Division/School Approval:	1/30/15	CP
	Date	Initial
Curriculum Committee Approval:	5/6/15	
	Date	Initial
Faculty Approval:	5/15/15	R. G.
	Date	Initial

SCHENECTADY COUNTY COMMUNITY COLLEGE
Course Outline

ACADEMIC DIVISION/SCHOOL: Mathematics, Science, Technology and Health

PREPARED BY: Gummersheimer, T.

COURSE CODE: CHM 122 **COURSE TITLE:** General Chemistry II

LECTURE HOURS/WEEK: 3 **LAB HOURS/WEEK:** 3 **CREDIT HOURS:** 4

PREREQUISITE/S: MAT 118 or or MAT 148 or MAT 154 or eligible to enroll in MAT 167 or higher AND CHM 121
PREREQUISITE or CONCURRENT COURSE: None
COREQUISITES: None

FINAL EXAM REQUIRED: YES X NO ____

COURSE DESCRIPTION:
This course is the second semester of a two-semester sequence. Topics include intermolecular forces, kinetics, equilibrium, acids and bases and their reactions, buffers, solubility and precipitation reactions, thermodynamics and electrochemistry. The laboratory experiments emphasize techniques and laboratory notebook keeping and illustrate the concepts studied in lecture.

SCCC Core Principle Course	**yes**
SUNY General Education Course	**no**

STUDENT LEARNING OUTCOMES:
Students successfully completing this course will:

- Evaluate intermolecular forces and apply this to various physical properties of substances;
- Identify substances in solutions and reactions and determine their concentrations;
- Describe and analyze various equilibrium systems;
- Solve a variety of problems involving the concepts of kinetics, thermodynamics, and electrochemistry; and
- Analyze quantitative data and qualitative observations from experiments.

REPRESENTATIVE TEXT/S:
Gilbert, T., Kirss, R., Foster, N., (current edition) *Chemistry: The Science in Context.* New York NY: Norton Publishing.

SUPPLEMENTARY MATERIALS/REFERENCES:
SCCC Laboratory Manual.
Shakhashiri, B., Schreiner, R. (Current edition) *Workbook for General Chemistry*. Champaign, IL: Stipes Publishers.

NOTE: Grading and assessment criteria may appropriately differ. Grades focus on what individual students have learned while assessments focus on entire cohorts of students. Each instructor will determine his/her grading criteria for the course and state on the course syllabus.

EVALUATION METHODS: Evaluation methods will include examinations and the laboratory notebook. Other evaluation methods may include, but are not limited to, quizzes, worksheets, or homework. The lecture is weighted as 75% and the laboratory is weighted as 25% of the course grade.

REQUIRED ASSESSMENT METHODS:

Assessment results from these methods will be used for course-level assessment and, where applicable, for SCCC core principles and SUNY General Education Knowledge and Skills areas. This information will be incorporated in program reviews.

Student Learning Outcome	Method(s)
Evaluate intermolecular forces and apply this to various physical properties of substances	Exam
Identify substances in solutions and mixtures and determine their concentrations	Exam
Describe and analyze various equilibrium systems	Exam
Solve a variety of problems involving the concepts of kinetics, thermodynamics, and electrochemistry	Exam
Analyze quantitative data and qualitative observations from experiments	Exam

NOTE: College policy requires a final exam or final week activity.

COURSE CONTENT OUTLINE:

COURSE: CHM 122 – General Chemistry II

WEEK	TOPIC
1-2	Intermolecular Forces
3	Solutions & Colligative Properties
4-5	Kinetics
6-7	Chemical Equilibrium – General Concepts
8-9	Acid and Base Equilibrium
10-11	Buffers
12	Solubility Equilibrium
13	Thermodynamics
14-15	Electrochemistry
16	Cumulative Final Exam

The topics must be covered in this order to properly coordinate with the laboratory.

COURSE LABORATORY OUTLINE:

COURSE: CHM 122 – General Chemistry II

WEEK	TOPIC
1	Lab Check-in and Safety The Laboratory Notebook
2	Freezing Point Depression
3	Solution Preparation and Standardization
4	Chemical Kinetics: Effects of Concentration and Temperature
5	Chemical Equilibrium – Week 1
6	Chemical Equilibrium – Week 2 and Systems at Equilibrium: LeChatelier's Principle
7	Synthesis of Aspirin
8	Determination of the Dissociation Constant for Aspirin
9	Buffers
10	Determination of the Solubility Product Constant of a Sparingly Soluble Salt
11	Qualitative Analysis
12	Enthalpy and Entropy of a Borax Solution
13	Oxidation-Reduction Reactions and Galvanic Cells
14	Instructor's Choice and Check-out