Inorganic Chemistry  Chem-3001

Spring – 2018

Instructor  Dr. Jay Gilbert

Office  Beury Hall-200
Office Hours  Monday: 11:00 am to 12:30 pm
            Wednesday: 10:30 am to 12:00 noon
Email  jgil@temple.edu
Phone  215-204-0471
Classroom  Tuttleman Learning Center 303AB
Lecture Schedule  MWF 9:00 am – 9:50 am

Fe₂O₃  TiO₂  HgS
Prerequisite:
Mandatory: General chemistry-1 and General Chemistry-2
Any one of the three: Organic Chem-1 or Organic Chemistry for Chemistry Majors-1 or
Organic Chemistry for Honors-1

Textbook:

_Inorganic Chemistry, 5th edition, by Gary L. Miessler, Paul J. Fischer and Donald A. Tarr,
Publisher: Prentice Hall. ISBN-13: 9780321811059_

Recitation:

Teaching Assistant: Mr. William A Sabbers
BE 311; Email: william.sabbers@temple.edu; Phone: 215-204-

<table>
<thead>
<tr>
<th>Section</th>
<th>Day</th>
<th>Time</th>
<th>Building</th>
<th>Room</th>
<th>Instructor</th>
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<tr>
<td>001</td>
<td>W</td>
<td>8:00 am to 8:50 am</td>
<td>Beury Hall</td>
<td>121</td>
<td>Mr. William A Sabbers</td>
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<tr>
<td>002</td>
<td>M</td>
<td>3:00 pm to 3:50 pm</td>
<td>Beury Hall</td>
<td>121</td>
<td>Mr. William A Sabbers</td>
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Exams & Quizzes:
There are a total of three midterm exams and one final exam, the dates listed below are final and not subject to change unless the university is closed due to bad weather conditions. The quizzes will be given during the recitation and missing the quizzes will affect the overall grade. Scientific calculators (non-programmable and non-graphing) are allowed to be with students during exams

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
<th>Points</th>
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<tbody>
<tr>
<td>Midterm–I</td>
<td>February 23, 2018</td>
<td>9:00 am to 9:50 am</td>
<td>100 points</td>
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<tr>
<td>Midterm–II</td>
<td>March 21, 2018</td>
<td>9:00 am to 9:50 am</td>
<td>100 points</td>
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<tr>
<td>Midterm–III</td>
<td>April 23, 2018</td>
<td>9:00 am to 9:50 am</td>
<td>100 points</td>
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<tr>
<td>Final Exam</td>
<td>May 7, 2018</td>
<td>8:00 am to 10:00 am</td>
<td>200 points</td>
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<td>Quizzes: (Best five of six)</td>
<td>TBA</td>
<td>At recitation</td>
<td>100 points</td>
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Topics to be discussed:

**Atomic Structure**: Development of atomic theory, The Schrödinger equation, Periodic properties of elements.

**Bonding theory**: Introduction Lewis electron dot-diagrams, VSEPR theory, Molecular polarity,

**Symmetry and group theory**: Introduction Symmetry elements and operations, Point groups, Properties and representations of groups, Examples and applications of symmetry.

**Molecular Orbitals**: Formation of molecular orbitals from atomic orbitals, Homonuclear diatomic molecules, Heteronuclear diatomic molecules, Molecular orbitals for larger molecules,

**Acids and Bases**: Major Acid-Base concepts, Hard and Soft acids and bases, Proton affinity.

**The Crystalline Solid State**: Formulas and structure, Thermodynamics of ionic crystal formation, Molecular orbitals and band structure, Superconductivity.

**The Chemistry of Main Group Elements**: General trends in main group chemistry, Hydrogen, Group study: Group-1(IA), Group-2(IIA), Group-3(IIIA), Group-4(IVA), Group-5(VA), and Group 17(VIIA).

**Coordination Chemistry-I**: Nomenclature, Isomerism, Coordination numbers and structures.

**Coordination Chemistry-II**: Bonding, Experimental evidence for electronic structures, Theories of electronic structure, Ligand field theory, Angular overlap, The Jahn-Teller effect.

**Coordination Chemistry-III**: Electronic spectra, Absorption of light, Quantum numbers of multi-electron atoms, Electronic spectra of coordination compounds,
**INCOMPLETES / WITHDRAWALS:**

This course will adhere to the Department's and the University Policy regarding the last date to drop or withdraw from the course. The last date to drop Monday, January 29th. Withdrawals can occur until a later time. For this semester this date will be Wednesday, March 21st. To obtain an "incomplete", the usual incomplete contract must be signed upon completion of 60% of the work. The student's accumulated total to that point should be more than 75% of the possible points. Non-attendance to the lab does not constitute "dropping" the course. Official withdraws can only be done through the Registrar's office.

**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](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.

**Disability Resources and Services:** Any student who has a need for accommodation based on the impact of a disability should contact their instructor privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at drs@temple.edu or 215.204.1280 in100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities. For more information visit their site at [http://www.temple.edu/disability/index.html](http://www.temple.edu/disability/index.html).

**Inclement Weather:** The University’s radio broadcast class cancellation numbers are 101 for day classes and 2101 for evening classes (starting after 4 PM). 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](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.

**Attendance:** 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.**

**Make-ups:** There will be no make-ups of missed midterm exams, recitation quizzes or final exam.
**Academic integrity**: All students are expected to adhere to the highest levels of academic integrity. Any students found cheating (i.e. copying answers to exam, quiz, or homework; submitting experimental data that they did not collect; presenting graphs and calculations; or otherwise taking credit for work that they did not perform) will receive a failing grade in the course. They will also be reported to the Dean's office in the College of Science and Technology. **Students are not allowed to have cell phones, smart watches and other PDA devices on their persons while taking an exam.** Students found using unacceptable electronic devices during exams will be given a letter grade of F for the course.

**Miscellaneous:**

1) Cell phones are to be turned off during lecture and exams.
2) No electronic devices other than a basic "four function" calculator may be used during an exam.
3) During testing situations, you have completed the test when you leave the room. Visit the restroom facilities before sitting for your exams.
4) Photo identification may be required at any test. Be prepared.