

## Honors General Chemistry (Chem. H091)

Course Hours: MWF 11:40 am - 12:30 pm

Instructor: Dr. Frank Spano

Office: BE446

Office Hours: Monday, Wednesday, Friday: 1:00 pm – 2:00 pm

Chemistry H091 (lecture), H091R (recitation) [and H093(laboratory)] are offered only in the Fall term. These courses serve as the first semester of General Chemistry for Honors (H) students. It is understood that, **at least** high school algebra and chemistry have been successfully completed by class participants.

**All students registered for H091 must also sign up for a Recitation Section (H091R)** where assigned problems may be discussed and quizzes are given to measure your progress. Since the scores based on the quiz material and discussions in Recitation count for a substantial portion of the total score in H091, regular attendance in recitation is essential.

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Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. (S)he should also contact Disability Resources and Services at 215-204-1280 in Room 100 Ritter Annex so that we can attempt to coordinate reasonable accommodations for her/his documented disabilities.

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**Text:** "*Chemical Principles: The Quest for Insight*", 3rd Edition, Peter Atkins and Loretta Jones, W. H. Freeman and Company, New York (2005). There is an optional study guide available; "*Student Study Guide and Solutions Manual for Atkins and Jones Chemical Principles*", 3rd Edition. In addition, there is a wealth of on-line information and help available at [www.whfreeman.com/chemicalprinciples3e](http://www.whfreeman.com/chemicalprinciples3e).

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**Calculators:** Most students find a calculator to be very useful in H091. Various calculators with many and varied features are available, but the most valuable features for this course are scientific (exponential) notation and logarithms, both of which you will be using routinely. It is your responsibility to keep your calculator in good working condition. The sharing of calculators during exams and quizzes is not permitted.

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**Grading:** At the end of the term, letter grades will be reported for H091; there is no separate grade for H091R. (It is considered part of H091.) The grades will be based upon a possible 1000 points as outlined below.

**Exams:** There will be two 50 min exams, four recitation quizzes, and a two hour final exam.

Grades will be calculated as follows:

- (2) 50 min exams 400 points (200 points each)
- (1) Final exam 400 points
- (4) recitation quizzes 200 points (50 points each)
- TOTAL 1000 points

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**Drop/Add:** During the first week of classes students may rearrange their schedules without special approval from the instructor as long as the desired section(s) are open. Students should check the Diamond Line (215-204-2525) phone registration system frequently or [Temple's On-line Course Schedule](#). Both systems will allow students to determine which sections are currently open. Note that a section that was closed in the early morning may have opened up by the afternoon, so check frequently.

**Withdrawal:** This course is governed by the Temple University Policy (#03.12.12) on Withdrawal. During the first two weeks of the fall or spring semester or summer sessions, students may withdraw from a course with no record of the class appearing on the transcript. In weeks three through nine of the fall or spring semester, or during weeks three and four of summer sessions, the student may withdraw with advisor's permission – there is no need to seek out an instructor's signature. The course will be recorded on the transcript with the notation of “W,” indicating that the student withdrew. After week nine of the fall or spring semester, or week four of summer sessions, students may not withdraw from courses and will receive a letter grade. A student may withdraw from no more than five courses during the duration of his/her studies to earn a bachelor's degree. A student may not withdraw from the same course more than once.

**Incomplete:** This course is governed by the Temple University Policy (#03.12.13) on Incompletes. The grade of incomplete “I” is an institutional procedure and must be completed in its entirety with the coordinator in conjunction with the lecture instructor. Failure to notify the coordinator, who reports all grades to the University, may result in a grade of “F” being reported.

An “I” (Incomplete) may be filed (1) only if the student has completed the majority of the work of the course at a passing level, (2) only if the student's work for the course was not completed for reasons beyond the student's control, (3) and only once a signed, written agreement with the instructor is filed with the department regarding the nature of the work to be completed, the means by which the final grade will be determined, and the date by which the work must be completed (no greater than 1 year, commonly 6 months). It is the student's responsibility to make contact with the instructor/coordinator to fulfill the contract.

### Honors General Chemistry I (Chem. 91)

| The Week Beginning: | Topic   | Chapter(s) in <i>Chemical Principles</i> | Homework Problems  |
|---------------------|---|--|--|
| August 28<br>MWM    | Particle and Wave Interpretation of light, Wave nature of matter, Particle in a Box | Chapter 1                                | Chapter 1 (pg.'s 47-51)<br>1.3,1.7,1.9,1.13,1.12,1.15,1.17,1.21,1.27   |
| September 4<br>WF   | Atoms and Atomic Orbitals<br>Atomic weight, Avogadro's number                       | Chapter 1                                | Chapter 1 (pg.'s 47-51)<br>1.23,1.25,1.33,1.35,1.37,1.39,1.41,1.43,1.45,1.51,1.53,1.55   |
| September 11<br>MWF | MW: Many electron atoms,<br>Periodic Table<br><br>F: Ionic Bonding                  | Chapters 1<br><br>Chapter 2              | Chapter 1 (pg.'s 47-51)<br>1.57,1.59,1.61,1.63,1.65,1.67,1.69,1.71,1.73,1.75,1.77,1.83,1.85<br>Chapter 2 (pg.'s 79-83) 2.1, 2.3              |
| September 18<br>MWF | Covalent Bonding,<br>Lewis structures,<br>electronegativity, polarizability         | Chapter 2                                | Chapter 2 (pg.'s 79-83) 2.5, 2.7, 2.11, 2.15, 2.17, 2.21, 2.29, 2.35, 2.39, 2.41, 2.45, 2.47,2.51, 2.53,2.61, 2.65, 2.71, 2.89, 2.91         |
| September 25<br>MWF | <b>M: Midterm#1</b><br>WF: VSEPR model, Valence Bond Theory                         | Chapter 3                                | Chapter 3 (pg.'s 118-123) 3.3, 3.7, 3.9, 3.11,3.17, 3.19, 3.25, 3.27, 3.33, 3.35, 3.37   |
| October 2<br>MWF    | Hybridization, Bonding in Diatomic Molecules  | Chapter 3                                | Chapter 3 (pg.'s 118-123) 3.45, 3.47, 3.51, 3.53, 3.55, 3.63   |
| October 9<br>MWF    | The Gas Laws, Kinetic Theory of Gases   | Chapters 4                               | Chapter 4 (pg's 154-160) 4.3, 4.5, 4.11, 4.13, 4.15, 4.17, 4.19, 4.21, 4.29, 4.39, 4.41, 4.47, 4.49, 4.53, 4.57, 4.61, 4.63, 4.65, 4.67,4.71 |
| October 16<br>MWF   | First Law of Thermodynamics, Heat Capacities, Enthalpy                              | Chapter 6                                | Chapter 6 (pg's 237-243) 6.3, 6.5, 6.7, 6.11, 6.13, 6.15, 6.17, 6.21, 6.23, 6.25, 6.29, 6.33   |
| October 23<br>MWF   | Reaction Enthalpy, Hess's Law, Bond Enthalpy  | Chapter 6                                | Chapter 6 (pg's 237-243) 6.41, 6.45, 6.47, 6.53, 6.55, 6.59, 6.61, 6.63, 6.67, 6.71, 6.73, 6.77  |
| October 30<br>MWF   | Entropy and The Second Law of Thermodynamics  | Chapter 7                                | Chapter 7 (pg's 276-281) 7.3, 7.5, 7.9, 7.13, 7.15, 7.17, 7.21, 7.25, 7.29, 7.31, 7.39, 7.41, 7.43   |
| November 6<br>MWF   | <b>M: Midterm#2,</b><br>WF: Reaction Entropies and Free Energy                      | Chapter 7                                | Chapter 7 (pg's 276-281) 7.47, 7.49, 7.51, 7.53, 7.55, 7.59, 7.75, 7.85, 7.87  |
| November 13<br>MWF  | Solids and Materials Chemistry, intermolecular forces, liquid structure             | Chapter 5                                | Chapter 5 (pg's 189-195) 5.3, 5.7, 5.9, 5.11, 5.15, 5.19, 5.27, 5.33, 5.37,5.43, 5.45  |
| November 20<br>MW   | Phase Transitions   | Chapter 8                                | Chapter 8 (pg's 317-325): 8.3, 8.5, 8.9, 8.11, 8.15, 8.17, 8.21  |
| November 27<br>MWF  | Solubility, Colligative properties, Binary Mixtures                                 | Chapter8                                 | Chapter 8 (pg's 317-325): 8.25, 8.27, 8.29, 8.31, 8.37, 8.41, 8.43, 8.47, 8.51, 8.53, 8.55, 8.59, 8.63, 8.65, 8.71, 8.77, 8.79,8.81, 8.85    |
| December 4<br>MW    | Nuclear Chemistry   | Chapter 17                               | Chapter 17 (pg. 673-677) 17.1, 17.3, 17.5, 17.9  |