|  |  |
| --- | --- |
| **PROFESSOR:** | **PHONE NUMBER:** |
| **OFFICE LOCATION:** | **E-MAIL:** |
| **OFFICE HOURS:** | **SEMESTER:** |

1. **COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDITS:**

**MAC 2311 CALCULUS WITH ANALYTIC GEOMETRY I (4 CREDITS)**

This course is designed for students majoring in science, mathematics, or engineering. Topics include: limits, differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions and applications. This course is sequential with MAC 2312 and MAC 2313. If completed with a grade of “C” or better, this course serves to demonstrate competence for the general education mathematics requirement.

1. **PREREQUISITES FOR THIS COURSE:**

(MAC 1106 & MAC 1114 with minimum grade of “C” in each course) OR (MAC 1140 & MAC 1114 with a minimum of “C” in each course) OR MAC 1147 with a minimum grade of “C” or appropriate CLM & Trigonometry bypass score.

**CO-REQUISITES FOR THIS COURSE:** None

1. **GENERAL COURSE INFORMATION:** Topic Outline.

• Review of Functions

• Limits and Continuity

• The Derivative

• Differentiation of Algebraic Functions

• Differentiation of Transcendental Functions

• Mean-Value Theorem and Intermediate Value Theorem

• Extrema and Graph Sketching

• Area and the Definite Integral

• Antidifferentiation

• Fundamental Theorem

1. **All courses at Florida SouthWestern State College contribute to the general education program by meeting one or more of the following general education competencies:**

**C**ommunicate clearly in a variety of modes and media.

**R**esearch and examine academic and non-academic information, resources, and evidence.

**E**valuate and utilize mathematical principles, technology, scientific and quantitative data.

**A**nalyze and create individual and collaborative works of art, literature, and performance.

**T**hink critically about questions to yield meaning and value.

**I**nvestigate and engage in the transdisciplinary applications of research, learning, and knowledge.

**V**isualize and engage the world from different historical, social, religious, and cultural approaches.

**E**ngage meanings of active citizenship in one’s community, nation, and the world.

**A.**  **General Education Competencies and Course Outcomes**

1. Listed here are the outcomes/objectives assessed in this course which play an integral part in the student’s general education along with the general education competency they support.

General Education Competency: **Evaluate**

Course Outcomes or Objectives Supporting the General Education Competency Selected:

* Students will be able to analyze functions graphically, numerically, and analytically.

2.  Listed here are the outcomes/objectives assessed in this course which play a *supplemental* role in the student’s general education along with the general education competency they support.

General Education Competency: **Think**

Course Outcomes or Objectives Supporting the General Education Competency Selected:

* Students will be able to determine critical numbers and inflection points for a function by calculating and analyzing the first and second derivatives.

**B.** **Other Course Objectives/Standards**

* Students will be able to calculate limits and test continuity using algebra, limit theorems, graphs and tables of data.
* Students will be able to calculate and interpret the slope of a tangent line and the instantaneous rate of change using the derivative.
* Students will be able to appropriately apply the derivative to solve problems, including those involving related rates and optimization.
* Students will be able to differentiate algebraic, trigonometric, exponential, and logarithmic functions expressed in explicit or implicit form using the sum, product, quotient, and/or chain rules as appropriate.
* Students will be able to calculate derivatives of expressions or functions that require the use of logarithmic differentiation.
* Students will be able to apply the Mean Value and Intermediate Value Theorems.
* Students will be able to sketch the graph of a function using the analysis from the first and second derivatives.
* Students will be able to construct a definite integral to determine an indicated area and calculate the area.
* Students will be able to determine antiderivatives by applying basic integration rules and/or substitution.
* Students will be able to evaluate definite integrals by applying the Fundamental Theorem of Calculus and properties of integrals.

1. **DISTRICT-WIDE POLICIES:**

**Programs for Students with Disabilities**

Florida SouthWestern State College, in accordance with the Americans with Disabilities Act and the College’s guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of Adaptive Services at the nearest campus. The office locations and telephone numbers for the Office of Adaptive Services at each campus can be found at <http://www.fsw.edu/adaptiveservices>.

**REPORTING TITLE IX VIOLATIONS**

Florida SouthWestern State College, in accordance with Title IX and the Violence Against Women Act, has established a set of procedures for reporting and investigating Title IX violations including sexual misconduct.  Students who need to report an incident or need to receive support regarding an incident should contact the Equity Officer at [equity@fsw.edu](mailto:equity@fsw.edu).  Incoming students are encouraged to participate in the Sexual Violence Prevention training offered online.  Additional information and resources can be found on the College’s website at <http://www.fsw.edu/sexualassault>.

1. **REQUIREMENTS FOR THE STUDENTS:**

List specific course assessments such as class participation, tests, homework assignments, make-up procedures, etc.

1. **ATTENDANCE POLICY:**

The professor’s specific policy concerning absence. (The College policy on attendance is in the Catalog, and defers to the professor.)

1. **GRADING POLICY:**

Include numerical ranges for letter grades; the following is a range commonly used by many faculty:

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

Below 60 = F

(Note: The “incomplete” grade [“I”] should be given only when unusual circumstances warrant. An “incomplete” is not a substitute for a “D,” “F,” or “W.” Refer to the policy on “incomplete grades.)

1. **REQUIRED COURSE MATERIALS:**

(In correct bibliographic format.)

1. **RESERVED MATERIALS FOR THE COURSE:**

Other special learning resources.

1. **CLASS SCHEDULE:**

This section includes assignments for each class meeting or unit, along with scheduled Library activities and other scheduled support, including scheduled tests.

1. **ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:**

(Which would be useful to the students in the class.)