SYLLABUS
ADVANCED EXPERIMENTAL LABORATORY
CHEMISTRY 442
SPRING 2008

Instructor: Dr. Anita Brown
Office: HS 322
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email: arbrown@salisbury.edu
web site: http://faculty.salisbury.edu/~arbrown
Office Hours:
M 2:00-3:20; W 3:00-3:50; R 9:30-10:20; F 11:00-11:50; other times by app’t or email

Meeting Time: TR 12:30-3:15

Text:
2. Laboratory notebook with “carbon-copy” pages

Purpose:
This is an advanced laboratory experience designed for senior chemistry majors. The course emphasizes both the theoretical and practical aspects of the representative areas of chemistry. You should increase your ability to plan experimental procedure, to work as a member of a team, to assess the limitations of physical measurements in terms of both sensitivity and accuracy, and to report results in a journal format.

Attendance Policy:
Attendance is required at each laboratory meeting. Penalties (described in subsequent sections) will be imposed for each day that you are late to or miss a lab meeting.

Missing 2 lab days may result in an automatic F in the course. For a legitimate excuse, arrangements may be made to reschedule one lab activity with your group.

Dishonorable Academic Behavior:
Any type of academic misconduct (see definition below) will result in a zero on an assignment, and quite possibly, with an “F” grade for the course.

Misconduct may apply to any aspect of this course and will be vigorously prosecuted.

Definition of Academic Misconduct (Taken from the SU Student Handbook)
Academic misconduct, a breach of academic integrity, may include, but is not limited to the following:
Plagiarism: presenting as one’s own work, whether literally or in paraphrase, the work of another.
Cheating on exams, tests, and quizzes: the wrongful giving or accepting of unauthorized assistance, the giving or taking of unauthorized exam material, and/or the use of illegitimate sources of information.
Illicit collaboration with other individuals in the completion of course assignments.
The use of fraudulent methods in laboratory, studio, field work or computer work.

Other acts generally recognized as dishonorable or dishonest which bear upon academic endeavors.

Laboratory: Each experiment will be described by the instructor. Since this is the highest level chemistry laboratory offered at this institution, you will assume responsibility for laying out the experimental procedure, examining the experiment for potential problems, and determining the needed precision of measurements prior to performing the experiment. In addition, you may need to search available literature to find appropriate information.

The experiments are to be worked and completed during the scheduled lab period (unless specifically determined otherwise by the supervising instructor). Thus, it is especially important that you understand the experiment when you arrive for the first lab period of the experiment. If you are prepared, you will have ample time to complete the experiment in the assigned time. After the allocated number of lab periods, you will not be permitted to perform any more work on previous experiments (unless specifically determined otherwise by the supervising instructor).

Laboratory Reports: The ACS Style Guide will be used in the preparation of all reports. Each laboratory report will be submitted as an article via email. Each person must prepare his or her own report. Unless you are informed otherwise by your instructor, the report will be due by midnight on the date listed on the schedule.

The report should be written for an audience comprised of senior-level chemistry majors. Thus, terms such as “molarity” or “titration” may be assumed to be understood and need not be explained or defined. More advanced concepts, however, should be explained. Any concept that is new to you should definitely be explained.

At a minimum, your report should include the following sections:

1) A title and a byline.

2) An abstract which describes the topic, findings and conclusions in about 150-200 words.

3) An introduction which gives a succinct statement of the project and what you expect to find. In addition, typically this section should contain the theoretical issues pertaining to the work you have completed. In this course, this section will be used to help the instructor judge your comprehension of these theoretical issues. Unless your instructor informs you otherwise, this section will be more of a “textbook” introduction than a journal introduction. With some assignments, your instructor may request separate textbook and journal introductions.

4) An experimental section describing what you did, including details of the experiments.

5) A results section in which you summarize and present data obtained, observations, and other relevant findings. This section may appropriately include tables, equations, figures, and charts or flowchart schemes to represent results. This section may NOT be simply a statement or two followed by a list of data or a series of tables or figures.
6) A **discussion section** interpreting and analyzing the significance of the results which you obtained. You should address such questions as the meaning of the results, their relation to your original objective(s) and how well your results clarified the original problem. You should also address the issues of error analysis.

7) A **conclusion** which gives a brief review of the significant findings and conclusions and how they relate to the objectives. New ideas are not first mentioned in the conclusion.

8) An **acknowledgments section** indicating sources of help, funding, and encouragement for your experiment.

9) A **reference section** typically using the format styles described in the *ACS Style Guide*. For a paper, your instructor may specify a style used in a particular journal. *Bibliographies, or general lists of references, are not appropriate and should not be included.*

**Some additional requirements of the report:**

1) Sample calculations will be included when necessary.
2) The report must be typed.
3) All tables and figures will be prepared in a professional manner.
4) All graphs must be appropriately labeled and captioned.
5) *All tables, figures, and graphs must be referenced/discussed in the body of the report.*
6) Any questions posed by the instructor specific to each experiment must be addressed completely and must be integrated within the paper.

Reports that do not include all necessary components or that do not meet the requirements identified above may be regarded as unacceptable.

**Grading of Lab Reports:**

Each of the required lab reports will be graded on a 100 point basis. *Lab reports that do not follow the format/requirements outlined by your instructor may be considered to be unacceptable.*

Completion of the lab work in a team is an important component of this course. Hence, in addition to penalties imposed in other grading categories, each day that you do not participate in or are late for a lab activity, the score on your lab report will be reduced by as much as 20%. Missing 2 lab days may result in an automatic F in the course. For a legitimate excuse, arrangements may be made to reschedule one lab activity with your group.

See “Guide for Evaluation of Writing Assignments” for general information about the evaluation of your reports. In addition to thorough coverage of the material, the reports will be graded on the following basis:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A <a href="#">Excellent.</a> Well organized; very clear; self-explanatory; excellent style. Demonstrates thorough and complete understanding of the material.</td>
</tr>
<tr>
<td>80-89</td>
<td>B <a href="#">Very Good.</a> Generally well-organized; reasonably clear; good style. Demonstrates an above average understanding of the subject.</td>
</tr>
</tbody>
</table>

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*(#)Italics and bold indicate emphasis. For online use, links can be provided.*
Assignments turned in any time after midnight on the date due will be considered “late.” The grade of any late lab report will be penalized 10% per day, including Saturdays and Sundays.

Laboratory Notebooks:

Each person will turn in carbons of all lab data collected in the laboratory notebook. In addition to procedures and data tables, the notebook will include objectives, notes and observations, calculations, and conclusions. Data pages will be collected each day. Data tables should be set up prior to collection. After lab work is complete, you will typically be given one week to finish the notebook for that topic (calculations, conclusions, etc.). Unless you are informed otherwise by the instructor, the completed lab notebook for each topic will be due by 5 pm on the date listed on the schedule.

All pages will be signed and dated. Pages should be sequential for each individual lab. The notebooks will be graded on format, completeness, accuracy, organization, and neatness. Notebooks that do not follow the format outlined by your instructor will be considered unacceptable.

At any time during a laboratory exercise, the instructor may view notebooks.

Data pages that are not turned in before the end of a lab period will be considered “late.” Completed notebooks turned in any time after 5 pm on the date due will be considered “late.” The grade of any late notebook will be penalized 10% per day, including Saturdays and Sundays.

Completion of the lab work in a team is an important component of this course. Hence, in addition to penalties imposed in other grading categories, each day that you do not participate in or are late for a lab activity, the score on your lab notebook will be reduced by as much as 20%.

Team Work:

Because working as a member of a team is an important skill in the workplace, in this course, you will work in groups. With the guidance of your instructor, you will develop guidelines for the duties of group members. After each experiment, you may be asked to evaluate the performance of members of your group based on these guidelines. These evaluations will be factored into the grade assigned for Group Work by the instructor. Your techniques and capability to do the lab correctly and completely both as a group and as an individual will also be included in this grade. It is strongly recommended that you arrive at lab prepared.

In addition to penalties imposed in other grading categories, each day that you do not participate in or are late for a lab activity, your score for experimental/group work will be reduced.
Final Exam: On Thursday, May 15\textsuperscript{th}, 10:45-1:15, you will take a final exam that will test your comprehension of the material covered in this course.

Course Grade: The grade for each experiment will consist of the following components:

- Lab Reports: 70 %
- Notebooks: 11 %
- Experimental/Group Work: 9 %
- Final Exam: 10 %

Total: 100 %

All experiments will be weighted equally.

Anyone who receives 90.0% or better of the total for the semester will receive an A, 80 % to 89 % a B, 70 % to 79 % a C, etc. The instructors reserve the right to lower the cutoff grades.

Vouchers for lab/notebook due dates:

At the beginning of the semester, each student will be given 6 vouchers. Each voucher will waive the late penalty for a notebook or a lab report for 24 hours. Voucher must be turned-in with late assignment. A separate voucher is required for each assignment (one voucher will not remove one day’s penalty for both the notebook and the report). Vouchers are non-transferrable. Vouchers are not valid for the last laboratory exercise of the semester. Use them wisely.

SCHEDULE – Part 1
Further Schedule will be announced in class

<table>
<thead>
<tr>
<th>DATE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>T, Jan 29</td>
<td>Intro/ MM Determination</td>
</tr>
<tr>
<td>R, Jan 31</td>
<td>Intro to Comp Chem</td>
</tr>
<tr>
<td>T, Feb 5</td>
<td>Comp Chem 1</td>
</tr>
<tr>
<td>R, Feb 7</td>
<td></td>
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<tr>
<td>T, Feb 12</td>
<td>Job’s Method</td>
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<td>R, Feb 14</td>
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<tr>
<td>T, Feb 19</td>
<td>Comp Chem 2</td>
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<tr>
<td>R, Feb 21</td>
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</tbody>
</table>

DUE DATES: Completed Notebooks and Papers – Part 1
Further Due Dates will be announced in class

<table>
<thead>
<tr>
<th>DATE</th>
<th>Assignment that is due</th>
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</thead>
<tbody>
<tr>
<td>T, Feb 5</td>
<td>MM Notebook</td>
</tr>
<tr>
<td>T, Feb 12</td>
<td>MM Paper</td>
</tr>
<tr>
<td>R, Feb 14</td>
<td>Comp Chem 1 Notebook</td>
</tr>
<tr>
<td>R, Feb 21</td>
<td>Comp Chem 1 Paper</td>
</tr>
<tr>
<td>T, Feb 26</td>
<td>Job’s Method Notebook</td>
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<tr>
<td>T, Mar 4</td>
<td>Job’s Method Paper</td>
</tr>
<tr>
<td>R, Mar 6</td>
<td>Comp Chem 2 Notebook</td>
</tr>
<tr>
<td>R, Mar 13</td>
<td>Comp Chem 2 Paper</td>
</tr>
</tbody>
</table>

Schedules, due dates, and other information may be announced via email. Students are responsible for checking their SU Groupwise email accounts for this information.