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

# COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDITS:

## MAP 2302 Differential Equations I (4 Credits)

This course presents methods for finding solutions of first-order equations and some higher-order equations, the use of Laplace transforms, and finding non-linear solutions. If completed with a grade of “C” or better, this course serves to demonstrate competence for the general education mathematics requirement.

## PREREQUISITES FOR THIS COURSE:

MAC 2312 with a minimum grade of “C”

### CO-REQUISITES FOR THIS COURSE:

None

## GENERAL COURSE INFORMATION:

Topic Outline

Identification of dependent, independent, linear, and non-linear equations

Separation of variables

Substitution techniques

Exact differential equations

Integrating factors

Higher order differential equations

Undetermined coefficients

Laplace transforms

Inverse transforms

Application of differential equations

Shifting theorems

Derivatives and integrals of Laplace transforms

## 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:

Determine and apply appropriate mathematical and computational methods, models, principles and algorithms in order to solve mathematical problems related to the selection of topics listed in the “General Course Information: Topic Outline” of this Syllabus, interpret and represent results.B. Other Course Objectives/Standards

At the conclusion of this course, students will be able to demonstrate the following competences:

Classify differential equations by order and linearity.

Analyze differential equations using separation of variables.

Solve exact differential equations.

Solve differential equations using integrating factors.

Compare and solve higher order differential equations using reduction of order, one or more methods for working with undetermined coefficients, variation of parameters.

Evaluate and model applications involving population, circuits, predator-prey, and boundary-value problems.

Design Laplace transforms and inverse Laplace transforms to solve appropriate differential equations.

Evaluate Laplace transforms and inverse Laplace transforms and solve differential equations using the shifting theorems.

Construct and graph the unit step function.

Evaluate the derivatives and integrals of Laplace transforms.

## 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 <https://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 <https://www.fsw.edu/sexualassault>.

## REQUIREMENTS FOR THE STUDENTS:

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

## ATTENDANCE POLICY:

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

## GRADING POLICY:

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

| **Grade Percent** | **Letter Grade** |
| --- | --- |
| 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.)

## REQUIRED COURSE MATERIALS:

(In correct bibliographic format.)

## RESERVED MATERIALS FOR THE COURSE:

Other special learning resources.

## CLASS SCHEDULE:

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

## ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:

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