SYLLABUS FOR GENERAL CHEMISTRY I – CHEM 1031*Tentative*

Course Descriptions, Pre- and Co-Requisites:

CHEM 1031. General Chemistry I (3 s.h.)

The first semester of chemistry for science majors, pre-professional students, and others in science related fields. A quantitative introduction to atomic and molecular structure, states of matter, basic thermodynamics, and solutions. Three hours of lecture and one hour of recitation per week. Prerequisite: Placement into Mathematics 1022, Mathematics 1021 with a grade of C or better, or equivalent transfer. Co-Requisite: Chemistry 1033 is normally taken concurrently. Students enrolled without meeting these requirements may be de-enrolled by the Dean’s office.

Note: This course can be used to satisfy the University Core Science & Technology First Level (SA) requirement. Students must earn the grade of C- in this course or higher before enrolling in CHEM 1032 (General Chemistry II).

Meeting Times Room Lecturer Office Ext Email
TR 9:30-10:50 BE 164 CERKEZ BE 448 7821 cerkeze1@temple.edu

Office Hours: W 9-11 am, R 2-4 pm, F 11 am – 1 pm, and by appointment.

Coordinator: Dr. John B. Michel (BE 126B; ext. 2434; jmichel@temple.edu). Dr. Michel is the person to see regarding scheduling issues and drop/adds in recitation and lab sections.

Canvas® Important announcements and useful information can be found in:

General Chemistry I – Cerkez

Recitations: Follow your schedule for meeting times and rooms. Recitations will meet starting the first week of the semester on Tuesday, January 17th. Be sure to make a note of your recitation instructor’s office hours and email address.

Drop/Add: During the first two weeks of the semester students may only register for open Lec/Rec sections with permission from Dr. Michel in consultation with the lecturer. The last day to drop a course without a record of the class appearing on the transcript is Monday, January 29th.
Withdrawal: In weeks three through eight of the semester, a student may withdraw only with their advisor’s permission. This is Temple University’s Policy (#02.10.14). There is no need to seek a lecturer’s or instructor’s signature. The course will be recorded on the transcript with the notation of “W,” indicating that the student withdrew. A student may withdraw from no more than five courses during his/her undergraduate career. A student may not withdraw from the same course more than once. After week eight, students may not withdraw from courses and will receive a letter grade. The last day to withdraw from a course is Tuesday, March 21st.

Incompletes: An incomplete, or “I”, will only be given in accord with Temple University’s Policy (#03.12.13). An “I” cannot be assigned until the specific requirements have been met and the Agreement for Issuing an Incomplete form has been signed and submitted by the instructor and the student prior to submitting the form to the Dean’s Office or Dean’s Designee for final approval. To obtain an “I”, at least 50% of the work for the course must be completed, a student’s accumulated point total must be more than 75% of the total number of possible points, and there must be a valid reason acceptable to academic advising. For students who are assigned a grade of “I”, all previous scores will stand and will be used in the calculation of the final score and grade when the course is completed. No “I” designation may be requested after the final exams for these two courses have been administered.

Students should have a Scientific Calculator that includes exponential and log functions. Note that the possession, use and sharing of graphing and programmable calculators, cell phones, and other digital devices is strictly prohibited when taking quizzes and exams.

For the Final Exam, students are encouraged to purchase the General Chemistry Study Guide from the American Chemical Society (ACS) at: http://shopping.na1.netsuite.com/s.nl/c.3773982/it.A/id.1717/.f
Copies of this guide are on reserve in the Science and Engineering Library.

Attendance and Make-up: Students are expected to attend all lectures and recitations, to arrive on time, and to remain for the entire class. Cell phones should be switched off during lectures and recitations. Please do not inform your lecturer that you have missed or will miss a lecture; they are not interested in your excuse and are under no obligation to inform students as to what material was covered in lecture. It is the student’s responsibility to note any announced schedule changes and their implications to graded work.

Lecture: It is the instructor’s prerogative to record attendance in lecture and to use it in the determination of the lecture grade. Make-up exams for the Final Exam will be offered only if an absence is beyond the student’s control and compelling documentation is provided. The student must meet with the lecturer, ideally within 24 hours, who will then decide if a make-up exam is justified. The make-up exam will be given 1 or 2 days after the regularly scheduled exam at a time and place determined by the lecturer. Note that there are no make-up exams for Exams I, II, III, or IV (see below).

Recitation: Recitations will meet starting the first week of the semester, starting on Tuesday, January 17th. Students are required to attend their registered recitation section at the scheduled time. Students are encouraged to ask questions. Each week there will be a 10-minute online “recitation” quiz which is available between 9 am Monday to 5 pm Friday (there will be no extensions). Attendance will be taken, and only those students present in recitation will earn credit for their online quiz. There are no
make-up quizzes; a score of zero will be recorded for a missed quiz. The recitation quiz scores are included as part of the student’s lecture grade.

**Inclement Weather:** The most accurate and up-to-date information can be obtained directly from the University (215-204-1975; WRTI, 90.1 FM; or http://www.temple.edu). In the event of a cancellation, it should be assumed that any exams or graded work will be due at the next class meeting unless otherwise stated.

**Course Materials:**

TEXTS ARE RECOMMENDED/OPTIONAL, NOT REQUIRED. You have the following choices:

**EITHER:** *Principles of Chemistry: A Molecular Approach*, 3rd edition, by Nivaldo J. Tro, published by Pearson. This is the complete text (hardback) of all 19 chapters and includes a set of Extra Exercises. This complete packet is only available for purchase at the Temple University Bookstore on the Main Campus. You cannot purchase this packet from any other vendors. ISBN: 9781323446577

**OR:** *Chemistry*, published by OpenStax. ISBN: 9781938168390. A PDF version of this text can be downloaded for free from: https://openstax.org/details/chemistry

**Other Versions Available:**


**OR:** *Principles of Chemistry: A Molecular Approach* (Subscription), 3rd edition, by Nivaldo Tro, published by Pearson. ISBN-10: 0133926222, available from VitalSource who offers the Tro eBook for $53.99 for 180-day access. This is just the eBook in a rental type format and the price is per semester.

**REQUIRED FOR ALL STUDENTS:** You will be using Sapling Learning as the on-line homework system. You can register directly at www.saplinglearning.com. While enrolling for a new course, the course string you should be browsing for is:

**Temple University – CHEM 1032 – Spring 18 – CERKEZ**

The cost is $34 for access for one semester or $51 for two semesters, if purchased directly from Sapling. As an alternative to purchasing a Sapling license directly from the website, students may use Prepaid Access Cards which can be purchased from the bookstore. ISBN: 9781319080266 (one semester) or 9781319078461 (two semesters).
Students should have a **Scientific Calculator** that includes exponential and log functions. Note that the possession, use and sharing of graphing and programmable calculators and cell phones, is strictly prohibited when taking quizzes and exams.

For the Final Exam, students are encouraged to purchase the General Chemistry Study Guide from the American Chemical Society (ACS) at: [http://shopping.na1.netsuite.com/s.nl/c.3773982/it.A/id.1717/f](http://shopping.na1.netsuite.com/s.nl/c.3773982/it.A/id.1717/f)

Copies of this guide are on reserve in the Paley Library.

**Point Breakdown, Approximate Grades, and Grading Disputes:**

- Exams I, II, III, IV (best of 3 out of 4) 300 pts
- Final Exam (cumulative) 200 pts
- Recitation/Lecture Quizzes 100 pts
- Homework 100 pts

**TOTAL** 700 pts

Approximate grades (as a percent) as are follows. **Note that this grading scale may change depending on the class average.**

- A or A-: 90 – 100
- B+ or B or B-: 80 – 89
- C+ or C or C-: 70 – 79
- D: 60 – 69
- F: 0 – 59

Lecturers do not give grades. Students earn grades.

In multi-section courses with different instructors, students are usually concerned about the fairness among sections. We often hear comments such as: “...the other sections have less work to do...”, “…we have 5 lecture quizzes, Dr. X’s sections only had 3…I”, “…their exams are easier than ours...”, “…his teacher is an easier grader than mine…”, “…the other section is covering less material than we are…”, etc. The instructors in CHEM 1031 are committed to offering a rigorous course that will prepare you well for future work in chemistry and other sciences. Each instructor will be presenting the course in their own unique style, but the rigor of all sections will be equal. Although all sections will be expected to master the same core material, each instructor may have a few class periods during which time they will cover topics of special interest and importance that may vary from section to section. At the conclusion of the course, the instructors will determine grades in consultation with each other, taking into consideration the class averages and composition of all sections. Please be assured that instructors will work very hard to ensure fairness in the assignment of final course grades.

With the exception of the Final Exam, all exams are held during regularly-scheduled lecture periods. See the Lecture Schedule on pages 8 and 9 for exams dates. It may be necessary to alter the course schedule due to inclement weather or for instructional purposes. It is the student’s responsibility to take note of any announced changes. Students should keep a record of all scores received, and confirm scores with their instructor at the end of the semester. If there is a discrepancy, the scores recorded in the grade book in Canvas® prevail unless the work can be produced.

Letter grades for the course will be assigned by the lecturer based on the exam scores, lecture quiz scores, and recitation quiz scores provided by the recitation instructors. If the scoring of an exam is
disputed, the student must contact his/her lecturer to resolve the issue within two weeks after the exam was returned. If the scoring of a recitation quiz is disputed, the student must contact his/her recitation instructor to resolve the issue within two weeks after the quiz was returned. If the dispute cannot be resolved, students should contact the lecturer. After the two-week window, your lecturer has no obligation to consider grade disputes. At the conclusion of the course, the lecturers will determine grades in consultation with each other, taking into consideration the lecture section averages. Be assured that the lecturers will ensure fairness in the assignment of final course grades. If the student disputes the course letter grade, he/she must contact the lecturer within 6 months of the close of the semester. Grade changes are warranted only if there was an error in the calculation of the grade, and must be approved by the Dean’s Office.

Cheating: Students are expected to adhere to the highest standards of academic honesty. Collaboration and discussion are encouraged, but all work to be graded is to be written in the student’s own words. Cheating of any kind is not tolerated; see the Student Code of Conduct: http://policies.temple.edu/getdoc.asp?policy_no=03.70.12

Student Rights and Responsibilities: The University has a policy on Student and Faculty Academic Rights and Responsibilities: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02

Temple University is a community of scholars in which freedom of inquiry and expression is valued. Each member of the University community is expected to have respect for the rights of others, to conduct one’s self in a manner that is compatible with the University’s mission, and to take responsibility for one’s actions. To fulfill its functions of promoting and disseminating knowledge, the University has authority and responsibility for maintaining order and for taking appropriate action, including, without limitation, exclusion of those who disrupt the educational process. Please refer to the Student Code of Conduct.

Help: Take full advantage of all of the academic support services available at Temple University. These include your lecturer’s and recitation instructor’s office hours, and Student Success Center. College can be demanding whether you are first-year or an upper class student. The Student Success Center offers Peer Assisted Study Sessions (PASS) and STEM tutoring for this course. During weekly PASS sessions, you will have an opportunity to work with a trained peer leader and your fellow classmates to practice and explore course content together. During STEM tutoring sessions, you can work one-on-one with a tutor to review and understand the concepts in this course. More information about PASS and STEM tutoring, as well as other services offered by the SSC, is available at www.temple.edu/class or by calling 215-204-0702.

Disability: Any student who has a need for accommodation based on the impact of a disability should contact the lecturer to discuss the specific situation as soon as possible. Contact Disability Resources and Services (DRS) at 215-204-1280 in 100 Ritter Annex to arrange reasonable accommodations for students with documented disabilities. http://www.temple.edu/disability

Assignments, Class Preparation and Important Information:

Homework: Students are required to enroll into Sapling Learning (see page 3) the first few days of the semester. Sapling Learning is an online problem solving tutoring system and is also used for homework. It is recommended that you use a reliable computer that has a high speed internet connection. The system guides students through the solution of multi-step problems, removing roadblocks with wrong-
answer-based feedback and on-demand hints. It includes multi-step problems that incorporate a wide
variety of answer types, including chemical structures, formulas and equations, fill-in-the-blank,
numerical, and multiple-choice questions. Homework questions from each chapter will be assigned on a
regular basis by the lecturers. The total score will be scaled down to 100 points and included in the
lecture course grade. Some homework assignments may contain extra credit problems, so it is possible
to get a total score greater than 100 points.

In addition to completing the assigned homework problems using Sapling Learning, students are
expected to attempt the other exercises in the recommended textbooks. Note that specific problems will
not be assigned. It is highly recommended that you do most, if not all, of the problems; in this way you
will be well-prepared for the recitation quizzes and exams (see below). While working through a section
of a chapter, you should do the practice problems pertaining to that particular section first before
attempting the exercises at the end of the chapter. Questions similar to the problems in the textbooks
and homework assignments will appear on the recitation quizzes and on the exams.

**Lecture Quizzes:** There will be 3 to 4 quizzes during lecture throughout the semester. These may be
unannounced ahead of time! Lecture quizzes will always be focused on the material learned in the prior
lecture week. **There are no make-up quizzes;** a score of zero will be recorded for a missed quiz. The
lecture quiz scores, along with the recitation quiz scores, are included as part of the student’s lecture
grade.

**Recitation Quizzes:** Recitations are small sections of about 30 students taught by an instructor under
the supervision of the lecturers. Recitations are designed for students to ask questions on the lecture
material and the exercises/problems that appear in the textbook. Students are strongly encouraged to
attempt most of the exercises/problems that pertain to the lecture material covered during the week prior
to the recitation. Instructors will also review material that will help students prepare for exams. Instructors
will not review homework problems. **Attendance will be taken** and those students present who also take
the online quiz, will earn their points for the online quiz. If you take the quiz and do not attend recitation,
you will not receive any points for the quiz. There will be at least 8 recitation quizzes (each worth 10
points) on lecture material covered the week prior. Quizzes will not be given the week of an exam. Each
quiz will consist of problems taken from the textbook or very similar problems, chosen by the lecturers.
Different sections will have slightly different quizzes. **Note that there are no make-up quizzes.**

Your top 10 quizzes (both recitation and lecture) will make up 100 points of your final grade. Depending
on how many quizzes are given over the semester, approximately 2-4 low quiz grades will be dropped.

**Exams:** There are no make-up exams for Exams I, II, III, and IV. Students will be allowed to take an
exam **early** if they:

- are member of a sports team and are required to travel or play on the day of the exam, and who
  have official documentation
- are required to go on a field trip as part of a course, and who have official documentation
- will be absent due to due a religious holiday

If a student misses an exam due to illness, travel issues, or personal problems, then a score of zero will
be recorded. The best 3 exams scores for Exams I – IV will count towards the final grade; the lowest
score on one of these exams will be dropped. If a student misses 2 or more of these exams they should consider withdrawing from the course.

Students will be allowed to take the Final Exam at a later date if there is a conflict with another exam, or if an absence is beyond the student’s control and compelling documentation is provided.

Students must have their Temple photo ID card during lecture exams. TU-ID Numbers must be correctly and completely filled in on exams to ensure your score is properly recorded. **Students are not allowed to have cell phones and other digital devices such as the Apple Watch on their persons while taking an exam.** Cell phones/digital devices are to be placed in bags/backpacks which will be kept at the back of the lecture hall. Students may leave cell phones/digital devices on the front bench of the lecture hall. Students who are caught using cell phones/digital devices during an exam will be ejected from the exam and will receive a score of zero. This violation will be reported to the Dean and the Vice-Provost who will then take the appropriate disciplinary action. Only pens/pencils and scientific calculators (non-programmable and non-graphing) are allowed to be with students during exams. Students are not allowed to take an exam in a lecture section in which they are not registered.

With the exception of the Final Exam, all exams are held during regularly-scheduled lecture periods (see schedule). Exams I – IV will contain a mixture of multiple choice questions, short answer/explanation questions and numerical problems, similar to those in the textbook.

The Final Exam will be held during finals week on Monday, December 18th from 3:30 – 5:30 pm. The location is yet to be determined. The Final Exam will be a multiple-choice exam covering the work of the entire semester. More details on the Final will be available in mid-November.

Before each exam, tutors from the Student Success Center will conduct sessions in which they will review exercises and problems from the textbook as well as questions from practice exams. Students are expected to come prepared to ask questions on problems that they have attempted. Tutors will not re-teach any of the lecture material.
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<th>Topics</th>
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<td>Introduction to General Chemistry I, Dimensional Analysis</td>
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<td>R 18</td>
<td>Matter, Physical and Chemical Properties, Measurement</td>
<td>1.1 – 1.8 / 1.1 – 1.6</td>
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<td>T 23</td>
<td>Atomic Theory, Laws, Atomic Structure, Subatomic Particles</td>
<td>2.1 – 2.5 / 2.1 – 2.3</td>
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<td>R 25</td>
<td>Isotopes; Atomic Mass, Atomic Mass; The Mole; Molar Mass</td>
<td>2.5 – 2.8 / 2.3 – 3.1</td>
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<td>T 30</td>
<td>Chemical Bonds; Formulas; Models, Naming Ionic Compounds</td>
<td>3.1 – 3.5 / 2.4, 2.6</td>
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<td>Feb R 1</td>
<td>Naming Molecular Compounds, Formula/Molar Mass; Mass %; Mole Ratios</td>
<td>3.5 – 3.8 / 2.7 – 3.1</td>
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<td>T 6</td>
<td>Empirical Formulas; Molecular Formulas; Balancing Equations, Stoichiometry</td>
<td>3.9 – 4.1 / 3.2, 4.1</td>
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<td>R 8</td>
<td>Mole-to-Mole and Mass-to-Mass Conversions, Limiting Reactants; Theoretical and % Yield</td>
<td>4.1 – 4.3 / 4.3 – 4.5</td>
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<tr>
<td>T 13</td>
<td>Molarity; Solution Stoichiometry; Aqueous Solutions, Precipitation Reactions; Acid-base Reactions</td>
<td>4.4 – 4.8 / 3.3 – 3.4, 4.2</td>
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<tr>
<td>R 15</td>
<td>EXAM I – Chapters (Tro) 2, 3, and part of 4</td>
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<td>T 20</td>
<td>Pressure; Properties of Gases; Boyle’s Law, Charles’s Law; Avogadro’s Law;</td>
<td>5.1 – 5.3 / 9.1 – 9.2</td>
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<td>R 22</td>
<td>Ideal Gas Law, Density and Molar Mass of a Gas; Partial Pressures</td>
<td>5.4 – 5.6 / 9.2 – 9.3</td>
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<td>T 27</td>
<td>Stoichiometry Involving Gases; Kinetic-Molecular Theory, Diffusion and Effusion; Real Gases</td>
<td>5.7 – 5.10 / 9.3 - 9.6</td>
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<td>Mar R 1</td>
<td>Energy; 1st Law of Thermodynamics; Heat and Work, Heat Capacities</td>
<td>6.1 – 6.4 / 5.1 - 5.3</td>
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<td>T 6</td>
<td>Spring Break – NO CLASSES</td>
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<td>R 8</td>
<td>Spring Break – NO CLASSES</td>
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<td>T 13</td>
<td>Heat Capacities; Calorimetry; Enthalpy; Exo- and Endothermic Reactions; Heats of Reaction</td>
<td>6.7 – 6.9 / 5.3</td>
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<td>R 15</td>
<td>Hess’s Law; Standard Heats of Formation</td>
<td>6.8 - 6.9 / 5.3</td>
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<td>T 20</td>
<td>Light; Electromagnetic Radiation and Spectrum, Atomic Spectra; Bohr Model; de Broglie’s Relation</td>
<td>7.3 – 7.4 / 6.1-6.2</td>
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<td>R 22</td>
<td>EXAM II – Chapters (Tro) 4 (part), 5, and 6</td>
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<td>T 27</td>
<td>Quantum Mechanics; Quantum Numbers; Shapes of Orbitals</td>
<td>7.5 – 7.6 / 6.3</td>
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<td>R 29</td>
<td>Periodic Table; Electron Configurations, Valence Electrons; Periodicity</td>
<td>8.1 – 8.6 / 6.4 – 6.5</td>
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<td>Apr T 3</td>
<td>Atomic Radii; Ions; Ionic Radii, Ionization Energy; Electron Affinity; Metallic Character</td>
<td>8.6 – 8.8 / 6.4 – 6.5</td>
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<td>R 5</td>
<td>Bonding; Lewis Dot Structures; Ionic Compounds; Lattice Energy</td>
<td>9.1 – 9.4 / 7.1-7.3</td>
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<td>T 10</td>
<td>EXAM III – Chapters (Tro) 7 and 8</td>
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<td>R 12</td>
<td>Simple Lewis Structures; Electronegativity; Polar Bonds, Lewis Structures of Molecular Compounds and Polyatomics</td>
<td>9.5 - 9.7 / 7.2 - 7.3</td>
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<tr>
<td>T 17</td>
<td>Resonance; Formal Charges; Exceptions to Octet Rule, Bond Energies and Bond Lengths</td>
<td>9.8 – 9.10 / 7.4 – 7.5</td>
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<td>R 19</td>
<td>VSEPR Theory, VSEPR Theory; Molecular Geometry; Polar Molecules</td>
<td>10.1 – 10.5 / 7.6, 8.1</td>
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<td>T 24</td>
<td>Valence Bond Theory; Hybridization</td>
<td>10.6 – 10.7 / 8.2 – 8.4</td>
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<td>R 26</td>
<td>EXAM IV – Chapters (Tro) 9 and 10</td>
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<tr>
<td>May M 7</td>
<td>FINAL EXAM – 3:30 – 5:30 pm; Location TBD</td>
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