

***This is a SouthArk Master Syllabus. The course syllabus distributed by the instructor may include additional requirements, must be followed by the student in the given term, and is considered to supersede the Master Syllabus.***

**Course Number**

CHEM 1004/L

**Course Title**

Fundamentals of Chemistry/Lab

**Course Description**

Prerequisites: BSTD 0613 with a “C” or better, BSTD 0513 or TECH 1003 with a grade of “C” or better (concurrent enrollment is acceptable for TECH 1003). This is a survey course introducing Chemistry as it applies to the real world for students in chemical/industrial process technology and/or general education. The course incorporates critical thinking to explore, analyze, and evaluate concepts such as the scientific method, measurement, states of matter, atomic structure, the periodic table, chemical properties, chemical bonding, chemical reactions, acids and bases, solutions, and other chemistry-related topics. This course does not fulfill the chemistry requirement for science majors or Allied Health programs. Three hours lecture and two hours laboratory.

**College Mission**

South Arkansas Community College promotes excellence in learning, teaching, and service; provides lifelong educational opportunities; and serves as a cultural, intellectual, and economic resource for the community.

**College Wide Student Learner Outcomes**

Critical Thinking

Responsibility

Communication

**ACTS Course**

**Program Course**

**ACTS Outcomes**

The state requires that we cover certain topics in order to meet the requirements of the Arkansas Course Transfer System. Upon completion of this course, the student will be able to recognize, discuss, describe, explain, and apply knowledge of the following:

1. Scientific Method
2. Basic Measurement
3. Atomic Structure
4. Periodic Table
5. Chemical Bonding
6. Chemical Reactions
7. Solutions
8. States of Matter
9. Acids and Bases

**Program Outcomes**

**Course Learner Outcomes**

| CLO # | Course Learner Outcomes   | Unit Outcomes/Competencies | ACTS Outcomes | Program Outcomes | Critical Thinking | Communication | Responsibility | Assessment                      |
|-------|---|----------------------------|---------------|------------------|-------------------|---------------|----------------|---------------------------------|
| CLO 1 | Demonstrate competency in the scientific method and chemistry lab techniques by effectively communicating experimental findings in writing. | Units I-IV                 | 1             |                  | CT4               | C1            | R2             | Final Exam, Laboratory Notebook |
| CLO 2 | Evaluate measurements & calculate percent error.  | Units I-IV                 | 2             |                  | CT2               |               |                | Final Exam                      |

|       |   |             |   |  |     |  |  |            |
|-------|---|-------------|---|--|-----|--|--|------------|
| CLO 3 | Analyze matter, its changes, and the structure and composition of the atom.                                   | Unit I:1-3  | 3 |  | CT1 |  |  | Final Exam |
| CLO 4 | Determine patterns and element information using the Periodic Table.  | Unit I:4    | 4 |  | CT1 |  |  | Final Exam |
| CLO 5 | Differentiate between the types of chemical bonding and nomenclature.   | Unit II:1   | 5 |  | CT3 |  |  | Final Exam |
| CLO 6 | Distinguish between the types of chemical reactions and energy.   | Unit II:2,3 | 6 |  | CT3 |  |  | Final Exam |
| CLO 7 | Analyze a solution, its characteristics, and the qualitative and quantitative nature of solution composition. | Unit III:1  | 7 |  | CT2 |  |  | Final Exam |
| CLO 8 | Evaluate the states of matter and solve gas law problems.   | Unit III:2  | 8 |  | CT2 |  |  | Final Exam |
| CLO 9 | Distinguish between acids and bases   | Unit IV:1,2 | 9 |  | CT4 |  |  | Final Exam |
| CLO10 | Categorize the characteristics of fundamental organic and biochemical compounds.                              | Unit IV: 3  |   |  | CT1 |  |  | Final Exam |

### Unit Outcomes/ Competencies

#### Unit I: Matter, Measurements, and Atoms

1. Analyze various types of matter and its changes.
2. Evaluate measurements and calculate percentage error.
3. Analyze the structure and composition of the atom.
4. Determine patterns and element information using the Periodic Table.

#### Unit II: Chemical Bonding, Reactions, and Stoichiometry

1. Differentiate between the types of chemical bonding and nomenclature.
2. Distinguish between the types of chemical reactions and energy.
3. Calculate quantities using the mole concept incorporated into stoichiometry.

#### Unit III: Solutions and States of Matter

1. Analyze a solution, its characteristics, and the qualitative and quantitative nature of solution composition.
2. Evaluate the states of matter and solve gas law problems.

#### Unit IV: Acids/Bases, Overview of Organic Chemistry and Biochemistry

1. Distinguish between acids and bases and describe neutralization.
2. Determine pH using indicators.
3. Categorize the characteristics of fundamental organic and biochemical compounds.

### Assessment Description(s)

Two embedded questions in the final exam for each outcome. Laboratory reports are evaluated using a standard laboratory rubric.

### Materials and Technological Requirements

1. *Introductory Chemistry: A Foundation* 8<sup>th</sup> ed. By Zumdahl and DeCoste with OWL version 2 (Online Web-based Learning) with e-book, Cengage Publisher (ISBN-13:9781305420915)  
\*\*If e-text preferred with OWL 2 (ISBN-13:9781305432888) no hard copy of the textbook, only e-book
2. Student Lab Notebook for Chemistry – Hayden/McNeil (ISBN: 9781930882232)
3. Visorgogs – Eye protection for the laboratory
4. A non-programmable calculator: TI-30XA. Scientific notation needed.
5. Reliable computer and internet for online homework, Blackboard, and Student E-mail: Course announcements and assignments will be posted to Blackboard. Specific student information will be received and sent only through your e-mail account at SouthArk. (If you have technical problems with Blackboard, please contact the Distance Learning Director.)

### Class Attendance Policy

Students are expected to attend all classes in which they are enrolled. If a student is absent from a class session, it is the student's responsibility to make arrangements to complete or make up any work missed. No make-up work for missed classes will be allowed without the approval of the instructor. Students who enroll late must assume all responsibility for work missed. Classes not attended as a result of late enrollment may be counted toward excessive absences. Students not attending the entire class period may be counted absent for that period. An instructor may drop students with a grade of "WE" if students have been absent for an excessive number of days. Warning letters will be sent to the students advising them of the consequences of nonattendance and urging them to contact their instructors immediately. Excessive absences are defined as follows:

### **Regular Semester**

|   |            |
|---|------------|
| Courses which meet once a week .....        | 2 absences |
| Courses that meet twice per week .....      | 3 absences |
| Courses that meet four times per week ..... | 5 absences |

### **Summer Session**

|   |            |
|---|------------|
| Courses that meet four times per week in a five week session .....  | 3 absences |
| Courses which meet two evenings per week in a 10 week session ..... | 3 absences |

Students enrolled in special programs or individualized instruction should contact their program director/instructor regarding specific attendance requirements for the program/course. Some of the selective-admission, health-science programs have specific criteria regarding attendance. Students are encouraged to refer to program policies in these matters.

### Jury Duty/Military/Official School Function

Scheduled absences are those that occur due to college-related activities or as a result of summons to jury duty or military duty. Classes missed as a result of scheduled absences will not be counted as excessive absences if the instructor is notified and provided documentation prior to the absence(s). Make-up work for scheduled absences will be at the discretion of the instructor.

In all instances, documentation must be provided to the instructor within 24 hours of receipt. Documentation should come from an appropriate party on letterhead or other official stationery with a signature and contact information. Documentation should list the corresponding dates of the leave.

### Medical leave

For medical-related absences, documentation must include written notice from the treating medical professional documenting time needed off related to medical reasons and time student may resume classes. The medical reason does not need to be listed on the documentation; the documentation must include only that there is a medical reason, the amount of time the student needs to be absent, and the time the student should be able to return to classes. Students who elect to work at home while on excused leave must meet with their instructors to make arrangements to do so. Working on coursework while on medical leave is not a requirement but can be requested by students. If students request that they be allowed to work at home while on an excused leave, the instructor will make every reasonable effort to ensure that the student is able to do so.

For students who have a medical condition necessitating time off or accommodation:

- 1) They may work at home on assignments if they choose to if on medical leave approved by a medical professional
- 2) Receive appropriate accommodations related to coursework (i.e., excused from labs with potentially harmful chemicals, have a larger desk, etc.)
- 3) Resume their studies where they left off once they return to classes
- 4) Be allowed to make up any missed work related to medical leave
- 5) Receive incompletes on their transcripts until coursework is completed, according to the incomplete grade contract.
- 6) Be given a reasonable time frame in which to complete missed coursework

### **Academic Honesty Policy**

Students enrolled at South Arkansas Community College are expected at all times to uphold standards of integrity. Students are expected to perform honestly and to work in every way possible to eliminate academic dishonesty. Academic dishonesty includes cheating and plagiarism, which are defined as follows:

- Cheating is an attempt to deceive the instructor in his/her effort to evaluate fairly an academic exercise. Cheating includes copying another student's homework, class work, or required project (in whole or in part) and/or presenting another's work as the student's own. Cheating also includes giving, receiving, offering, and/or soliciting information on a quiz, test, or examination.

- Plagiarism is the copying of any published work such as books, magazines, audiovisual programs, electronic media, and films or copying the theme or manuscript of another student. It is plagiarism when one uses direct quotations without proper credit or when one uses the ideas of another without giving proper credit. When three or more consecutive words are borrowed, the borrowing should be recognized by the use of quotation marks and proper parenthetical and bibliographic notations.

If, upon investigation, the instructor determines that the student is guilty of cheating or plagiarism, the following penalties will apply:

- The student will receive a penalty of no less than a zero on the work in question.
- The instructor will submit a written report of the incident to the Vice President for Learning
- The Vice President for Learning will determine whether further disciplinary action will be taken.
- All decisions may be appealed for review through the college's Academic Appeals procedure.

### **Equal Opportunity-Affirmative Action Statement**

South Arkansas Community College does not discriminate on the basis of age, race, color, creed, gender, religion, marital status, veteran's status, national origin, disability, or sexual orientation in making decisions regarding employment, student admission, or other functions, operations, or activities.

### **Library Services**

Library Homepage: <http://southark.libguides.com/homepage> Library Contact: LibraryStaff@southark.edu or 870.864.7115

### **Procedures to Accommodate Students with Disabilities:**

If you need reasonable accommodations because of a disability, please report this to the Vice President of Student Services with proper documentation. . VPSS Contact: 870.875.7262

### **The Early Alert System**

In an effort to ensure student retention and success, South Arkansas Community College employs an Early Alert System to identify and support at-risk students as soon as possible in a given semester. The intent of Early Alert is to provide this assistance while there is still time to address behaviors or issues that have the potential of preventing students from completing their courses and degree plans. Students referred through the Early Alert System will be required to work on a corrective action plan with their student advising coach and to include attendance accountability and mandatory academic tutoring either in the academic division or in the Testing and Learning Center (TLC).

Once the Student Advising Coach has met with the referred student, and again when the student has met the prescribed corrective actions, the coach will update the Early Alert System so that the instructor is kept informed of the progress in resolving issues.

### **Behavioral Review Team**

At South Arkansas Community College (SouthArk), we are committed to proactive leadership in student wellbeing and campus safety. By focusing on prevention and early intervention with campus situations that involve any person experiencing distress or engaging in harmful or disruptive behaviors, the BRT will serve as the coordinating hub of existing resources to develop intervention and support strategies and offer case management. Students, faculty, staff, and campus guests are encouraged to report any person on campus who is a concern. BRT Contact: 870.875.7262 BRT@southark.edu

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