GEORGIA PERIMETER COLLEGE
DIVISION OF SCIENCE
COMMON COURSE OUTLINE
REVISION DATE: March 2004

COURSE ABBREVIATION
CHEM 1151L

CREDIT HOUR
1 semester hour

COURSE TITLE
Survey of Chemistry I (Lab)

COREQUISITE
Chem 1151

CATALOG DESCRIPTION
This is a laboratory to accompany Chem 1151. A minimum of three hours a week is scheduled.

GENERAL EDUCATION OUTCOMES
I. This course addresses the general education outcome relating to communications as follows:
   1. The student must become proficient in the comprehension of technical text. Using a
      laboratory manual, class handouts, and instruction sheets for laboratory equipment meets
      this goal.
   2. The student will develop discriminatory listening skills to efficiently process the
      pre-laboratory lecture information. These sessions provide details that either the
      laboratory or lecture texts do not address. Further, students must often talk with peers in
      informal problem solving sessions.
   3. The student develops his/her ability to transcribe learned ideas to the written form as
      assessed by written solutions to problem sets, written laboratory reports and responses to
      computerized laboratory reports.
   4. The student will develop organizational skills through transcription of procedural
      outlines to a personal laboratory notebook. Laboratory reports require tabulation and
      summarization skills to develop the Data, Calculations, Results, and Conclusions
      sections of the laboratory notebook successfully.

II. This course addresses the general education outcome relating to showing the effective
    individual
    and group solving and critical thinking skills in a variety of ways:
   1. The student is encouraged to resolve questions in the laboratory by discussion with the
      instructor and with peers. The group formulates possible solutions, yet the student is
      ultimately responsible for the decision made.
   2. Written evaluations employ both objective and subjective questions that require the
      student
      to apply the newly learned ideas to a similar situation.
   3. Instructors sometimes conduct weekly Oral evaluations in these sessions to assess the
      level of the student’s understanding of procedural and theoretical ideas and to evoke
      deeper reflection by the student on the work here.
III. This addresses the general educational outcome relating to recognizing and applying scientific inquiry in a variety of settings as follows:

1. The student is encouraged to identify theoretical sources of procedural error for each experiment. They must identify and analyze these parameters for their effects upon the outcome of the experiment and any conclusions that may be drawn.
2. The experiments chosen give the student a concrete and tactile means of investigating mere abstract theoretical ideas introduced in the lecture.
3. Weekly quizzes and the final exam require the student to synthesize many related theories and apply them to a new situation.

EXPECTED EDUCATIONAL RESULTS

Upon successful completion of Chemistry 1151 lab, the student should be able to:
1. recognize and state the use of appropriate laboratory apparatus
2. define accuracy, precision and significant digits as related to laboratory measurements
3. given appropriate measuring devices and lab apparatus, determine physical properties of substances using appropriate significant figures
4. define and use appropriately methods of separating known components of mixtures based on chemical and physical properties
5. where appropriate, calculate percent error of experimental results relative to standards
6. upon carrying out chemical reactions in the lab and given appropriate reference materials (i.e., polyatomic ion formulas, periodic table, activity series and solubility rules) convert observable laboratory reactions to balanced equations
7. given a set of data related to a specific experiment
   a. identify all measurable quantities
   b. recognize sources of error
   c. identify limitations of measuring devices in order to state the uncertainty in measurements.
   d. come to a valid conclusion based on the data
8. given appropriate data, determine stochiometrically the formula of a compound.
9. given appropriate titration data, determine the number of moles of an unknown acid or base present, determine the solution concentration and operationally define a titration, endpoint, equivalence point and indicator.
COURSE CONTENT

Topics
- video and check in
- Measurements and Significant Figures
- Conversion Factors in Calculations
- Density and Specific Gravity
- Atomic Structure
- Compounds and Their Formulas
- Chemical Reactions and Equations
- Energy and Matter
- Formation of Solutions
- Concentrations of Solutions
- Solutions, Colloids, and Suspensions
- Le Chatelier's Principle
- Acid-Base; Titration
- Check out and Review
- Final Exam

ASSESSMENT OF EXPECTED EDUCATION RESULTS

A. COURSE GRADE
   This course grade will be determined by the individual instructor (under guidelines of the division) using a variety of methods such as quizzes, evaluation of lab reports, evaluation of lab notebook, and the final exam). Graded activities are designed to measure student’s ability to use the process skills of science (i.e., observing, measuring, collecting data, analyzing data, testing, hypothesis, controlling variable). A comprehensive final exam is required. The exam must count for no more than 25% of the course grade.

B. DIVISIONAL ASSESSMENT
   Chemistry 1151 L will be assessed every 5 years in the fall. The committee will develop a time-line to monitor the assessment process during the five year cycle to ensure that assessment activities are occurring in order to have sufficient data to undertake a formal assessment at the end of the cycle. Assessment will consist of;
   a. An attitudinal survey addressing students’ career and professional goals and perceptions of the quality and usefulness of the course.
   b. a set of objective test items keyed to expected learning outcomes. These items will be balanced with respect to content and level of cognitive demand using a process described in the document Designing Assessment Instruments: A Guide for DeKalb College Faculty.
   c. a pilot administration of the assessment instrument. The results of the pilot assessment will be used to determine how well the test items are functioning in terms of discrimination, difficulty, and test reliability. The information obtained from item analysis will be used to eliminate or rewrite test items not functioning properly.
   d. The revised instrument will be administered during the assessment cycle at a time established by the committee.
C. USE OF ASSESSMENT FINDINGS
The Chemistry 1151 L Assessment Committee will analyze the results of both the pilot testing and the formal assessment data as well as the attitudinal survey. The committee will use assessment results to determine the effectiveness of the course by seeking answers to the following questions.

1. Are students performing at a pre-determined minimal level of performance on:
   a. the course as a whole
   b. on individual learning outcomes?
2. Which learning outcomes are students’ performance acceptable or above average?
3. Which learning outcomes are students’ performance below minimal of performance?
4. What factors are contributing to student performance on those learning outcomes below minimal of performance?
5. What changes are modified in course content or instructional strategies are needed to help improve student performance on learning outcomes below minimal level of performance?

Approved Date: March 30, 2001
Review Date: March 31, 2004