Big Sandy Community and Technical College

Course Syllabus

PS Number: 88759  Semester: Spring  Year: 2016

Faculty Name: Paul D. Thompson  Title: Professor

Course Prefix and Number: CHE 180 B001  Course Credit Hours: 4

Course Prerequisites: (CHE 170 with a grade of C or better) and (College Algebra with C or better). Lecture: 4 credits (60 contact hours).

Course Title: General College Chemistry II

Catalog Course Description: Continues CHE 170. Focuses on major chemical topics, including acid-base chemistry, kinetics, thermodynamics, and chemical equilibrium. Emphasizes solving of mathematical problems which illustrate the principles of chemistry. Designed for students in the sciences, engineering, and pre-professional programs.

Instructor Contact Information:

Campus Location: Prestonsburg  Building & Room: Campbell Rooms 208A and Lab Room 225

Office Hours:
M 11:30 – 12:30 PM; 3:30 – 5:30 PM
T 12:30 – 1:30 PM; 4:30 – 5:30 PM
W 12:05 – 12:35 PM; 3:30 – 4:00 PM
R 12:30 – 2:30 PM; 3:30 – 5:30 PM

Office Phone Number: 606-889-4720  Alternate Number: 606-886-3963 ext. 64711

Best Times to Call: MW 11:30 – 12:30

KCTCS Email: Paul.Thompson@kctcs.edu

Special Instructions: Contact the instructor by phone or email to make an appointment.

Supervisor Contact Information:

Name: Patsy R. Jackson
Campus Location: Prestonsburg  Building & Room: Campbell, 120H
Office Phone Number: 606-886-3963 ext. 64711
KCTCS Email: Patsy.Jackson@kctcs.edu
Text and Supplies:


3. An ordinary two-line scientific calculator (TI-30 or Casio 115 or equivalent).

4. Access to a computer to print files, at home or on campus.

KCTCS General Education Competencies
Students should prepare for twenty-first century challenges by gaining:

A. Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.
   Method to Achieve Competency:
   Students will take a multiple choice competency quiz which will be a part of the Final Exam and be part of their Final Exam score.

B. Intellectual and practical skills, including
   • inquiry and analysis
   • critical and creative thinking
   • written and oral communication
   • quantitative literacy
   • information literacy
   • teamwork and problem solving
   Method to Achieve Competency:

C. Personal and social responsibility, including
   • civic knowledge and engagement (local and global)
   • intercultural knowledge and competence
   • ethical reasoning and action
   • foundations and skills for lifelong learning
   Method to Achieve Competency:

D. Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills.
   Method to Achieve Competency:

Course Specific Competencies (Student Outcomes):
Upon completion, the student will be able to:
1. Demonstrate an understanding of general chemistry, including acid-base chemistry, kinetics, thermodynamics, and chemical equilibrium.
2. Evaluate and interpret numerical, chemical, and general scientific information.
3. Apply information from other areas of study (such as mathematics and physics) to facilitate their understanding and manipulation of fundamental chemical theories.
4. Analyze and solve chemical problems.
5. Relate chemical concepts to daily life.

**Lab Competencies (Student Outcomes):** (Enter N/A if this does not apply.)
N/A

**Course Outline:**

I. Chemical Kinetics (Chapter 12)
   A. Collision and transition state theories
   B. Factors that influence reaction rates
   C. Reaction order
   D. Reaction mechanisms

II. Chemical Equilibria (Chapter 13)
   A. Dynamic equilibria
   B. Reversible reactions
   C. Definition of equilibrium constants
   D. Calculations of equilibrium concentrations
   E. LeChatelier's principle
   F. Gas phase equilibria
   G. Heterogeneous equilibria
   H. Acid-base equilibria (Chapter 15)
   I. Solubility equilibria (Chapter 16)
   J. Complex ion equilibria (Chapter 16)

III. Chemical Reactions: Acid-Base and Redox (Chapter 14)
   A. Acid-base definitions and reactions
   B. Titrations and titration curves
   C. Oxidation numbers
   D. Balancing redox reactions

IV. Chemical Thermodynamics (Chapter 17)
   A. Enthalpy changes and spontaneity
   B. Entropy and spontaneity
   C. Laws of thermodynamics
   D. Gibbs free energy
   E. Standard free energy
   F. Free energy and equilibrium

V. Solutions (Chapter 11)
   A. Definitions
   B. Concentration and stoichiometry
   C. Colligative properties
VI. Electrochemistry (Chapter 18)
   A. Electrolytic cells and Faraday's law
   B. Voltaic cells and the Nernst equation

VII. Selected Topics
   A. Organic chemistry (22)
   B. Coordination chemistry (21)
   C. Nuclear chemistry (19)
   D. Descriptive inorganic chemistry (20, 21)
   E. Materials science (10)

Course Structure:
This course covers topics that are commonly taught in the second semester of General Chemistry. We will cover Chapters 10 – 16 in our textbook and give an introduction to organic chemistry in Chapter 22. Remaining topics in the outline may be covered briefly during lecture, in definitions or examples, by accessing information online, or by reading the text. The basic course structure is lecture/homework/practice quizzes/exams.

Technology/Media Component:
This is a web-enhanced course so components of the online course may be used. Students are expected not to download any copyrighted material from the Internet without permission.

Service-Learning:
N/A

Course Requirements and Evaluation:
CHAPTER HOMEWORK: Selected problems at the end of each chapter will be chosen. Please write the Chapter Number and Page Number at the beginning of each new set of homework. Each set will be assigned either one point or no point as follows:
   Student has done most (roughly 80 %) of the homework assignment ........ 1 point
   Student has done an inadequate amount (< 80 %) ......................... 0 point

PRACTICE QUIZZES: a practice quiz for each chapter will be posted in the online course and will be due at the same time the chapter homework is due. Chapter homework and practice quizzes together will be worth 16% of the final course grade. Any additional worksheets, quizzes, or other assignments will be figured in to this 16%. Chapter homework and practice quizzes are due at the beginning of the exam that covers those chapters.

EXAMS: There will be two one-hour exams each worth 24% and a final exam also worth 24%. All exams will be in-class, closed book. Exams may be written answers and calculations, and may contain matching, True-False, or multiple choice questions

Tentative Exam Schedule:  Thursday, February 11  Exam I  Ch. 10, 11, 12  Thursday, March 24  Exam II  Ch. 13, 14, 15  Thursday, May 5  Final Exam  Ch. 16, 17, 22
The chapters covered may change depending on how we progress through the text. The exams may be given earlier or later than the date listed. Any extra credit used on an exam will be a part of the exam itself when it is given; no separate course work will be used as extra credit for a exam. Instead, if need be, the same amount of extra points will be added to each person’s score. Programmable calculators and cell phones and any other electronic device cannot be used during an exam. An ordinary scientific calculator is allowed and is necessary for taking an exam. Because chemistry is an accumulative subject the Final Exam is over the chapters listed and is also comprehensive.

EXAM SCORES: Sometimes a student doesn’t do well on an exam and their score doesn’t reflect their understanding in the course. To make up for this the lowest exam score of the three will be dropped and replaced by the average of the other two. For example, let’s say a student gets an 82 on Exam I, a 63 on Exam II and a 77 on the Final. The 63 will be dropped and replaced by 79.5 which is the average of the other two. However, you can’t just skip an exam. You must be present and take all three exams or an exam you skip will be counted as zero.

VARIABLE EXTRA CREDIT ON EXAMS: The extra credit problems on an exam are graded only after the main part of the exam has been graded and are used to adjust the class average to a higher score, as needed. The goal is to place the midpoint of the "bell curve" for the scores somewhere in the 70 – 80 range. For instance, if average were 62, the extra credit could be assigned a value of 12 points, allowing the class average to be adjusted as high as 74. If, on the other hand, the average was 71, the extra credit would only be valued at 3 points to bring the average up to 74.

INSTRUCTOR ASSESSMENT: In this component, the instructor will make a qualitative assessment of student success and participation in the course, worth 6% of the final course grade. This includes but is not limited to such things as contribution to class discussion, understanding of the chemical topics being presented, ability to apply math to chemical problems, and feedback while calculations are being demonstrated on the board. The best way to earn assessment points is by participation.

Grading Policy:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework and Practice Quizzes</td>
<td>16 %</td>
</tr>
<tr>
<td>Exam I</td>
<td>24</td>
</tr>
<tr>
<td>Exam II</td>
<td>24</td>
</tr>
<tr>
<td>Attendance</td>
<td>6</td>
</tr>
<tr>
<td>Assessment</td>
<td>6</td>
</tr>
<tr>
<td>Final Exam</td>
<td>24</td>
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<td></td>
<td>100 %</td>
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</tbody>
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Letter Grade As Determined by Percent Earned in the Course:

- 100-90 % = A
- 89.9-80 % = B
- 79.9-70 % = C
- 69.9-60 % = D
- 59.9-0 % = E

Attendance Policy:
Role will be taken and attendance is required. Six final percentage points are allotted for attendance. One percentage point will be deducted for each absence up to the maximum of six, and no attempt will be made to distinguish between "excused" and "unexcused" absence. No more points will be deducted for more than six absences.
**Missed Exam Policy:**
There will be no make-up exams during the semester and no one-hour exam will be given at a different time, except in cases of emergency as agreed upon by both the student and the instructor.

**Late Assignment Policy:**
No course work will be accepted after 5:00 PM on the last day of the semester before Finals Week except the homework and practice quizzes which are to be handed in at the beginning of the Final Quiz.

**EMAILING GRADES OR SCORES:** At least once after the second exam and before the end of the semester grades will be calculated and sent to the student. This is done so that the student knows his or her approximate grade before the Final Exam and has a chance to withdraw from the course.

**ADDITIONAL AGREEMENTS:** Sometimes a student asks about due dates or grading or some other feature of the course, and later it is found out that what I told them is not consistent with the Syllabus. Since course policy should not be set arbitrarily, whatever is written in the Syllabus will be followed even if the instructor gives verbal permission to do it another way.

**EXTRA CREDIT:** Up to 6% extra credit may be earned by writing a paper and producing a model and/or poster based on pull-strips. Instructor and student must agree on each extra credit project.

**Withdrawal Policy:**
Students will be allowed to withdraw from this course up until the “Last Day to Withdraw at the Discretion of the Instructor”, and receive a grade of “W”.

**Additional information can be found at the following site:**
http://www.bigsandy.kctcs.edu/en/Academics/Office_Hours_Schedules_and_Syllabi.aspx
CHE 180 B001 Reading and Homework for SPRING 2016

Text = Zumdahl and Zumdahl, 9th Edition

Ch. 10  Skip p. 468 – 480

Ch. 10 p. 500: #35, 37, 39, 42, 47, 50, 51, 55, 57, 81, 91, 94, 99, 102 (14)

Ch. 11  Skip sections 7 and 8

Ch. 11 p. 543, #11, 12, 13, 14, 15, 29, 30, 33, 44, 53, 57, 65, 68, 71, 91 (15)

Ch. 12  Skip sections 5 and 7

Ch. 12 p. 593, #23, 28, 29, 33, 37, 38, 39, 49, 54, 67, 69 (11)

Ch. 13  Study all

Ch. 13 p. 644, #23, 25, 27, 28, 39, 42, 47, 51, 54a, 57, 59, 65, 70, 73 (14)

Ch. 14  Skip p. 691 – 696

Ch. 14 p. 701, #21, 26, 37, 43, 47, 51, 61, 65, 68, 75, 82, 87, 99, 109, 116, 147 (16)

Ch. 15  Study all

Ch. 15 p. 751, #21, 23, 25, 41, 44, 45, 50, 55, 61, 66, 71, 72, 87, 99 (14)

Ch. 16  Study p. 759 – 767

Ch. 16 p. 781, #23, 25, 27, 39 (4)

Ch. 22  Study p. 1024 – 1052, Optional p. 1052 – 1066

Ch. 22 p. 1070, #3, 6, 13, 18, 21, 25, 29, 39, 48, 49, 61, 65 (12)

Reading and homework assignments may change as needed to suit course needs.