Course Objective
Material covered in lecture courses is based on experimental data accumulated over the years, which has been systematized into natural laws and theories. However, the study of chemistry (or any science) requires that you learn some laboratory techniques and methods of data acquisition. It is intended that the skills acquired in this course will be of practical value to you in your fields of interest. It is hoped that a "hands on" experience also will enable you to grasp the concepts presented in CEM 252 lecture more readily.

Required Materials

Safety Supplies: Approved splash proof safety goggles (ANSI 279.1 1979) and rubber "dish washing" gloves. A rubber or plastic apron is also encouraged.

Miscellaneous: Any bound notebook with duplicate prenumbered pages and carbon paper (comes as a bundle with the lab manual). The perforated carbon copies will be torn out and submitted at the end of each lab. Also, a ballpoint pen (not pencil) is needed for lab reports.

Course Directors:
Dr. A. Azadnia, Room 128 Chemistry, 355-9715, x114
Office Hours: Mondays & Thursdays, 10-11:30 AM
Or by appointment
E-mail: azadnia@chemistry.msu.edu

Mr David Voss 355-9715, ex 398
Office: 134 Chemistry
Office Hours: By appointment
E-mail Address: voss@chemistry.msu.edu

Lecture Time:
Thursdays 5:00–5:50 PM, Room 1281 Anthony Hall

Grading
Experiments will be graded according to the weight scale on the schedule below.

Major or continual violations of safety rules will result in dismissal from lab without any points and/or reduction of grade by 50 points per occurrence.

The grades will be based on accuracy and completeness of recorded observations and data as well as legibility (neatness counts).

The grading procedure for each experiment will be discussed in class during the Thursday lectures (5:00-5:50 PM) prior to the corresponding lab.

Your final grade will be based on the total points earned as follow:

965-1060 = 4.0  890-964 = 3.5  816-889 = 3.0  742-815 = 2.5  636-741 = 2.0

There will be a 10–point of extra credit for lab clean–up on Friday, December 11 from 10 AM–1 PM.
Absences

Because our teaching staff is being used to capacity, there will be NO MAKE-UP LABORATORY, except for special circumstances, which will be decided on an individual basis. If you are unavoidably absent from a laboratory class due to illness or family crisis, contact Dr. Azadnia as soon as possible. A grade of zero will be assigned for an experiment missed regardless of the reason. However, you may be allowed to make up the missed lab so long as you make arrangement with Dr. Azadnia within one week of the corresponding experiment.

Students who miss three or more sessions due to illness, etc. should drop CEM 255 and re-enroll another term. Incomplete grades CANNOT be issued when three or more labs have been missed. If you drop CEM255 course, you still must be checked out of lab by your lab TA, on or before your last scheduled lab section. Failure to check out properly costs $25.00 plus breakage charges. No CEM 255 lockers will be shared. If you believe someone has access to your locker, exchange your lock at the stockroom (room 133).

Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>DATE</th>
<th>Experiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9/14 – 9/17</td>
<td>Check-in/Models/mp Calibration</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>9/21 – 9/24</td>
<td>Thin Layer Chromatography</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>9/28 – 10/1</td>
<td>Distillation I</td>
<td>70</td>
</tr>
<tr>
<td>4</td>
<td>10/5-10/8</td>
<td>Extraction</td>
<td>70</td>
</tr>
<tr>
<td>5 &amp; 6</td>
<td>10/12 – 10/15</td>
<td>Identification of an Organic Unknown</td>
<td>130</td>
</tr>
<tr>
<td>7</td>
<td>10/19 – 10/22</td>
<td>Distillation II: Preparation of Cyclohexene</td>
<td>130</td>
</tr>
<tr>
<td>8</td>
<td>10/26 – 10/29</td>
<td>Acid I</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>11/2 – 11/5</td>
<td>Acid II</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>11/9 – 11/12</td>
<td>Acid III</td>
<td>130</td>
</tr>
<tr>
<td>11</td>
<td>11/16– 11/19</td>
<td>Grignard Reaction</td>
<td>130</td>
</tr>
<tr>
<td>12</td>
<td>11/23 – 11/26</td>
<td>Thanksgiving Recess – NO LABS</td>
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<tr>
<td>13</td>
<td>11/30 – 12/3</td>
<td>Grignard II, Isolation of an Active Drug</td>
<td>70</td>
</tr>
<tr>
<td>13</td>
<td>12/7 – 12/10</td>
<td>Azo Dye/Check-out</td>
<td>60</td>
</tr>
</tbody>
</table>

FINAL EXAM – Thursday, December 10, 2014, 5:00-5:50 PM
Room 1281 Anthony Hall

BRING A CALCULATOR TO CEM255 FINAL EXAM

Your Lab Manual is not to be used in the lab. You must work from your own procedures written in your lab notebook.

Write-ups

An important laboratory skill is the making and writing down of precise observations. A well-kept notebook is an essential part of any investigation. Your notebook should be a complete description of what happened, or didn't happen, in your experiments. If someone else could repeat your experiment and get identical results using only the notebook for directions, then your notes are thorough. A well-kept set of records is an essential part of any investigation. Take notes as if you expected to repeat the work next term using only your own notes.

Before entering the laboratory, you should familiarize yourself with the experiment by studying the Lab Manual and the corresponding chapter in your organic textbook. Experience has shown that those students who rewrite the procedure as numbered, single operation steps directly in their notebooks encounter fewer problems. If this is done in advance, then only observations and changes must be recorded during the experiment. Keep track of your progress by checking off the steps as you do them. Carbon copies of all prelab and in-lab write-ups are to be submitted, along with any products, as you leave the laboratory.