



Course Syllabus

I. Basic Information

Chemistry 111

Four Semester Hours Credit

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II. Scope of the Course

This is the basic chemistry course taught as background for all chemistry and biology courses. It covers the principles of inorganic, physical, and analytical chemistry. It is the first of a series of three courses.

III. Objectives of the Course

- For students to demonstrate processes of science such as the scientific method and understand the major concepts of chemistry such as atomic structure, nuclear chemistry etc.
- For student to be able to explain the concepts of energy with changes that occur in the matter, these changes being both chemical and physical.
- For student to be able to explain the different types of bonding, different classes of chemical reactions, balancing of chemical equations, solutions and the quantitative calculations of concentration.
- To prepare the student for further studies in the sciences.
- To observe the beauty and orderliness of God's Creation on a molecular level
- To develop skills to be a productive member of a team.

IV. Texts to be used.

Chemistry: The Central Science, Brown,

Lemay, Bursten, Murphy 11th Edition.

Chemistry: A Guided Inquiry, Moog, Farrell, 4th Edition.

A binder for the above loose leaf workbook will be needed.

Laboratory Manual to Accompany Chemistry Text (sold by Department)

V. Special Projects and Activities

At the beginning of the semester, the student should complete a math review.

Appendix A in the Brown text must be studied

Outline of the material to be studied in this review:

- System of Units
- Metric System
- Uncertainty in Measurements
- Scientific notation
- Significant Figures

VI. Method of Instruction

The primary method of instruction will be Guided Inquiry in the classroom, laboratory experiments, utilization of practice tests, and utilization of homework. The instructor will guide student groups in the classroom. It is then the student's responsibility to utilize the text to support the group work. Students must:

- Read assigned text material before class
- Attend class and participate
- Complete assigned exercises
- Prepare for quizzes and tests using text, classroom materials, and web materials
- Attend and complete lab exercises

VII. Method of Evaluation

Each activity shall be weighted as follows:

| Activity | Points |
|-----------------------|--------|
| Exams (3) @ 100 each | 300 |
| Homework Exercises | 100 |
| Quizzes (5 @ 10 each) | 50 |
| Group ChemActivities | 100 |
| Laboratory | 250 |

| | |
|------------|------|
| Final Exam | 200 |
| Total | 1000 |

The final course grade will be assigned utilizing the following scale.

| Total Points | Course Grade |
|--------------|--------------|
| 1000 - 900 | A |
| 800 - 899 | B |
| 700 - 799 | C |
| 600 -699 | D |
| Below 600 | F |

Late, unexcused homework and practice tests will be docked 10% per school day (or portion thereof) for 3 school days, after which they will not be accepted. If not handed in to the instructor by the end of the 3 days, a grade of zero will be given.

VIII. Attendance in Lecture

The student who expects to succeed in chemistry 111 must attend class regularly. There can be a penalty for excessive absences. Such a penalty will be assessed should an examination is missed for any reason other than a documented illness or family trauma.

IX. This syllabus is intended to help the student plan his work in this course and is in no way considered to be a contract. It is subject to change at any time by the instructor should a change be in the best interest of the class.

X. Cheating Policy

The penalty for cheating (giving or receiving aid on a test, plagiarism on homework, lab reports, etc.) is an F in this course. The student will also be reported to the academic center as required by school policy.

| The Laboratory | | LABORATORY SCHEDULE | | | | |
|--|--|----------------------------|---|-------------|-------------------|---------------------|
| <p>The following laboratory exercises are designed to develop laboratory skills, promote an interest in and understanding of the concept of General Chemistry.</p> <p>I. A weekly report will be turned in after each laboratory period. Each report counts 15 points. The report will be graded on neatness, completeness, and accuracy.</p> <p>II. A weekly pre-laboratory report worth 5 points will be collected at the beginning of each laboratory period. This is a preparatory exercise and is essential for efficient laboratory work. The lab procedure outlines in the lab text should be read and highlighted before the laboratory period.</p> <p>III. Students are expected to do their own work individually and keep the desk neat and clean. Students are expected to do their work efficiently and be out of the laboratory on time each laboratory day. No work is allowed after 5:00 p.m.</p> <p>IV. Each laboratory period must be attended. Makeup's will only be allowed for excused absences (official college-sponsored activity other than intramural sports, documented illness, or family trauma). Those participating in a college-sponsored activity must arrange for the makeup prior to the event. Those with an unexcused absence will be given a zero for that lab.</p> | | <u>DATE</u> | <u>TITLE</u> | <u>Date</u> | <u>Read Text</u> | <u>ChemActivity</u> |
| | | | | 8/31 | Check-in, Safety, | 8-26 |
| | | 9/8 | Qualitative Analysis of Metal Cations by Paper Chromatography | 8-28 | 1.1-1.6 | SF & Conv |
| | | 9/15 | Densities of Metals: Changing Copper into Silver and Gold | 8-31 | 2.1-2.3 | 1 |
| | | 9/22 | Reaction Rates and Half-lives | 9-1 | 2.4-2.6 | 2 |
| | | 9/29 | Determination of the Molar Mass of a Copper compound | 9-4(Q) | 2.7 | 24 |
| | | 10/6 | Synthesis of Aspirin | 9-9 | 2.8-2.9 | naming PPT |
| | | 10/20 | The Synthesis and Characterization of Copper (II) Complex | 9-11 | 3.1 | 29 |
| | | 10/27 | Acid/Base Titration of Vinegar | 9-14 | 3.2-3.3 | Reaction Types |
| | | 11/3 | Determining the Enthalpy of Chemical Reactions | 9-16(Q) | 3.4-3.6 | Mole & Empirical |
| | | 11/10 | VSEPR Theory and the Shapes of Molecules | 9-18 | 3.7 | 30 |
| | | 11/17 | The Gasimetric Analysis of a Carbonate Compound | 9-21 | Review for Exam | |
| | | 11/30 | Exam and Checkout | 9-23 | Exam | |
| | | | | 9-25 | 4.1-4.3 | 49 |
| | | | | 9-28 | 4.4 | 48 |
| | | | | 9-30 | | Solub. & Net Ionic |
| | | | | 10-2(Q) | 4.5 | 32 |
| | | | | 10-5 | 4.6 | Solution Stoich |
| | | | | 10-7 | 5.2-5.3 | Enthalpy of Form. |
| | | | | 10-9 | 5.4-5.5 | Enthalpy Change |
| | | | | 10-12 | 5.1 | Specific Heat |
| | | | | 10-14 | 5.6-5.7 | Hess's Law |
| | | | | 10-21 | 6.1-6.3 | ElectrRad&PES |
| | | | | 10-23(Q) | 6.4-6.5 | Shell Mod & Size |
| | | | | 10-26 | | 12 |
| | | | | 10-28 | 6.6-6.7 | Quantum # |
| | | | | 10-30 | 6.8-6.9 | Electron Config. |
| | | | | 11-2 | Review for Exam | |
| | | | | 11-6 | Exam | |
| | | | | 11-9 | 8.1&8.5 | Lewis Struct. I |
| | | | | 11-11 | 8.5-8.8 | B. Order, etc. |
| | | | | 11-13 | | Lewis Struct. II |
| | | | | 11-16(Q) | 9.1-9.3 | Molecular Shape |
| | | | | 11-18 | 8.2-8.4&9.4 | Polar, Nonpolar |
| | | | | 11-20 | 9.5 | hybridization |
| | | | | 11-23 | Exam | |
| | | | | 11-30 | 10.1-10.4 | Gas Laws |
| | | | | 12-2 | 10.5-10.10 | Beh. of Gases |
| | | | | 12-4 | REVIEW FOR FINAL | |