

COURSE IMPLEMENTATION DATE:[ September 2001  
COURSE TO BE REVIEWED DATE:[ September 2005  
(Four years after implementation date)

**OFFICIAL COURSE OUTLINE INFORMATION**

Students are advised to keep course outlines in personal files for future use.

Shaded headings are subject to change at the discretion of the department and material will vary  
- see course syllabus available from instructor

FACULTY/DEPARTMENT : **CHEMISTRY**

**CHEM 324** **4**  
COURSE NAME/NUMBER FORMER COURSE NUMBER UCFV CREDITS

**CHEMICAL KINETICS AND THERMODYNAMICS**
**COURSE DESCRIPTIVE TITLE**
**CALENDAR DESCRIPTION:**

An introduction to thermodynamics with applications to phase and chemical equilibria. Topics include principles of chemical kinetics including enzyme kinetics and reaction rate theory. Laboratory experiments illustrate lecture material.

PREREQUISITES: CHEM 111 and 112, or CHEM 101 and 102 with B or higher; PHYS 111 and 112, or PHYS 105; MATH 111 and 112.  
(MATH 211 is highly recommended.)

COREQUISITES: None

**SYNONYMOUS COURSE(S)**

(a) Replaces: N/A  
\_\_\_\_\_  
(Course #)  
(b) Cannot take CHEM 222 or 323 for further credit  
\_\_\_\_\_  
(Course #)

**SERVICE COURSE TO:**

\_\_\_\_\_  
(Department / Program)  
\_\_\_\_\_  
(Department / Program)

TOTAL HOURS PER TERM: **90**

**STRUCTURE OF HOURS:**

Lectures: 45 hrs  
Seminar: \_\_\_\_\_ hrs  
Laboratory: 45 hrs  
Field Experience: \_\_\_\_\_ hrs  
Student Directed Learning: \_\_\_\_\_ hrs  
Other (Specify): \_\_\_\_\_ hrs

**TRAINING DAY-BASED INSTRUCTION**

LENGTH OF COURSE: \_\_\_\_\_  
HOURS PER DAY: \_\_\_\_\_

MAXIMUM ENROLMENT: 24

EXPECTED FREQUENCY OF COURSE OFFERING: \_\_\_\_\_

**WILL TRANSFER CREDIT BE REQUESTED?** YES \_\_\_\_\_ NO **X**

**TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:** YES \_\_\_\_\_ NO **X**

**AUTHORIZATION SIGNATURES:**

Course designer(s): \_\_\_\_\_  
N. Weinberg

Chairperson: \_\_\_\_\_  
(Curriculum Committee)

Department Head: \_\_\_\_\_  
N. Weinberg

Dean: \_\_\_\_\_  
K. Wayne Welsh

PAC Approval in Principle Date: \_\_\_\_\_

PAC Final Approval Date: February 23, 2000

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COURSE NAME/ NUMBER

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**LEARNING OBJECTIVES / GOALS / OUTCOMES/ LEARNING OUTCOMES:**

Students will become familiar with fundamental principles of chemical kinetics and thermodynamics and will learn how to use them to analyze chemical processes and phase equilibria.

**METHODS:**

Lectures, labs, group problem-solving sessions.

**PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):**

Credit can be awarded for this course through PLAR      YES \_\_\_\_\_      NO   X  

**METHODS OF OBTAINING PLAR:****TEXTBOOKS, REFERENCES, MATERIALS:**

Atkins, *Physical Chemistry*, 6<sup>th</sup> ed., Freeman and Co., 1998

**SUPPLIES / MATERIALS:****STUDENT EVALUATION:**

Labs	20%
Midterms	40%
Final	40%

**COURSE CONTENT:**

1. Introduction to Thermodynamics. The Zeroth Law of Thermodynamics.
2. The First Law of Thermodynamics.
3. Thermochemistry. Thermodynamic cycles.
4. Thermodynamic Potentials. Spontaneity and Equilibrium.
5. Phase Equilibria.
6. Chemical Equilibria.
7. Introduction to Chemical Kinetics. Rate laws.
8. Complex kinetics. Enzyme kinetics.
9. Collision theory. Transition state theory