CAMPBELLSVILLE UNIVERSITY

COURSE SYLLABUS

PLEASE TYPE. DATE 23 December 2015

ACADEMIC UNIT Natural Science Division FACULTY Elizabeth K. Sutton

Discipline	Course # and Section	Title of Course	Credit Hours	Cross Reference (if applicable)
CHE	114-91/-92	General Chemistry II Lab	2	n/a

TEXTBOOK [X] Required [ ] Not Required

Author Beran, Jo Allen Title "Laboratory Manual for Principles of General Chemistry", 10th ed.

Publisher John Wiley & Sons Publishing Date of Publication 2013

WORKBOOK [ ] Required [ ] Not Required

Author Title

Publisher Date of Publication

PLEASE ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER AND ATTACH TO THIS FORM.

1. DESCRIPTION OF COURSE: Develop a brief description of the course as it will appear in the Catalog.

2. STUDENT LEARNING OBJECTIVES: List the student learning objectives for the course. Please relate these objectives to the mission and goals of the University and the Academic Unit. For general education courses, please indicate which student learning objectives address general education goals and the intended method of assessment. A minimum of four of the seven general education goals must be included.

   Example: Students will demonstrate their ability to compare and contrast two types of basket weaving. (Goal: Oral and Written Communication; Evidence: research paper and class presentation)

3. COURSE OUTLINE: Outline the topics/units that are to be taught.

4. EVALUATION: How do you plan to determine the grade in the course? Please include grading scale.

5. REQUIREMENTS:
   a. Examinations: State when tests are to be administered, including unit, mid-term, and final examinations.
   b. Reports: How many, length required, and what type (Oral, term and/or research, book critiques).
   c. Supplemental reading assignments or outside work required.
   d. Supplemental instruction aids: Audio visual aids, field trips, guest speakers, etc.

6. BOOKLIST

DEAN Date Copy Received

VICE PRESIDENT FOR ACADEMIC AFFAIRS Date Copy Received

I. **TITLE:** CHE 114 General Chemistry Laboratory II, two credit hours

II. **COURSE DESCRIPTION:** This laboratory course introduces the student to semi-micro qualitative inorganic analysis. **Two three hour laboratory periods per week. Prerequisites:** CHE 111 and 113 with a grade of C or better or consent of the chemistry department. **Co-requisite:** CHE 112 must be taken concurrently.

III. **COURSE OBJECTIVES**

A. **General Education Curriculum Objectives (GECO):** (numbered to correspond to the listing in the University catalog)

2. Critical Thinking: Students will demonstrate the ability to reflect on theories and issues in a systematic fashion.
4. Ethics: Students will demonstrate an understanding of Christian values and ethical standards in order to make mature and informed decisions concerning moral issues.
5. Oral and Written Communication: Students will demonstrate the ability to express ideas, beliefs, and information in an organized, precise, and persuasive manner.
6. Quantitative Literacy: Students will demonstrate the ability to understand and utilize mathematical and/or logical relationships to analyze data, to construct and assess arguments, and to make sound judgments in quantitative situations that arise in daily life.
7. Social Responsibility and Citizenship: Students will demonstrate an understanding of personal and social responsibility in a changing global environment so that students can make contributions to their respective discipline and to society as a whole.

B. **Student Learning Outcomes (SLO)**: Students will (numbered to correspond to the pertinent General Education Curriculum Objective [GECO])

1. Students will specifically demonstrate laboratory and safety techniques that are related to basic chemistry and chemical samples. (GECO 6; Evidence: quizzes, weekly labs)
2. Students will develop skills to critically analyze the validity of experimental data.(GECO 4, 6; Evidence: lab reports)
3. Students should comprehend and use basic chemical principles, terminology, and the uses of scientific technology and their implications. (GECO 6; Evidence: quizzes, lab reports)
4. Students will recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing. (GECO 2,5; Evidence: lab reports)
5. Students will follow ethical practices when conducting research, writing reports, using sources and when working with others. (GECO 4; Evidence: quizzes, lab reports)
6. Students will demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies. (GECO 4,6,7; Evidence: quizzes, lab reports, class discussion)
7. Students will demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture. (GECO 4,6,7; Evidence: lab reports)

C. Program Learning Outcomes (PLO): (numbered to correspond to the program learning outcomes listed in the program assessment document) (Evidence: lab reports, quizzes, exams)

1. The student will be able to demonstrate a solid understanding of the core principles in the traditional subdivisions of chemistry: Analytical, Inorganic, Organic and Physical.

2. The student will be able to perform qualitative/quantitative chemical analyses/syntheses through the use of the appropriate laboratory techniques/equipment, experimental design, data acquisition, interpretation of data, and relevant instrumentation.
4. The student will be able to articulate chemical information/data/ideas clearly and effectively in speech and in writing in an acceptable presentation format.
5. The student will demonstrate a fundamental knowledge of chemical safety, chemical hazards, and proper disposal of chemical waste and be introduced to basic principles of green chemistry.
6. The student will demonstrate critical thinking skills in chemistry: interpretation, evaluation, explanation, and scientific inquiry; how to ask appropriate questions, gather relevant information effectively and creatively, and reason logically from this information to make reliable conclusions**.**

D. **Course Specific Objectives (CSO):** numbered to correspond to the pertinent Program Learning Outcomes (PLO). Evidence: lab reports, quizzes, lab notebooks, exams.
1. The students will be able to illustrate principles and safety rules covered in the concurrent lecture course. (PLO 1,5)
2. Students will demonstrate the techniques of handling chemicals in the laboratory and proper laboratory techniques. (PLO 5)
3. Students will demonstrate a basic understanding of various types of laboratory equipment and techniques.(PLO 2)
4. The students will demonstrate an understanding of basic analytical and inorganic reactions. (PLO 1)
5. Students will demonstrate their written communication skills and their ability to think critically and analytically through written laboratory reports. (PLO 4)

V. COURSE OUTLINE

A. Safety Practices/Basic Lab Techniques
B. Colligative Properties
C. Solubility Product
D. Chemical Kinetics
E. Qualitative Analysis
F. Limiting Reagents/Preparation of an Inorganic Compound
G. Acid-Base Titrations

VI. COURSE EVALUATION

A. **Instructional Strategies**:
1. Students will learn science by doing science, in this course the science focus is on chemistry. The lab applies the intellectual theory and conceptual understanding of chemistry obtained from the lecture component of the course.
2. Writing Component: This course will promote student learning by emphasizing writing skills. There will be several writing requirements. These requirements may include short papers, article critiques, journals, portfolios, or other writing assignments.
3. Critical Thinking, Problem Solving, and Reasoning Skills will be reinforced throughout the study of chemistry and its applications in this course.

B. The course grade will be determined from laboratory experiments, pre-laboratory assignments, quizzes and formal lab reports. The standard ten-point grading scale will be used when assigning course grades. If, for any reason, you cannot continue to attend this course, be certain that you **DROP IT OFFICIALLY**. Otherwise, you will automatically receive a failing grade.

Distribution of Course Points:				
Pre-Lab Assignments (Best 12 of 13 @ 10 pts)	120 pts	675-750 pts	A	90-100%
Lab Notebook Pages (Best 12 of 13 @ 10 pts)	120 pts	600-674 pts	B	80-89%
Lab Reports (Best 12 of 13 @ 30)	360 pts	525-599 pts	C	70-79%
Lab Exams (1@150)	150 pts	450-524 pts	D	60-69%
TOTAL	**750 pts**	Less than 450 pts	F	< 60%

- **If, for any reason, you cannot continue to attend this class, be certain you DROP IT OFFICIALLY. Otherwise you will automatically receive a failing grade.**
- **Any student who does not obtain at least 50% of the lecture components (homework/ quizzes, hourly exams and final) will fail the course.**

Dates to Remember:			
M. L. King, Jr Day-No Class	Jan 18	First Bi-term ends	Mar 12
Evening classes begin	Jan 19	Spring Break-No Classes	Mar 13-18
Day classes begin	Jan 20	Second Bi-term begins	Mar 21
Last day add/register for Spring term	Jan 22	Easter Holiday-No Classes	Mar 25-28
Last day to drop 1st Bi-term class with W	Feb 20	Last day to drop a semester class with W	Apr 15
Midterm Week	Mar 7-11	Finals Week	May 9-13

VII. COURSE REQUIREMENTS

A. ***Attendance:*** Each student is expected to have punctual attendance at each class meeting. The University Undergraduate Attendance Policy will be strictly followed.

B. **Numbers to Remember:**
   1. **Campus Security Cell Phone: 270-403-3611**
   2. **Campus Security Office Phone: 270-789-5556**
   3. **Natural Science Division Office: 270-789-5065**

C. **Safety Rules:** Students are required to follow the necessary safety precautions at all times while in the laboratory. This includes the wearing of protective eyewear, leather shoes completely covering the feet, clothing from the **neck to below the knee with close fitting sleeves**, and a protective apron. **Students without appropriate attire will be sent out of the laboratory to change their footwear and/or whatever does not meet the requirements.** Additional safety rules and procedures will be discussed during the first week of class.

D. ***Pre-lab Assignments****:* The student will read the lab experiment in the manual and complete the pre-lab for the given lab experiment **BEFORE** coming to class. This pre-lab assignment must be completed and turned in **at the beginning** of the laboratory period. Each lab manual pre-lab assignment will be worth 10 points. If the pre-lab is not complete at the beginning of the laboratory period, the student will receive a score of zero.

E. ***Lab Notebook:*** Before each lab period, the student will complete a brief report in their lab notebook. This report will include a brief purpose statement of the lab being performed, a brief summary of the lab and sample calculations. Prior to beginning work on the experiment, the student is responsible for getting the lab instructor's initials on the pre-lab report. During the lab period, the student will keep a journal of everything you see, hear, smell, or do during the lab that is relevant to the experiment. In addition, the student will use the lab notebook to record any notes from the pre-lab lecture. More details about the format of the lab notebook will be given during the first lab period. Before leaving the lab, the student is responsible for getting the lab instructor's initials on the completed work in their lab notebook

F. ***Lab Reports:*** Each experiment must be completed and written up in the appropriate form. Details on the form for the types of lab reports will be given in the first laboratory period. The lab reports are due at the beginning of lab the following week. Failure to submit the lab report on time will result in a loss of points on the report. ***A 10% penalty per day (including weekends) will be***

assessed for late reports. <u>Reports submitted two weeks after completion of the experiment will receive a grade of zero</u>.

G. ***Examinations:*** A comprehensive lab final (150 pts) will be given at the end of the semester. More details about the lab exams will be given during the first weeks of lab.

H. ***Classroom Behavior:***

1. NO FOOD, DRINK, TOBACCO, or CHEWING GUM.
2. Guests are only allowed in class at the discretion of and with prior approval from the instructor.
3. Electronic recording devices of any kind are not permitted except in special circumstances and with the specific permission of the instructor.
4. While you are expected to attend and participate in this class, your cell phone, computer, and MP3 players are **not**. Pagers, cell phones, and similar items are disruptive to the entire class and **<u>must be turned off</u>** during class. **<u>The owner of any such device that activates during class will be immediately excused from class and counted as absent for the entire period.</u>**
5. Use of cell phones, computers, and MP3 players during examinations and quizzes will be considered academic dishonesty, which will result in a zero being awarded for the quiz or examination (No exceptions!).
6. Hats and caps are to be removed prior to entering the classroom.
7. Take care of any physiological needs *before* coming into the classroom.
8. Unacceptable student behaviors:
   a. Sleeping during class
   b. Chronic tardiness. Be here ready to learn when class begins.
   c. Reading, studying or working on materials for other classes.
   d. Chatting with your classmates when the instructor or other classmates are speaking.
   e. Prematurely packing up your books and bags before class has been dismissed.

I. ***Academic Misconduct/Integrity*:** Students in this course will be working toward mastery of the material to satisfy the course objectives. ***This class is held to an honor system, meaning that cheating, allowing someone to cheat, or failing to report known cases of cheating are all considered academic misconduct***. Cheating includes, but is not limited to, any attempt to present the work of another as your own; discussing or copying exams, quizzes, or homework with students who have not yet completed them; using "cheat sheets" on exams or quizzes; altering a test for re-grade, plagiarism of primary or secondary sources of information or using programmable calculators to store and/or recall prohibited information for an exam. Any student who refuses to allow a calculator to be inspected by the instructor upon request will not be allowed to use that calculator on the exam/quiz. Be aware that aggressive methods are used to protect the majority of you who are honest. Violations will be dealt with according to the University and Divisional policies. <u>A copy of the Division of Natural Sciences (DNS) policy on Academic Integrity will be available on the course TigerNet page</u>. <u>Please read this policy and take it very seriously</u>. For information about plagiarism and how to avoid it, consult the following website: http://www.indiana.edu/~istd/. Students will be asked to sign an integrity statement on each examination and quiz. The following statement reads as follows:

> "I pledge on my honor that on this assignment/examination/quiz I have neither received nor given nor have I seen any dishonest work.
>
> Signature _____ Date _____"

J. ***Teaching Methods***: Important laboratory procedures, safety precautions, and a review of necessary calculations will be demonstrated by the instructor at the beginning of the lab period.

Students will then complete the assigned experiment. The instructor will be available to answer questions throughout the lab period.

VIII. **BOOK LIST** (Instructional Materials needed)

A. Beran, J. A., "Laboratory Manual for Principles of General Chemistry", 10th ed., Wiley & Sons Publishing, 2013. ISBN: 978-1118621516. Available as in e-book version or paperback version.
B. Whitten, Gailey, and Davis; General Chemistry with Qualitative Analysis, 5th ed. Saunders/HBJ Publishing, 1996, (Chapters 29-36).
C. Additional handouts provided by the instructor.
D. Chemistry Lecture textbook: "Chemistry: A Molecular Approach" Tro, Nivaldo J., Prentice Hall Publishing, 2011.
E. Laboratory Notebook: A hard cover, bound composition notebook.
F. Safety Goggles. Industrial quality safety goggles (impact resistant and splash proof) must be worn in the laboratory at all times.
G. Safety Lab Apron.
H. Scientific Calculator.
I. Other materials assigned or issued by the instructor.

IX. **DISABILITIES**

Campbellsville University is committed to reasonable accommodations for students who have documented physical and learning disabilities, as well as medical and emotional conditions. If you have a documented disability or condition of this nature, you may be eligible for disability services. Documentation must be from a licensed professional and current in terms of assessment. Please contact the Coordinator of Disability Services at 270-789-5192 to inquire about services.

X. **ACADEMIC SUPPORT**

The Academic Support area, located in the Badgett Academic Support Center (BASC), exists to help students. At certain times, most students need some help with studying, choosing a career, major/minor, or assistance in a difficult course. The following services are available Career Services, Disability Services, tutoring, and the Citizens Bank & Trust Writing Center. *These services are provided at no extra cost to the student.* Space is also available for individual and group study, and laptop computers are available for students to check-out and use within the building. Information about these services is accessible by clicking on the "Current Students" tab on the University website at www.campbellsville.edu. Information is also available by calling the Office of Academic Support at (270) 789-5064.

XI. **TITLE IX**

Campbellsville University and its faculty are committed to assuring a safe and productive environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office of Civil Rights, the University requires all responsible employees, which includes faculty members, to report incidents of sexual misconduct shared by students to the University's Title IX Coordinator.

Title IX Coordinator:
Terry VanMeter
1 University Drive
UPO Box 944
Campbellsville, KY 42718

Administration Office 8A
Phone: 270-789-5016
Email: twvanmeter@campbellsville.edu

Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: www.campbellsville.edu/titleIX

Tentative Course Schedule for CHE 114 Spring 2016

Date	Experiment	Text
JAN 21	**NO LAB**	---
26	Lab Check In, Lab Safety	
28	Intermolecular Forces and Solid-Liquid Transitions	Handout
FEB 2	Intermolecular Forces and Solid-Liquid Transitions	Handout
4	Vapor Pressure and Heat of Vaporization	Handout
9	Molar Mass of a Solid	14
11	Molar Mass of a Solid	14
16	Factors Affecting Reaction Rates	23
18	Factors Affecting Reaction Rates	23
23	A Rate Law and Activation Energy	24
25	A Rate Law and Activation Energy	24
MAR 1	Le Chatelier's Principle; Buffers	16
3	Le Chatelier's Principle; Buffers	16
8	Aspirin Synthesis and Analysis	19
10	Aspirin Synthesis and Analysis	19
15/17	**SPRING BREAK—NO CLASSES**	
22	Dry Lab #4, Qual I	DL 4, 38
24	Qual I	38
29	Qual II	39
31	Qual II	39
APR 5	An Equilibrium Constant	34
7	An Equilibrium Constant	34
12	Thermodynamics of Borax	26
14	Thermodynamics of Borax	26
19	Spectrophotometric Metal Ion Analysis	35
21	Spectrophotometric Metal Ion Analysis	35
26	Transition Metal Complexes	36
28	Transition Metal Complexes	36
MAY 3	**ACS General Chemistry Exam (2 hours)**	
5	Lab Check Out	
10/12	**FINALS WEEK—Lab Final Exam**	
In the event of class cancellation for any reason (weather, instructor illness, etc.) exams or other scheduled activities will be administered in the next active class period.		

COURSE #: _____ SEMESTER: _____

COURSE TITLE: _____

Student's Acceptance of Course Policies

Please fill out and sign the following form and **return it no later than _____** to the instructor. **Use a blue or black pen (no pencil).**

I, _____, have read the entire syllabus describing the course
(Print your name neatly)

policies for this course, taught by Ms. E. Kay Sutton. I fully understand these policies and I agree to comply with them during the entire _____ term.

Signature: _____ Date: _____