Chemistry 5560.002 and 556.003 (online sections)
Inorganic Chemistry
Fall, 2007

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Physical Office Hours: MW 10-11 am
Online office hours (through WebCT only): MTW evenings, times to be announced.
e-mail: [rthomas@unt.edu](mailto:rthomas@unt.edu)

Textbook: *Inorganic Chemistry*, 3rd edition, Gary L. Miessler and Donald A. Tarr
Recommended: HGS Molecular Model Set #1001 for General Chemistry or equivalent (should contain octahedral and trigonal bipyramidal geometries)

Lessons are accessible to registered students starting the first day of the semester via the UNT WebCT Vista login page: [https://webctvista.unt.edu/webct/entryPageIns.dowebct](https://webctvista.unt.edu/webct/entryPageIns.dowebct)

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### Tentative Schedule

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug. 27 – 31 1 &amp; 2</td>
</tr>
<tr>
<td>2</td>
<td>Sept 3 – 7 3 &amp; 4</td>
</tr>
<tr>
<td>3</td>
<td>Sept 10 – 14 5 &amp; 6</td>
</tr>
<tr>
<td>4</td>
<td>Sept 17-21 7</td>
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</tbody>
</table>

**Exam I (Lessons 1-7)** (Available Sept 17; Postmark deadline Sept 25)

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Lessons</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>Sept 24 – 28 8 &amp; 9</td>
</tr>
<tr>
<td>6</td>
<td>Oct. 1 - 5 10 &amp; 11</td>
</tr>
<tr>
<td>7</td>
<td>Oct 8 – 12 12 &amp; 13</td>
</tr>
</tbody>
</table>

**Exam II (Lessons 8-13)** (Available Oct 15; Postmark deadline Oct 23)

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Lessons</th>
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</thead>
<tbody>
<tr>
<td>8</td>
<td>Oct 15 – 19 14</td>
</tr>
<tr>
<td>9</td>
<td>Oct 22 – 26 15 &amp; 16</td>
</tr>
<tr>
<td>10</td>
<td>Oct 29 – Nov 2 17 &amp; 18</td>
</tr>
<tr>
<td>11</td>
<td>Nov 5 -9 19 &amp; 20</td>
</tr>
</tbody>
</table>

**Exam III (Lessons 14-20)** (Available Nov 12; Postmark deadline Nov 20)

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Nov 12 – 16 21</td>
</tr>
<tr>
<td>13</td>
<td>Nov 19 – 23 22 &amp; 23</td>
</tr>
<tr>
<td>14</td>
<td>Nov 26 – 30 24 &amp; 25</td>
</tr>
<tr>
<td>15</td>
<td>Dec 3 – 7 26 &amp; 27</td>
</tr>
</tbody>
</table>

**FINAL COMPREHENSIVE EXAM** (Available Dec 7; Must be RECEIVED by Dec 13)
Lessons and Expected Time Required
This course is designed for a 15-week semester and is made up of 27 lessons, two lectures per week less three lessons to allow time for the three exams.

Lesson 1  Introduction and Welcome
Lesson 2  Atomic Structure
Lesson 3  Lewis Dot Structures
Lesson 4  Shapes of Molecules
Lesson 5  Electronegativity and Polarity
Lesson 6  Symmetry Elements and Symmetry Operations
Lesson 7  Point Groups
Lesson 8  Introduction to Molecular Orbitals
Lesson 9  Applications of Molecular Orbital Theory
Lesson 10  Definitions of Acids and Bases
Lesson 11  Strengths of Acids and Bases
Lesson 12  Hard and Soft Acids and Bases
Lesson 13  Frontier Orbitals and Acid-Base Reactions
Lesson 14  Introduction to Coordination Chemistry
Lesson 15  Introduction to Bonding in Transition Metal Complexes
Lesson 16  Molecular Orbital Description of Bonding in Transition Metal Complexes
Lesson 17  Structural Preferences in Transition Metal Complexes
Lesson 18  Colors of Transition Metal Complexes
Lesson 19  Electronic States - A More Detailed Look
Lesson 20  Electronic Spectra of Transition Metal Complexes
Lesson 21  Introduction to the Redox Chemistry of Transition Metals
Lesson 22  Ligand Substitution Reactions of Square Planar Complexes
Lesson 23  Introduction to Organometallic Chemistry
Lesson 24  Introduction to Bioinorganic Chemistry
Lesson 25  Introduction to Solids
Lesson 26  Ionic Solids
Lesson 27  The Molecular Orbital Theory of Solids

Although the amount of time necessary for any particular student may vary drastically, most students should expect to spend 1.5 hours for each lesson (equivalent to one 1.5 hour lecture) and an average of one to two times the “lecture” or lesson time on studying and working problems. Each student should therefore expect to spend an average of six to nine hours per week on this course (3 hours/week for the two online lessons and twice that amount or 6 hours/week for reading, studying, and working problems). Students with deficiencies in their background may need more than this amount of time.

As with any online course, a larger burden falls to the student than in a normal lecture class. It is critically important that students maintain a pace that allows for sufficient preparation prior to exams.

Problem Sets
Problems will be suggested for most lessons. To encourage interaction among the members of the class, homework problems will not be graded. Students are strongly encouraged to post questions about the problems in the Discussion section of the website.
Exams and Grading
There will be three exams of 100 points each (3 x 100 = 300) and a comprehensive final exam worth 200 points for a total of 500 points. Your course grade will be based on the percentage of 500 points.

Test Format
Exams will be regular proctored, closed book exams.

Test proctor
Students need to identify a location and a proctor for the exams (approximately one hour for each exam and two hours for the final exam). There is a lot of flexibility in choice of a proctor, however the proctor cannot be a relative or a friend. In the past, proctors have typically been the student’s supervisor, a school librarian, or similar professional. Whomever you choose, the proctor must be willing and able to print out the exam and mail the completed exam to the address provided. Deadline for returning information about your proctor to Dr. Thomas is September 10. The proctor will need to email Dr. Thomas at rthomas@unt.edu indicating his or her title, place where the exams will be taken, and an email address to which the exam should be sent as an attachment. See Lesson 1 for additional information.

Disability Accommodations
All reasonable accommodation will be made to facilitate special needs. However, it is the student’s responsibility to make any special needs known to the instructor. Given the special nature of an online course, it is especially important to address these issues early. It is highly recommended that you first contact the UNT Office of Disability Accommodation, http://www.unt.edu/oda/index.html. The instructor will work with the Office of Disability Accommodation to identify appropriate accommodations.