QUEENSBOROUGH COMMUNITY COLLEGE

CHEMISTRY DEPARTMENT

CH-127

INTRODUCTORY GENERAL CHEMISTRY

PREREQUISITES: None

LECTURE: 3 hrs/wk

LAB: 3 hrs/wk

CREDITS: 4.5

*TEXTBOOK:
General, Organic, and Biochemistry
Denniston - Topping – Woodrum - Caret
Volume 1 (Custom Edition); ISBN: 1259138488

New Textbook package will include access to the online homework system (CONNECT) and the E-book

*Some sections of this course require access to online material and the instructors will provide information for best cost textbook options. It is advisable to attend the first day of class before purchasing the textbook.

LAB MANUAL:
Introductory College Chemistry Laboratory Experiments,
Irina Rutenburg, Paris Svoronos, Pedro Irigoyen

COURSE DESCRIPTION: This course is the first semester of a two-semester sequence. The first semester is intended to provide students with basic knowledge of modern theory of general chemistry, while the second semester introduces organic chemistry. The course covers the most essential topics of general chemistry for health professions. Topics include units of measurement and dimensional analysis, elements and compounds, chemical bonding and chemical reactions, properties of solutions and chemical equilibrium, acid-base chemistry, physical states and gas laws, intra- and intermolecular forces. In the laboratory component, students apply the scientific method to explore natural phenomena using basic experimental techniques.

CURRICULA FOR WHICH THE COURSE IS REQUIRED/RECOMMENDED:

- B.S. or B.A. in Nursing, Nutrition and some other Allied Health Professions
- A.S in Health Sciences
- A.A. in Liberal Arts and Sciences (non-science concentration) and other non-science majors as a laboratory science elective.
- Pathways Common Core 1C-Life and Physical Sciences and 2E - Scientific World STEM variant

GENERAL EDUCATIONAL OBJECTIVES:

- To learn and apply the fundamental concepts and methods of health-related chemistry.
- To apply the scientific method in exploring natural phenomena.
- To use the tools of chemistry to perform collaborative investigations in laboratory.
- To collect, analyze, interpret, and present data in an effectively written laboratory report.
- To identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.

Prepared by course coordinators: Drs. Bruzewicz Lall-Ramnarine, Rutenburg & Sideris  Spring 2016
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SPECIFIC COURSE OBJECTIVES / EXPECTED STUDENT LEARNING OUTCOMES:

- To develop an understanding of the theoretical and descriptive concepts that form the basis of general chemistry, and to solve qualitative and quantitative problems in chemistry and health-related fields.
- To apply fundamental concepts of chemistry to quantitative problem-solving and to qualitative analysis, and to use the scientific method—development of hypotheses, observation, experimentation, measurement, and presentation of results—in exploring chemical properties of matter and determining unknown physical quantities.
- To collaborate in groups of two or more to learn and apply fundamental experimental techniques used in health-related chemistry.
- To perform hands-on experiments that require collection, interpretation, and evaluation of data; to draw conclusions based on data; and to communicate experimental findings clearly and effectively through discussion and writing.
- To learn to practice and expect unbiased collection and presentation of scientific data in reports and papers; to understand the importance of upholding ethics; and to be able to identify violations of research ethics.

METHODS BY WHICH STUDENTS LEARNING WILL BE EVALUATED:

The overall grade will be computed using the following general distribution:

- Examinations, Assignments and Classroom Performance 50%
- Laboratory Work 25%
- Final Examination 25%

This distribution may be changed at the discretion of the individual instructor. Aside from the above, students are mandated to take the American Chemical Society (ACS) assessment test which will be administered during the last (check-out) laboratory period (week 14) and 10% of that grade will be added to the students’ final course grade.

ATTENDANCE/ABSENCE POLICY:

Attendance will be taken at every class. The Student Handbook states that a student will be considered excessively absent from a course and will receive a WU grade if the student has been absent for 15% or more of the total number of contact hours for the course. If there is a laboratory component to a course, a student will be considered excessively absent if the student misses 15% or more of either component. A WU is computed as an F in the student’s GPA.

Students who have valid excuses for missed classes should speak with their instructor and present documentation explaining the reason for the absence. Absences that have been excused by the instructor will not be counted toward a WU grade.

- If a class meets twice per week: students will receive a grade of WU if they have 7 or more excused/unexcused absences.
- For any lecture that meets only once per week, students will receive a grade of WU if they have 4 or more excused/unexcused absences.
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ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:

As stated in the current college catalog, any student who needs specific accommodations based upon the impact of a disability should register with the office of Services for Students with Disabilities (SSD) to be eligible for accommodations which are determined on an individual basis. The SSD office is located in the Science Building, room S132 (718-631-6257). Students should also contact their instructor privately to discuss their specific needs.

LABORATORY ATTENDANCE/ABSENCE POLICY:

All lab policies will be explained in detail by your lab instructor. Three (3) or more absences from the lab earn a grade of WU in the lab. For CH-127/128, CH-151/152, CH-251/252, a WU in the lab results in a WU for the entire course. The first and last lab meetings are mandatory and count against your total attendance.

There are no make-up sessions for missed labs. Policies regarding excused and unexcused absences will be explained by your lab instructor. A full lab report is required for each experiment and is due the next class period. Your lab instructor will describe the format for lab reports, as well as requirements for entry into the lab. Students who arrive after the pre-lab lecture may not participate and will be marked absent.

Safety in the lab is extremely important. Therefore, the ACS safety video must be viewed during the first lab session. A safety quiz must be taken and passed, and the safety declaration sheet must be signed. A student that shows up for the lab, but who has not seen the safety video and passed the quiz, will not be permitted to conduct the experiment, will be considered absent, and will receive a zero for the lab. There will be several additional showings of the safety video during the first three weeks of classes. A student who has not viewed the safety video and passed the quiz by the third lab session will have accumulated 3 absences in the lab and therefore will not be permitted to continue in the course. They may either withdraw or receive a WU for the course.

REQUIRED ATTIRE FOR THE LABORATORY:

Students MUST wear safety goggles in the lab at all times. Shorts and short skirts, tank tops and cropped tops, sandals and open-toed shoes, untied long hair, and any type of food or beverage in the lab are forbidden. Students who fail to follow these rules will not be permitted to perform the experiment. They will be marked absent and will be given a zero that lab.

ACADEMIC INTEGRITY:

Academic honesty is taken extremely seriously and is expected of all students. All assignments must be the original work of the student (and partners or group, if applicable). All questions or concerns regarding ethical conduct should be brought to the course instructor. “It is the official policy of the College that all acts or attempted acts that are violations of academic integrity be reported to the Office of Student Affairs (OSA). At the faculty member’s discretion and with the concurrence of the student or students involved, some cases, though reported to the OSA, may be resolved within the confines of the course and department. The instructor has the authority to adjust the offender’s grades as deemed appropriate, including assigning an F to the assignment or exercise or, in more serious cases, an F to the student for the entire course” (Adapted from the QCC Academic Integrity Policy, 2/14/2005).

Prepared by course coordinators: Drs. Bruzewicz Lall-Ramnarine, Rutenburg & Sideris     Spring 2016
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LECTURE SYLLABUS

TEXTBOOK: General, Organic, and Biochemistry
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<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>TOPIC</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chemistry: Methods and Measurements</td>
<td>5</td>
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<tr>
<td>2</td>
<td>The Structure of the Atom and the Periodic Table</td>
<td>4</td>
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<tr>
<td>3</td>
<td>Structure and the Properties of Ionic and Covalent Compounds</td>
<td>7</td>
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<tr>
<td>4</td>
<td>Calculations and the Chemical Equation</td>
<td>5</td>
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<tr>
<td>5</td>
<td>States of Matter: Gases, Liquids, and Solids</td>
<td>4</td>
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<tr>
<td>6</td>
<td>Solutions</td>
<td>4</td>
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<tr>
<td>7</td>
<td>Energy, Rate, and Equilibrium</td>
<td>2</td>
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<tr>
<td>8</td>
<td>Acids and Bases and Oxidation-Reduction</td>
<td>4</td>
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<tr>
<td>9</td>
<td>The Nucleus, Radioactivity, and Nuclear Medicine</td>
<td>2</td>
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<td>At least 3 Class Exams and quizzes</td>
<td>5</td>
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</table>

The approximate hours per chapter are guidelines and are at the discretion of the instructor. The instructor is responsible for making assignments and scheduling examinations. The Final Exam is cumulative and is given during the last week of classes.
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## LABORATORY SCHEDULE

**LAB MANUAL:** Introductory College Chemistry Laboratory Experiments, Irina Rutenburg, Paris Svoronos, Pedro Irigoyen

<table>
<thead>
<tr>
<th>WEEK</th>
<th>EXPERIMENT TITLE</th>
<th>EXPT. #</th>
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<tbody>
<tr>
<td>1</td>
<td>Check-in, Safety Movie and Discussion</td>
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<tr>
<td>2</td>
<td>Physical Properties of a Substance: Melting and Boiling Points</td>
<td>2</td>
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<tr>
<td>3</td>
<td>Physical Properties of a Substance: Density</td>
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<tr>
<td>4</td>
<td>Formula of a hydrated Salt</td>
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<tr>
<td>5</td>
<td>Electrical Conductivity of Aqueous Solutions: Electrolytes and Non-electrolytes</td>
<td>6</td>
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<tr>
<td>6</td>
<td>Chemical Properties of a Substance: Chemical Reactions</td>
<td>5</td>
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<tr>
<td>7</td>
<td>Qualitative Analysis</td>
<td>13*</td>
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<td>8</td>
<td>Chromatography</td>
<td>3</td>
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<tr>
<td>9</td>
<td>Molar Mass of a Volatile Liquid (Referred to as “gas” in manual)</td>
<td>7</td>
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<tr>
<td>10</td>
<td>Determination of a Solution’s Concentration by UV-Visible Spectrophotometry</td>
<td>8*</td>
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<tr>
<td>11</td>
<td>pH Determination of Solutions</td>
<td>9*</td>
</tr>
<tr>
<td>12</td>
<td>Determination of a Solution’s Concentration by Titration</td>
<td>10*</td>
</tr>
<tr>
<td>13</td>
<td>Nuclear Chemistry: Radioactivity</td>
<td>12*</td>
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<tr>
<td>14</td>
<td>ACS Assessment Test</td>
<td></td>
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<tr>
<td>15</td>
<td>Check-out (Attendance required: All students must be present)</td>
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*Modified procedure provided in handout.*