

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 4410
COURSE TITLE:	Physical Chemistry I
PREREQUISITE(S):	CHM 3120C (Elementary Analytical Chemistry with lab), MAC 2311 (Calculus with Analytical Geometry I), and PHY 2054C (General Physics II with lab) all with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course will cover gases, solutions, thermodynamics, chemical equilibria, and kinetics with an added emphasis on how these chemical principles influence enzymes and other biological macromolecules and processes.

SUGGESTED TEXT(S):

Chang, Raymond, Physical Chemistry for the Biosciences,
University Science Books, Latest edition

Kuhn, Hans, Forsterling, Horst-Dieter, Waldeck, David H.,
Principles of Physical Chemistry, John Wiley and Sons,
Latest edition

McQuarrie, Donald A., Simon, John D., Physical Chemistry, A
Molecular Approach, University Science Books, Latest
edition

Silbey, Robert J., Alberty, Robert A., Bawendi, Moungi G.,
Physical Chemistry, John Wiley and Sons, Latest edition

Chang, Raymond, Physical Chemistry for the Chemical and
Biological Sciences, University Science Books, Latest edition

Levine, Ira N., Physical Chemistry, McGraw Hill, Latest
edition

Engel, Thomas, Reid, Philip, Physical Chemistry, Prentice Hall,
Latest edition

IMPLEMENTATION DATE:

Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS		CONTACT HOURS <u>PER TOPIC</u>
I	Introduction	1
II.	Gases	5
	e. Ideal	
	f. Real	
	g. Kinetic Theory	
	h. Maxwell Distribution	
III.	Thermodynamics	12
	a. First Law	
	b. Second Law	
	c. Third Law	
	d. Gibbs Free Energy	
IV.	Solutions	9
	a. Ideal	
	b. Real	
	c. Electrolytic	
	d. Colligative	
	e. Acids & Bases	
	f. Electrochemistry	
V.	Chemical Equilibria	9
VI.	Chemical Kinetics	9
	a. Chemical	
	b. Enzymatic	
Total Lecture Hours:		45



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: <u>CHM 4410</u>	SEMESTER CREDIT HOURS (CC): <u>3</u> CONTACT HOURS (NCC):
COURSE TITLE: <u>Physical Chemistry I</u>	

Section 2		
TYPE OF COURSE: (Click on the box to check all that apply)		
☐ AA Elective	☐ AS Required Professional Course	☐ College Prep
☐ AS Professional Elective	☐ AAS Required Professional Course	☐ Technical Certificate
☒ Other <u>B.S. Biomedical Sciences Upper Division Core Course</u>	☐ PSAV	☐ Apprenticeship
☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

Section 3 (If applicable)		
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:		
☐ Communications	☐ Social & Behavioral Sciences	☐ Mathematics
☐ Natural Sciences	☐ Humanities	

Section 4					
INTELLECTUAL COMPETENCIES:					
☐ Reading	☐ Speaking	☒ Critical Analysis	☒ Quantitative Skills	☒ Scientific Method of Inquiry	
☐ Writing	☐ Listening	☐ Information Literacy	☐ Ethical Judgment	☐ Working Collaboratively	

Section 5		
STATE GENERAL EDUCATION LEARNING OUTCOME AREA		
☐ Communication	☐ Critical Thinking	☐ Scientific and Quantitative Reasoning
☐ Information Literacy	☐ Global Sociocultural Responsibility	

Section 6 LEARNING OUTCOMES		Type of Outcome: Gen. Ed, Program, Course	METHOD OF ASSESSMENT
•	Demonstrate knowledge of ideal and real gases and solutions	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of chemical thermodynamics	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of chemical equilibria and kinetics	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the

			answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Stephen Lukacs, Ph.D.

Date: December 17, 2010