If you are aware of such activity by another student in the course, you should bring the matter to your instructor's attention immediately.

**VII. Cell Phones:** TURN THEM OFF! Students are not allowed to use cell phones in mathematics classes. Please turn them off as you enter the classroom and keep them stored out of sight in your backpack or pocket.

**VIII. SHU General Education Learning Outcomes.**

The general education learning outcomes (see page 10 of the undergraduate catalog) receiving major emphasis in this course are C1 and B3. The writing required for activities and data projects address C1 while homework assignments and quizzes address B3.

**IX. Department Learning Outcomes:**

The Mathematics Department has identified the following five learning outcomes to be achieved by majors and minors in its program.

1. Students will read and understand mathematics, differentiating between correct and incorrect mathematical reasoning.
2. Students will effectively communicate mathematics to others, both in writing and speaking.
3. Students will demonstrate abilities to work independently and in-groups to develop mathematical models using appropriate technologies.
4. Students will demonstrate a mathematical maturity leading to independent investigations, increased responsibility for learning, and participation in the professional mathematics community.
5. Students will demonstrate mastery of the content of the courses required for the major including the calculus, foundations, algebra, and analysis.

**X. Students with Disabilities**

In accordance with University policy and the equal access laws, I am available to discuss appropriate academic accommodations that you may be eligible for as a student with a disability. Please contact me for an appointment to discuss possible accommodations. Students must register with the Office for Students with Disabilities for disability verification and determination of reasonable accommodations. Requests for accommodations must be done in a timely manner and are not retroactive. The OSD is located in Sacred Heart Hall in room 303.

**ACCOMMODATIONS POLICY FOR STUDENTS WITH DISABILITIES**

Section 504 of the Rehabilitation Act of 1973 (Section 504), prohibits discrimination on the basis of physical or mental disability (29 U.S.C. Section 794). Siena Heights University is committed to furnishing appropriate auxiliary aids and services where necessary to afford any student with a disability an equal opportunity to participate in, and enjoy the benefits of, a service, program, or activity conducted by a public entity.

An academically qualified (has met admission standards) student with a disability who is in need of auxiliary aids/services is obligated to provide detailed documentation of the nature of the disabling condition to the

Office of Disability Resources (303 Sacred Heart Hall/ 517 264-7683). The student will discuss with the coordinator of the ODR how the disability impacts performance in the academic setting. The student should initiate this process at the beginning of the semester, so that accommodations may be arranged before the student experiences difficulty. This process is not retroactive-a student may not disclose a disability in order to retake a failed test. Once appropriate accommodations/services have been determined, the student presents a Letter of Accommodation (provided after consultation with the coordinator of the ODR) to his/her course teaching staff and discusses a plan for implementing the accommodation/service.

**Learning math – and remembering it weeks later – requires practice and persistence.**

Tentative Schedule of course topics.

### **Unit 1**

- Week 1: Inequality and Interval Notation.  
Solving inequalities with the Number Line Test  
Coordinate Plane  
Distance, Midpoint, and Circles (include completing the square)  
Absolute Value Inequalities in one and two variables  
Symmetry (x-axis, y-axis, origin)  
Solving Equations with Technology.
- Week 2: Functions and Function Notation  
Odd and Even Functions  
Domain and Range  
Linear Functions (parallel and perpendicular lines)
- Week 3: Quadratic Functions (finding roots)  
Transformations (vertical and horizontal shifts, vertical and horizontal stretches and compressions)  
Applications of Quadratic Functions

### **Unit 2**

- Week 4: Transformations focused on Absolute Value, Root, Greatest Integer (Step) Functions  
Combining Functions (Sum, Difference, Product and Quotient)  
Reciprocal Functions
- Week 5: Composition of Functions (include Domain and Range)  
Inverse Functions (one-to-one functions, graphing inverses)

### **Unit 3**

- Week 6: Polynomial Functions (focus on sketching)  
Applications of polynomial functions  
Division of Polynomials (Long and Synthetic Division)  
Factor Theorem
- Week 7: Rational Root Theorem  
Rational Functions (focus on sketching)  
Asymptotes and Removable Discontinuities  
Arithmetic with Imaginary and Complex Numbers  
The Fundamental Theorem of Algebra  
Solving equations including complex solutions  
Complex Conjugate Root Theorem

### **Unit 4**

- Week 8: Radian Measure  
Arc Length and Area of a Sector  
Right Triangle Trigonometry with Applications  
Sine and Cosine Functions (include graphs)  
Trigonometric values for special angles
- Week 9: Sketching  $y = A \sin(B(x \pm C)) \pm D$   
Other 4 Trigonometric Functions and their graphs  
Trigonometric Identities (Pythagorean, Sum/Difference, Double-Angle)
- Week 10: Inverse Trigonometric Functions (Values and their graphs)  
Law of Sines, Law of Cosines, Area of a Triangle (include Heron's Formula)

**Unit 5**

- Laws for simplifying Exponents. (include Euler's Constant)
- Week 11: Properties and Graphs of Exponential Functions  
Logarithmic Functions (include Natural Logarithms)  
Properties of Logarithmic Functions
- Week 12: Exponential Growth and Decay  
Exam Preparation