### NORTHEASTERN TECHNICAL COLLEGE
### COURSE OUTLINE

<table>
<thead>
<tr>
<th>COURSE:</th>
<th>PREFIX NO.</th>
<th>EFFECTIVE DATE</th>
<th>NEXT REVIEW DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM</td>
<td>110</td>
<td>Fall 2015</td>
<td>Fall 2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TITLE:</th>
<th>CREDITS</th>
<th>CONTACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Chemistry I</td>
<td>4</td>
<td>3 3 4</td>
</tr>
</tbody>
</table>

**PREREQUISITES:** A grade of "C" or better in Math 101 (or higher math), CHM 100, or recent chemistry

**DESCRIPTION:** This is the first course in a sequence which includes the following topics: atomic and molecular structure, nomenclature and equations, properties, reactions and states of matter, stoichiometry, gas laws, solutions, and equilibria.


**MATERIALS (specifying those to be purchased by student):** scientific calculator

**COLLATERAL READING:** library resources, internet articles

**CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):**

**Academic dishonesty:** As stated in the college catalog, any student that plagiarizes or is caught cheating on any assignment in a course will receive a zero for that assignment. The documentation will be collected and reported to the Dean of Student Services.

**Attendance:** According to college policy, a student may miss 20% of the scheduled class periods. A student withdrawing from a course up to midterm will be assigned a "W". A "W" will be assigned after midterm only if the student has instructor-documented satisfactory progress. A "WF" may be assigned for a student withdrawal after midterm when the student is not passing the course. An "F" may be assigned for excessive absences without withdrawal.

If a student leaves class or lab early, the hours missed will be counted as part of the hours absences.

**Tardies:** A student is considered tardy if he or she arrives for class after the scheduled time. Three tardies constitute 1 hour of absence.

**Electronic Devices in the Classroom:**
Use of cell phones/beepers (including headsets) or cameras is not permitted unless the instructor grants permission of use for a class activity.
**Student ID:** It is mandatory that every student wear his or her student ID at all times. Students will be dismissed from class if not wearing their ID. The student may get his/her ID and return to class before the midpoint of the class. If the student cannot get his/her ID and return to class by the midpoint, the instructor will record the absence.

**Disabilities Statement:** Students with disabilities are encouraged to contact the Dean of Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Dean of Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog)

**RESOURCES:** (A-V, persons, tools/equipment): The following equipment may be used in lecture or lab settings: overhead LCD projector, VCR/DVD, computers, and various chemical lab equipment as specified in individual labs.

**ASSESSMENT:** Assessments will be assigned by the instructor throughout the semester.

**COURSE TOPICAL OUTLINE** (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.

Chapter 1 Chemistry and Measurement (1-1.5 weeks)
Chapter 2 Atoms, Molecules, and Ions (1.5-2 weeks)
Chapter 3 Calculations with Chemical Formulas and Equations (1.5-2 weeks)
Chapter 4 Chemical Reactions (1-1.5 weeks)
Chapter 7 Quantum Theory of the Atom (1.5 weeks)
Chapter 8 Electron Configurations and Periodicity (1.5 weeks)
Chapter 9 Ionic and Covalent Bonding (1.5 weeks)
Chapter 10 Molecular Geometry and Chemical Bonding Theory (1.5 weeks)
Chapter 5 The Gaseous State (2 weeks)
Chapter 11 States of Matter; Liquids and Solids (1 week)
### TENTATIVE TOPICAL LAB SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Chemistry Lab/ SI Unit Lab</td>
</tr>
<tr>
<td>2</td>
<td>Basic Laboratory Operations Lab</td>
</tr>
<tr>
<td>3</td>
<td>Identification of a Compound: Chemical Properties</td>
</tr>
<tr>
<td>4</td>
<td>Water Analysis: Solids</td>
</tr>
<tr>
<td>5</td>
<td>Paper Chromatography</td>
</tr>
<tr>
<td>6</td>
<td>Percent Water in a Hydrated Salt</td>
</tr>
<tr>
<td>7</td>
<td>Empirical Formulas</td>
</tr>
<tr>
<td>8</td>
<td>Limiting Reactant</td>
</tr>
<tr>
<td>9</td>
<td>Periodic Table and Periodic Law</td>
</tr>
<tr>
<td>10</td>
<td>Acids, Bases, and Salts</td>
</tr>
<tr>
<td>11</td>
<td>Aspirin Synthesis and Analysis</td>
</tr>
<tr>
<td>12</td>
<td>Modern Marvels Acids</td>
</tr>
<tr>
<td>13</td>
<td>Infrared Spectroscopy</td>
</tr>
<tr>
<td>14</td>
<td>The Chemistry of Combustion</td>
</tr>
<tr>
<td>15</td>
<td>Flame Tests; Boiling Point</td>
</tr>
</tbody>
</table>

### LEARNING OUTCOMES/OBJECTIVES OF COURSE:

1. Students will be able to perform basic chemical laboratory exercises and accurately measure (mass, volume) chemicals needed for use in lab.

2. Students will be able to use chemical nomenclature and atomic symbols to identify chemicals on the Periodic Table.

3. Students will be able to calculate the amount of chemicals used during a chemical reaction using stoichiometry.

4. Students will be able to describe how atoms bond based on their valence electrons.

5. Students will be able to describe how a gas reacts using gas law calculations.

6. The student will be able to use the scientific method to solve problems.
COLLEGE-WIDE COMPETENCIES:
1. The student will be able to collect information needed for a given task.
2. The student will be able to analyze information.
3. The student will be able to evaluate information to determine its usefulness.
4. The student will be able to apply knowledge to make decisions and solve problems.

INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES: Lectures, laboratory work, and videos on topics in chemistry may be used. Science projects and reports may also be used to supplement instruction.

EVALUATIVE METHODS TO APPRAISE OBJECTIVES: Course assignments may include tests and lab activities. A comprehensive final exam will be given. No lecture test grades will be dropped. Points will be deducted for spelling and grammatical errors. One lab assignment will be dropped before final averaging.

COURSE GRADES WILL BE A WEIGHTED AVERAGE OF THE FOLLOWING COMPONENTS:
- Final Average
- Lecture test average = 50%
- Lab average = 30%
- Cumulative Final Exam = 20%

GRADING SCALE:
- 90 - 100 = A
- 80 - 89 = B
- 70 - 79 = C
- 60 - 69 = D
- BELOW 60 = F