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

# COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDITS:

## CHM 2046 General Chemistry II (3 Credits)

This course is the second part of the two-semester general chemistry sequence. It covers thermodynamics, equilibrium, kinetics, oxidation-reduction, and electrochemistry.

## PREREQUISITES FOR THIS COURSE:

CHM 2045 and CHM 2045L with a grade of “C” or better in each course

### CO-REQUISITES FOR THIS COURSE:

CHM 2046L

## GENERAL COURSE INFORMATION:

Topic Outline

Properties of solutions

Thermochemistry and chemical thermodynamics

Chemical kinetics

Chemical equilibrium: homogeneous and heterogeneous; aqueous

Oxidation-reduction reactions and electrochemistry

## 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 course outcomes/objectives assessed in this course which play an integral part in contributing to the student’s general education along with the general education competency it supports.

General Education Competency: Evaluate

Course Outcomes or Objectives Supporting the General Education Competency Selected:

Using correct terminology, explain the laws of thermodynamics.

Solve numerical problems involving enthalpy, entropy, and free energy changes for physical and chemical processes.

Analyze the significance of the fundamentals of rates and mechanisms to chemical reactions.

Solve numerical problems involving rates, rate laws, reaction orders, concentrations, activation energy, and temperature dependence of rate.

Compare and contrast the fundamentals of chemical equilibrium.

Solve equilibrium problems involving homogeneous and heterogeneous systems.

Evaluate the Arrhenius, Bronsted-Lowry, and Lewis acid-base systems and classify acids and bases into the appropriate systems.

Predict relative strengths of selected binary and ternary acids.

Solve numerical problems involving acid-base and oxidation-reduction reactions in aqueous solutions.

Use the concepts of pH/pOH to solve numerical problems involving strong and weak acids and bases and polyprotic acids.

Recognize and appraise buffer systems and acid-base titration curves.

Analyze chemical equilibria involving slightly soluble salts and complex ions.

Solve numerical problems involving equilibria of sparingly soluble salts and complex ions.

Describe the fundamentals of galvanic and voltaic electrochemical cells and the mathematical description of both electrolytic and galvanic cells in terms of spontaneity and electrode potentials.

Balance oxidation reduction reactions.

Solve numerical problems involving electrochemical cell potentials, concentrations of electroactive species, thermodynamic and

equilibrium aspects of electrochemical cells

Explain and evaluate the dissolution process (including the effects of pressure and temperature on solubility) and selected colligative properties, and calculate concentration units.

## 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.)