Bergen Community College
Division of Mathematics, Science and Technology
Physical Science Department

Course Syllabus
CHM-141 General Chemistry Laboratory I

COURSE DESCRIPTION:
CHM-141 General Chemistry Laboratory I is a course designed to familiarize the student with chemical laboratory techniques through problem solving experiments. It complements material covered in CHM-140. Written lab reports are required.

COURSE CREDITS/HOURS: 1 credit/3 hours ***(3 contact hour lab)***

PREREQUISITE OR CO-REQUISITE: CHM-140

GENERAL ED COURSE: Yes

STUDENT LEARNING OBJECTIVES (LEARNING OUTCOMES): As a result of meeting the requirements in this course, students will be able to:

1. Write laboratory reports that conform to accepted technical writing protocols.
2. Use Excel for the representation of experimental data in graph form.
3. Use the factor label method/dimensional analysis to solve problems.
4. Report calculated results with correct precision.
5. Translate written and oral experimental directions into accepted laboratory practices.
6. Recognize the relationship between mass and volume.
7. Identify the types of chemical reactions.
8. Write balanced chemical equations and net ionic equations.
9. Perform a titration.
10. Use a balance, a buret and vacuum filtration as parts of laboratory protocols.
11. Apply the gas laws to experimental situations.
12. Build three-dimensional models of simple inorganic compounds.
13. Predict the structures of simple inorganic compounds.
14. Use computer integrated technology to collect and analyze data.
15. Apply laboratory safety rules.
16. Demonstrate acceptable laboratory technique in the use of laboratory equipment and the handling of chemicals.

Course Outline and Calendar*
CHM-141 General Chemistry Laboratory I

WEEK	TOPIC/ EXPERIMENT NUMBER	Student Learning Objectives (Learning Outcomes)

1	Check in, Safety Rules, math review **Experiment 1**: Significant Figures and Scientific Notation, (Page 11)	1, 4, 15
2	**Experiment 2:** Density and Graphing (Page 30)	1, 2, 3, 4, 5, 6, 14, 15, 16
3	**Experiment 3:** Salt Content in Pretzel (Page 41)	1, 3, 4, 5, 8, 9, 10, 15, 16
4	**Experiment 4:** Synthesis of Alum (Page 51)	1, 3, 4, 5, 7, 8, 10, 15, 16
5	**Finish experiment 4**	
6	**Experiment 5:** Universal Gas Constant, R (Page 63)	1, 3, 4, 5, 11, 15, 16
7	**Experiment 6:** Water of Hydration (Page 74)	1, 3, 4, 5, 8, 9, 15, 16
8	**Experiment 7:** Type of Reactions (Page 87)	1, 5, 7, 8, 15, 16
9	**Experiment 8:** Molecular Weight of a Volatile Liquid (Page 104)	1, 3, 4, 5, 15, 16
10	**Experiment 9:** Titration of vinegar (Page 117)	1, 3, 4, 5, 8, 9, 10, 15, 16
11	**Experiment 10:** Enthalpy of Neutralization (Page 135)	1 - 5, 7, 8, 10, 14 - 16
12	**Experiment 11:** Lewis Dot Structures (page 152)	1, 5, 12, 13, 14, 15, 16
13	**Finish experiment 11**	
14	**Experiment 12:** Vitamin C in Fruit Juices (Page 178)	1, 3, 4, 5, 8, 9, 10, 15, 16
15	Clean up and check out Final Examination	

***Dates for all tests will be announced by the individual instructor.**

Bergen Community College Core Competencies

CHM 141 General Chemistry Laboratory I

Competency	Student Learning Objectives (Learning Outcomes)
1. Communication	1
2. Quantitative Reasoning	1, 3, 4, 6, 9, 11, 14
3. Critical Thinking	1 - 13
4. Civic Responsibility	15, 16
5. Technological and Information Fluency	2, 12, 13, 14, 16
6. Personal Skills	1, 15, 16
7. Interpersonal Skills	11, 15, 16
8. Applied Knowledge	1 - 16

ASSESSMENT MEASURES:
The student learning objectives will be assessed by:

1. Laboratory Reports (format, data sheets, calculations, graphs, post-lab exercises)
2. Pre-Laboratory Exercises
3. Observation of acceptable laboratory techniques
4. Observation of consistent implementation of safety rules
5. Instructor-student and student-student discussion of recorded data and experimental results
6. Tests

LABORATORY MANUAL: College Publication - A copy of the laboratory manual is available on Moodle. Download and print each experiment as you need them, each week.

COURSE CONTENT:
Basic chemistry laboratory safety
Basic chemistry laboratory techniques
Experiments that emphasize the topics contained in General Chemistry I. A detailed list of experiments is found on the CHM-141 Lab Schedule (last page).
Data collection, data analyses and graphical representation of data and/or results
Use of the factor label method/dimensional analysis for problem solutions.
Laboratory report writing

OTHER REQUIREMENTS:
Safety goggles or safety glasses are required and may be purchased at the B.C.C. bookstore or at a hardware store.

A scientific or graphing calculator is required.

GRADING POLICY
Instructor's Grading Policy:
Each instructor will distribute the grading policy for each section at the first class meeting.

General Guidelines:

1. Laboratory Reports (prelab/quizzes, data sheets/graphs, postlab and format) . . . . 70 %**
2. Examinations (one or two midterms and a **comprehensive** final) . . . . . .30 %**
3. Safety Violations ……..……minus points**

**Subject to the instructor's discretion

There will be no make-up labs or examinations except in certain special circumstances at the instructor's discretion. Even in those cases all make-up situations must be resolved within a week of the missed class. Any missed lab or examination will be assigned a grade of zero.

Students found cheating will be dealt with appropriately. Cheating includes using the data, prelabs or postlabs of another student past or present. It also includes using unauthorized formula sheets of any kind during an examination.
Please read The Bergen Community College Statement on academic integrity as found in the college catalog and Student Handbook.

DATA RECORDING AND LABORATORY REPORT FORMAT:

1. Data is to be recorded directly onto data sheets.
   NO SCRATCH PAPER.

2. Use **blue** or **black** ink to record all data.
   NO WHITE-OUT.
   If a mistake is made in recording data, neatly cross out mistake and write the correct data nearby.

3. Data sheets must be signed and dated by the instructor before the end of the lab period.

4. Each person is required to perform his/her own lab work. Individual unknowns must be obtained from the instructor and evaluated. Students will be informed when there is a need to work with a partner.

5. Laboratory reports are due no later than one week after the completion of the experiment and must be submitted at the beginning of the lab period in which it is due.
   Lateness in submission may result in penalty points at the discretion of the instructor.

6. LAB REPORT CONTENT:
   Follow the following order with regard to organization of lab report pages.
   Handwritten reports are acceptable. However, graphing is to be done using Excel.
   Staple all pages together.
   1. Cover page: title of experiment, student name, instructor name and date (optional)
   2. Data sheets (instructor initialed and dated) with supporting calculations.
      Sample calculations **must** be clearly shown.
   3. Graphs of experimental results if part of the experiment. Use Excel for graphs.
   4. Post lab exercises and any post lab graphs. Use Excel for graphs.
   5. Concluding/summary paragraph. In a short paragraph (approximately ten sentences) state the objectives of the experiment and explain whether the data recorded and the analyses of the data support the expected objectives. If the experimental objectives were not met explain the source of errors.

ATTENDANCE POLICY:

Attendance at laboratory sessions is mandatory. Students are expected to report to lab on time, if not a few minutes early. The pre-lab presentations/directions by the instructor for the proper and **safe** performance of the experiment are critical to conducting each experiment correctly. It has been found that students who miss some or all of this presentation usually perform their experiments poorly. Keep in mind, it is the instructor's discretion as to when it is too late for a student to safely and successfully complete an experiment.

OTHER POLICIES:

Electronic Devices:

The use of portable electronic devices such as pagers and cell phones is not permitted while laboratory is in session. Please silence these devices before entering the laboratory.

Code of Student Conduct:

Students are encouraged to read, understand and follow the rules and standards of conduct as explained in the Student Handbook. The Student Handbook is available in the Office of Student Life and on the BCC website.

STUDENT SUPPORT SERVICES:

The General Chemistry support class, CHM-142, is recommended for students experiencing difficulty with chemistry-related arithmetic and algebraic problem solving. Late registration for this 1 credit hour class is allowed and encouraged.

Additionally, **The STEM Learning Center in Room S-315** and the Tutoring Center (L-125) provide student support in chemistry, math and other sciences.

Faculty office hours may be a productive vehicle for assistance in understanding the course material.

The BCC Library provides extensive support services for student research.

SERVICES FOR STUDENTS WITH DISABILITIES

Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

FACULTY ABSENCE PROCEDURE:

A daily listing of cancelled classes will appear in a glass case near the registration area on the first floor. Another such listing will appear in a glass case in Ender Hall. Students can consult these cases before going to class. Cancelled classes are also listed under class cancellations at bottom of the BCC website page. Under no circumstances are notices regarding class cancellations taped to classroom doors binding.

If students find a class cancelled which has not been listed, they should report this to the Divisional Dean's Office, A-304 or the Evening Office C107.

CHM-141 LAB SCHEDULE*

WEEK	EXPERIMENT	PAGE NUMBER

1	Check in, Safety Rules, math review **Experiment 1**: Significant Figures and Scientific Notation	11
2	**Experiment 2:** Density and Graphing	30
3	**Experiment 3:** Salt Content in Pretzel	41
4	**Experiment 4:** Synthesis of Alum	51
5	**Finish experiment 4**	
6	**Experiment 5:** Universal Gas Constant, R	63
7	**Experiment 6:** Water of Hydration	74
8	**Experiment 7:** Type of Reactions	87
9	**Experiment 8:** Molecular Weight of a Volatile Liquid	104
10	**Experiment 9:** Titration of vinegar	117
11	**Experiment 10:** Enthalpy of Neutralization	135
12	**Experiment 11:** Lewis Dot Structures	152
13	**Finish experiment 11**	
14	**Experiment 12:** Vitamin C in Fruit Juices	178
15	Clean up and check out Final Examination	

***Dates for all tests will be announced by the individual instructor.**
The instructor may modify this schedule slightly to accommodate tests.

All BCC students enrolled in credit courses are entitled to a WebAdvisor account. With WebAdvisor, you may register online, pay your bill, check your schedule, room assignments, GPA, and find out what courses you need to take. To find out more about WebAdvisor or to sign up online, visit <http://go.bergen.edu>! While there, please make sure you give us your preferred email address. You'll find directions how to do this at <http://go.bergen.edu/email>.