Course description: Problem solving and critical thinking skills applied to the study of a broad range of topics, including sequences and series, recursion, and mathematical modeling with families of functions, including connections to the classroom.

Credit hours: 3

The following is an excerpt from SFA Policy 5.4:

The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

Course Prerequisites and Corequisites: Math 1351.

Course outline:

<table>
<thead>
<tr>
<th>Course outline</th>
<th>Approximate time spent</th>
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<tbody>
<tr>
<td>The Real Number System</td>
<td>20%</td>
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<tr>
<td>o Common Subsets of the Real Numbers</td>
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<tr>
<td>o Decimals and Real Numbers</td>
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<tr>
<td>o Connections between Fractions and Decimals in the Context of Terminating and Nonterminating Decimals</td>
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<tr>
<td>o Connections to the Classroom</td>
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<tr>
<td>Algebraic Thinking</td>
<td>65%</td>
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<tr>
<td>o Sequences, Series, and Recursion (Including the Fibonacci Sequence)</td>
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<tr>
<td>o Arithmetic and Geometric Progressions as Functions; Connections to Recursive and Closed Form Rules</td>
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<tr>
<td>o Simulations as a Tool to Model and Solve Problems</td>
<td></td>
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<tr>
<td>o Developing and Validating Conjectures about Patterns and Relationships in Data Presented in Tables, Sequences, or Graphs</td>
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<tr>
<td>o Finite Differences</td>
<td></td>
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<tr>
<td>o Interpreting and Using Graphs for Mathematical Modeling</td>
<td></td>
</tr>
<tr>
<td>o Problem Solving Strategies</td>
<td></td>
</tr>
<tr>
<td>o Connections to the Classroom</td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td>15%</td>
</tr>
<tr>
<td>o National and state mathematics standards for grades EC-8</td>
<td></td>
</tr>
<tr>
<td>▪ Reference: Texas Essential Knowledge and Skills (TEKS), Texas Education Agency</td>
<td></td>
</tr>
<tr>
<td>o National and state mathematics standards for beginning teachers of grades EC-8</td>
<td></td>
</tr>
</tbody>
</table>
Academic Integrity
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.

Definition of Academic Dishonesty (SFA policy 4.1):
Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to:
- using or attempting to use unauthorized materials on any class assignment or exam;
- falsifying or inventing of any information, including citations, on an assignment;
- helping or attempting to help other student(s) in an act of cheating or plagiarism.

Plagiarism is presenting the words or ideas of another person as if they were one’s own. Examples of plagiarism include, but are not limited to:
- submitting an assignment as one’s own work when it is at least partly the work of another person;
- submitting a work that has been purchased or otherwise obtained from the Internet or another source;
- incorporating the words or ideas of an author into one's paper or presentation without giving the author credit.

Withheld Grades Semester Grades (SFA Policy 5.5)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

SFASU Mental Health Statement: SFASU values students' mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SFASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041

sfasu.edu/math
Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy 10.4). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Student Learning Outcomes (SLO): At the end of MTH 129, a student who has studied and learned the material should be able to:
1. Identify the number sets. [SBEC: I]
2. Identify and define recursively and explicitly (when possible) arithmetic and geometric sequences. [SBEC: II, V]
3. Use finite differences to find the closed form rule for sequences defined by a polynomial. [SBEC: II]
4. Use geometric series to find the rational number representation of a repeating decimal. [SBEC: I, II, V]
5. Define relations and represent them in a variety of ways. [SBEC: II]
6. Determine whether a relation satisfies the reflexive, symmetric, and transitive properties. [SBEC: II, V]
7. Define functions and function properties. [SBEC: II]
8. Identify the function families. [SBEC: II]
9. Interpret graphs of functions. [SBEC: II, V]

There are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and/or a service course.

Texas State Board for Educator Certification (SBEC): Mathematics Standards: Standard I. Number Concepts: The mathematics teacher understands and uses numbers, number systems and their structure, operations and algorithms, quantitative reasoning, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics. Standard II. Patterns and Algebra: The mathematics teacher understands and uses patterns, relations, functions, algebraic reasoning, analysis, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics. Standard V. Mathematical Processes: The mathematics teacher understands and uses mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics, and to communicate mathematically.

Date of document: 08/09/2021