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<b>COURSE PREFIX/NO:</b>	<b>CHM 105</b>
<b>COURSE TITLE:</b>	<b>General, Organic and Biochemistry</b>
<b>LECTURE HOURS/WEEK:</b>	<b>3.0</b>
<b>LAB HOURS/WEEK</b>	<b>3.0</b>
<b>CREDIT HOURS/SEMESTER</b>	<b>4.0</b>

[Distance Learning Attendance/VA Statement](#)  
[Textbook Information](#)

### **COURSE DESCRIPTION**

This course is a study of the fundamental principles of chemistry, including atomic and molecular structure, common substances and reactions, introduction to organic chemistry and biochemistry. It is recommended that students with no background in chemistry take CHM 101 before taking CHM 105.

### **COURSE COMPETENCIES**

Upon successful completion of this course students should be able to:

#### **Module 1: Measurements, Atoms, Elements, Compounds and Their Bonds**

- Use key terminology of the units used in the metric and American measurement systems appropriately.
- Explain the concept of measured numbers and Significant Figures.
- Write and use conversion factors.
- Use metric prefixes to convert metric units of different sizes.
- Show proficiency in problem solving.
- Use the concept of density and specific gravity by.
- Use key terminology of the elements and their symbols.
- Using atomic numbers and mass numbers, determine the number of neutrons in an atom.
- Write the electron configuration of the electrons in the atoms.
- Explain what is meant by valence electrons, ions, and the octet rule.
- Show proficiency in writing the names and formulas of ionic, covalent, and polyatomic compounds.
- Explain the concept of electronegativity, bond polarity, and the geometry of molecules.
- Perform a scientific experimental procedure.
- Collect and analyze data.
- Write a proper scientific laboratory report.

#### **Module 2: Chemical Reactions, Quantities, Solutions, Acids and Bases**

- Explain the difference between physical and chemical changes.
- Show proficiency in balancing and using chemical equations.
- Explain the classification of chemical reactions.
- Explain the concept of the mole in chemistry.
- Show proficiency in the use of molar mass in calculating chemical quantities.

- Conduct a chemical reaction in the laboratory and calculate the percent yield.
- Discuss the properties of solutions, electrolytes, and non-electrolytes.
- Show proficiency in calculating the concentrations of solutions.
- Discuss the properties of acids and bases.
- Show proficiency in calculations involving the ionization of water, pH, and pOH.
- Show proficiency in balancing neutralization reactions.
- Show proficiency in calculating chemical quantities in neutralization reactions.
- Explain how buffers work.
- Conduct a titration reaction in the laboratory and determine the amount of acid or base present.

### **Module 3: Introduction to Organic Chemistry**

- Explain the IUPAC system for naming hydrocarbons.
- Write full and condensed structural formulas of the hydrocarbons.
- Identify and name examples of all organic functional groups.
- Write balanced chemical equations for important organic chemical reactions.
- Write structures of isomers and discuss the effect of structure on properties.
- Explain chirality and its association with organisms.

### **Module 4: Introduction to Biochemistry**

- Demonstrate knowledge of carbohydrate types
- Draw structures and be able to identify types and name by type
- Write chemical reactions for conversions between carbohydrate types.
- Explain enzyme action associated with one of several models.
- Classify fats, waxes and oils from plant and animal sources.
- Draw structure of amino acids from the general formula and R groups.
- Explain the multiple levels of protein structure
- Recognize the main functions of proteins in organisms.

### **MINIMAL STANDARDS**

Minimal standards for performance of course competencies are indicated by achieving an average of 60% on all evaluation instruments used in the course.

### **COURSE REQUIREMENTS**

#### **Attendance Policy**

Students are responsible for attending class and laboratory meetings in the course and for completion of all reading and written assignments. If a student is absent from a class or laboratory meeting, it is the student's responsibility to obtain and complete any assignment that may have been made in the missed meeting. Students who are absent from more than 10 percent of the total contact hours (class and laboratory combined) will be withdrawn from the course in accordance with the York Technical College attendance policy.

#### **Withdrawal from a Course**

A student may withdraw from a course after the drop/add period until midterm with a grade of "W" (withdrawn). To withdraw from a course, a student may contact the instructor to initiate an electronic withdrawal or contact Student Services. Students who withdraw after midterm may

receive a “W” at the discretion of the instructor if performance has been satisfactory to the point of withdrawal. Otherwise, such withdrawals will receive a grade of “WF.”

### **Student Conduct**

Students are required to conform to all conduct codes as specified in the York Technical College Handbook and Catalog. Students found guilty of academic dishonesty such as cheating or plagiarism will be given a grade of zero and may be subject to further disciplinary action.

### **EVALUATION STRATEGIES/GRADING**

The competencies of each module may be evaluated by any of the following methods: examination (written or oral), presentation, written report, written assignment, daily quiz, laboratory quiz, homework, or other appropriate instruments. Grades will be determined as follows:

Module 1	15% of course grade
Module 2	15% of course grade
Module 3	15% of course grade
Module 4	15% of course grade
Final Exam (comprehensive)	15% of course grade

Laboratory Grade (participation and documentation) 25% of course grade

### **Grading Scale:**

A	90 – 100
B	80 – 89.9
C	70 – 79.9
D	60 – 69.9
F	Below 60.0

The above requirements and topics are standard and required for the course. Individual instructors will provide statements of additional requirements and/or policy.

### **Disabilities Statement:**

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

### **ENTRY LEVEL SKILLS**

A student entering this course should possess reading comprehension and writing skills on at least the 10th grade level.

**PREREQUISITES:** None. However; CHM 101 is recommended before taking CHM 105 for students with no recent chemistry background.

**CO-REQUISITES:** None