A. Course Description

Chemistry 1 is the introductory course in General Chemistry at the Ateneo de Manila University. This class is intended for non-science undergraduate students desiring a simple, clear but broad understanding of chemical principles and their impact on our lives. The general aim of the course is to provide the students a firm background and understanding of the role of the natural sciences in their everyday lives in the context of chemistry as a central science. The course is designed to make general chemistry interesting in order to elicit positive attitudes of students towards chemistry, and science in Philippine life in general.

B. Learning Outcomes

At the end of the course, the student should be able to:

1. Correctly use the scientific method to create a clear, logical, and scientifically sound experimental design to solve simple chemical problems
2. Demonstrate skills in performing basic chemical calculations and predicting the properties of simple compounds given their structures
3. Correctly explain:
   a. The chemistry and science behind things and events encountered in everyday life
   b. How chemistry and other fields can be used to address complex problems in society
4. Discuss innovations and inventions that made an impact in Philippine society today

C. Course Outline and Schedule of Activities

<table>
<thead>
<tr>
<th>Week</th>
<th>TOPIC</th>
<th>Hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Chemical Building Blocks: Atomic Theories, Models, and Electronic Structures Atomic Theory of Matter, Development of Atomic Models, Quantum Mechanical Model</td>
<td>Ch 2; 3</td>
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<tr>
<td>4-4.5</td>
<td>The Mendeleev Code: Unlocking the Periodic Table The Periodic Table of Elements, Periodic Trends, Electron Configuration and Periodicity</td>
<td>Ch 3</td>
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<tr>
<td>4.5-6</td>
<td>How Attractive Are You I: Chemical Bonding Lewis Structure, Ionic Bond, Covalent Bond, Electronegativity, Bond Polarity</td>
<td>Ch 4</td>
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<td></td>
<td><strong>LONG EXAM 1 (Week 6)</strong></td>
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<tr>
<td>7</td>
<td>How Attractive Are You II: Hybridization and Molecular Interaction PART II Lewis Structure, Molecular Structure (VSEPR), Polarity, Intermolecular Forces</td>
<td>Ch 4; 6</td>
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<tr>
<td>8</td>
<td>The Language of Chemistry: Symbols, Formulas, and Nomenclature Names and Symbols for Simple Ions, Formulas and Names for Ionic Compounds, Names for Chemical Compounds</td>
<td>Ch 4</td>
</tr>
<tr>
<td>9-10</td>
<td>Electronic Take-overs and Mergers: The Arithmetic of Chemistry, Equations and Stoichiometry Chemical Equations/Reactions, Atomic and Molecular Weights, The Mole and Avogadro’s Number</td>
<td>Ch 5</td>
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<td><strong>LONG EXAM 2 (Week 11)</strong></td>
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| 11-12 | Chemists have Solutions: Acids and Bases  
Solutions (Concentration, Dilution), Acids and Bases (Definitions, the pH Scale), Redox Reactions | Ch 7; 8 |
| 13-14 | It's a Gas, Gas, Gas: the Gas Laws & You!  
Early Gas Law Experiments, Integrated Gas Law, Stoichiometry of Gases, Real Gases | Ch 6; 13 |
| 15-16 | Special Topics |

### D. Required References


### E. Suggested Readings

### F. Course Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Three (3) Long Exams (100 points each)</td>
<td>50%</td>
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<tr>
<td>Comprehensive Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Class-related Activities</td>
<td>15%</td>
</tr>
<tr>
<td>(Quizzes, Problem Sets, Homework, Seatwork)</td>
<td></td>
</tr>
<tr>
<td>Special Project</td>
<td>15%</td>
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</tbody>
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#### 1. Quizzes and Homework

There will be quizzes (announced or unannounced) and homework that may be based on class discussions, assigned readings or end-of-chapter problems. The key to doing well in Ch 1 is mastering concepts and problem solving techniques. There is a 1:1 correlation between problem solving skills and how well one does in a general chemistry class. The techniques and concepts are cumulative, so it is critical that you do not fall behind. Missed quizzes or homework merits a ZERO grade and cannot be made up.

#### 2. Exams

There will be four (4) required examinations: three (3) pre-final long examinations and one (1) comprehensive final exam. Unexcused absences from any exam will result in a grade of ZERO for that exam. Excused absences from an exam include: serious illness, or death or serious illness in the immediate family. In all cases, it is the student's responsibility to notify the instructor, or the Department of Chemistry Secretary (Phone: 02-4266001 local 5620), prior to the exam to be officially excused from the Exam. You must inform the teacher beforehand if there are any foreseeable circumstances that would prevent you from taking the exam as scheduled. Advanced/deferred long exams are solely at the teacher’s discretion. Exemptions for the final exam require a minimum grade of 91.50% for the three long exams and class-related activities.

#### 3. Special Project

The special project is done in groups of no more than 4 members. The details will be discussed in class. It is the student's responsibility to form his/her group.

#### 4. Class Participation

Students are expected to come prepared to class. In order to facilitate a good discussion, students are expected to actively participate in class by answering questions, solving problems or expressing their ideas/opinions.

#### 5. Other Requirements

A calculator capable of arithmetic, powers, and exponential functions is essential for examinations, quizzes and problem sets and is required during class. Programmable calculators, or cellular phones or PDA-based calculators are prohibited for use during quizzes or examinations.
G. Grading System

Grade Equivalent (%): A ≥ 91.50 >B+ ≥ 86.50 >B ≥ 79.50 >C+ ≥ 74.50 >C ≥ 67.50 >D ≥ 60.00 >F

H. Class Policies

Attendance. Students are expected to attend all classes. Only nine (9) hours of cuts, excused or unexcused, are allowed. Exceeding this limit will result in withdrawal of the student from the class (a grade of W). Absences and tardiness will prohibit you from turning in your homework, taking a quiz or an exam. The teacher reserves the right to not admit latecomers in class. Observance of regularly scheduled religious obligations, attendance at academic conferences or field trips, or participation in university-sponsored activities such as debating contests or athletic competition can also be excused if prior notification and permission is granted.

Decorum. Students are expected to behave properly given the academic setting. As such, cellular phones, computers and other electronic gadgets are prohibited during lecture and exams. Students are also encouraged to work on assigned homework and problem sets outside of class as students may be called to solve problems in front of the class. The teacher reserves the right to eject anyone from the classroom on the grounds of discourtesy to the teacher or fellow student, misbehavior in the classroom, or other reasons stipulated in the Student Handbook.

Honesty. In keeping with the Mission Statement of Ateneo, academic, professional, and personal honesty is imperative. Academic dishonesty includes, but is not limited to:

1. An attempt, whether successful or unsuccessful, in cheating in the form of looking at someone’s paper, possession and/or availability of unauthorized notes or any material relevant to the exam within sight, talking to someone even if unrelated to the exam, etc.
2. Letting someone else do the homework assigned or ask significant help from someone else.
3. Fabrication or submission of falsified data and information or deception (e.g. claiming to have done the task before writing a reaction paper about it, letting someone sign your name in the attendance of a bonus activity, claiming to have submitted work, etc.).

Cheating in any major course requirement will merit an academic penalty of F in the course and will be regarded as a major disciplinary offense. Major course requirements would include mid-term or final examinations, or any other academic requirements that constitute twenty (20) percent or more of the final grade in the course. Cheating in any other course requirement will merit a minimum academic penalty of F in that academic requirement, and will be subjected to the usual review befitting a disciplinary case.

Correspondence. If a student has a disability that interferes with learning, please see the teacher on a confidential basis so that a strategy can be devised to overcome whatever barriers that might exist. Set an appointment with the teacher if at any point in the semester you feel that you are having problems in class or which affects your performance in class.

Suggestions. Suggestions for course improvement are welcome at any time. Any concerns about the course should be brought to my attention. Feel free to approach the teacher after class or send an email.