

## CHE 154 General Chemistry II

**Section G2 — MW 1:00 – 2:15 PM — Graduate & Health Studies Building 106**

**Instructor:** Dr. Matthew Wilson

**Office:** SC 239

**Email:** mwilson@ut.edu

**Phone:** 257-3128

**Office Hours:** Dr. Wilson will be available 11:00 AM – 12:00 PM Monday through Friday, and at other times by appointment.

**Course Description:** A continuation of General Chemistry I. Topics include solution chemistry, kinetics, equilibrium, thermodynamics, electrochemistry, and nuclear chemistry.

**Prerequisites:** CHE 152 and CHE 153L (both with a grade of “C” or better). Pre- or corequisites: CHE 155L (with a grade of “C” or better) and MAT 170.

### Learning Objectives:

- Gain knowledge essential to a broad understanding of chemistry, including:
  - Atomic and molecular structure
  - Stoichiometry of chemical reactions
  - Chemical equilibria, including those involving acids and bases
  - Thermodynamics
  - Kinetics
- Develop and practice critical thinking and problem solving skills.
- Develop the ability to study and learn independently.

**Spartan Ready Competencies:** The University of Tampa is committed to preparing students to become successful individuals with an advanced understanding of their field of study, the interdisciplinary workplace, how to be effective leaders and engaged citizens who contribute to society. Through co-curricular programs, students develop high demand competencies that are relevant for today’s workforce. These make up the Pillars of Spartan Readiness which are supported by life skills education and training to be a professional. (<http://www.ut.edu/spartanready/>)

- *Critical thinking:* The ability to envision and employ analysis, interpretation and reason using information and data through cognitive processes. Examples include analytical thinking, problem solving, decision making, understanding qualitative data, understanding quantitative data, and reading comprehension.
- *Interpersonal Abilities:* The ability to develop personal insight in order to engage with others and create meaningful relationships, which will lead to effective collaboration. Examples include civility, building trust, overcoming personal conflict and differences, dealing with difficult people, building good work relationships, social skills etiquette, learning to compromise, and handling difficult conversations.
- *Organization:* The ability to effectively and efficiently manage and/or systematize resources, time and individuals to accomplish goals and tasks. Examples include time management, project management, prioritizing, strategic planning, attention to detail, multi-tasking, coordination, and dealing with the unexpected.
- *Self-Awareness:* The ability to demonstrate an understanding of how inherent and/or developed personality traits and characteristics contribute to personal and professional success. Examples include resilience, reliability, adaptability/flexibility, personal work ethic, integrity, motivation/initiative, independence, stress management, and dealing with failure.

**Class Policies:** Success in this course, and in future endeavors, requires a variety of skills beyond academic knowledge. These policies are designed to create an effective learning environment and provide students with the opportunity to practice these important skills.

- *Utilize resources to close gaps in skills and knowledge:* It is assumed that you know the prerequisite material well enough to use it in this course. It is up to you to determine where you are lacking in foundational skills. Each individual's gaps are different, so there is not always time during class to spend filling them in. Review materials are available for some areas and you can get help at office hours, but ultimately, you are responsible for knowing the prerequisite material.
- *Focus less on the amount of time spent working and more on accomplishing the task:* A common misconception is that spending a lot of time on tasks should count for something, but spending a lot of time on a task doesn't matter if you are not doing the right things to accomplish the goal. Come to meetings on time and prepared. Be attentive during meetings (don't text or work on other tasks) and take notes, recognizing that not every important point will be written on the board.
- *Develop intrinsic motivation:* It isn't someone else's job to make you happy or motivate you to do your best work. Push to get work done in a timely fashion; start as soon as you can to give yourself enough time to complete the task well.

**Required Materials:** *Chemistry: A Molecular Approach*, N. J. Tro, 5th ed. and a non-programmable scientific calculator (a phone or other electronic device may *not* be substituted for a calculator).

**Recommended Material:** *Chemistry: A Molecular Approach Selected Solutions Manual*, K. T. Shaginaw, 4th ed. and *ACS Study Guide for General Chemistry Exam* (on reserve at the UT Library and available for purchase at <http://chemexams.chem.iastate.edu/guides/index.cfm>)

**Communication:** Class announcements, lecture notes, course documents, and grades will be posted on Blackboard (<http://ut.blackboard.com>). Students are responsible for monitoring their UT email account and the course Blackboard site.

**Homework:** The Mastering Chemistry online homework system (<http://www.masteringchemistry.com>) will be used in conjunction with this course. Assignments labeled "Practice" are not required and not graded. Assignments labeled "Homework" are graded for correctness, with the opportunity to earn partial credit if multiple attempts are needed. No credit will be given for late submissions. While there are more than 100 points offered across all of the homework assignments, the maximum number of course points that can be earned on the homework is 100 points.

**Exams:** Each exam will be worth 120 course points. A missed exam will count as a zero, unless excused by your instructor. A decision to excuse an absence from an exam will only be considered if supported by written documentation. Any requests regarding the regrading of an exam must be made within one week of receiving the graded exam; your instructor reserves the right to regrade the entire exam. The final exam will be a standardized exam prepared by the American Chemical Society, covering all of the material from the second semester of general chemistry, and will be graded on a curve.

**Grades:** A total of 700 points are possible in the course. Letter grades will be assigned as follows:

A	700 – 630 points	100.0 – 90.0%	C	524 – 490 points	74.9 – 70.0%
AB	629 – 595 points	89.9 – 85.0%	D	489 – 420 points	69.9 – 60.0%
B	594 – 560 points	84.9 – 80.0%	F	419 – 0 points	59.9 – 0.0%
BC	559 – 525 points	79.9 – 75.0%			

This course and CHE 153L have separate grades; a student must make a grade of "C" or better in *both* courses to be eligible to take any chemistry class that requires them as prerequisites. Permission to retake the course during the fall or spring semester after having earned a letter grade in or having officially withdrawn from the course can only be granted by the department chair.

**Schedule:** The following is a tentative schedule of chapter sections to be covered and exam dates:

January 22	Introduction and Chemistry Review
January 27	Liquids, Solids and Intermolecular Forces (Sections 12.2–12.3, 12.5)
January 29	Liquids, Solids and Intermolecular Forces (Sections 12.6–12.8)
February 3	Solids and Modern Materials (Sections 13.3–13.5, 13.9)
February 5	Solutions (Sections 14.2, 14.4–14.5)
February 10	Solutions (Section 14.6)
February 12	Chemical Kinetics (Sections 15.2–15.4)
February 17	Chemical Kinetics (Sections 15.5–15.7)
February 19	<b>Exam 1</b> (Chapters 12–14)
February 24	Chemical Equilibrium (Sections 16.2–16.5)
February 26	Chemical Equilibrium (Sections 16.6, 16.8)
March 2	Chemical Equilibrium (Sections 16.7, 16.9)
March 4	Acids and Bases (Sections 17.3–17.4, 17.7)
March 9	<i>No Class</i>
March 11	<i>No Class</i>
March 16	Acids and Bases (Sections 17.5–17.6)
March 18	<b>Exam 2</b> (Chapters 15–16)
March 23	Acids and Bases (Sections 17.8–17.9, 17.11)
March 25	Aqueous Ionic Equilibria (Sections 18.2, 18.4)
March 30	Aqueous Ionic Equilibria (Section 18.5)
April 1	Free Energy and Thermodynamics (Sections 19.2–19.7)
April 6	Free Energy and Thermodynamics (Sections 19.8–19.10)
April 8	<b>Exam 3</b> (Chapters 17–18)
April 13	Electrochemistry (Sections 20.2–20.3)
April 15	Electrochemistry (Sections 20.4–20.5)
April 20	Electrochemistry (Sections 20.6, 20.8)
April 22	Radioactivity and Nuclear Chemistry (Sections 21.3, 21.6, 21.10)
April 27	Radioactivity and Nuclear Chemistry (Sections 21.7–21.9)
April 29	<b>Exam 4</b> (Chapters 19–20)
May 4	Review
May 6	<b>Final Exam</b> (1:30 – 3:30 PM)

**Additional Resources:** The Academic Center for Excellence (ACE, <http://www.ut.edu/ace/>) in the Academic Success Center offers tutoring in several subjects, including chemistry. This is available at no charge above your tuition.

**Disclosures:** The University of Tampa syllabus disclosures may be found on this course's Blackboard site.