

# Survey of Physical Chemistry

(The Thermodynamic & Kinetic Modeling of the Physical and Chemical behavior of Matter)

CHEM-3510

Fall 2016

**Purpose:** This course is designed for chemistry majors in the pre-professional track. The course explores the basis of fundamental thermodynamic, kinetic, and quantum mechanical models that are used for interpreting and predicting the behavior of matter. The thermodynamic and kinetic models deal with bulk matter while the quantum mechanical models deal with the behavior (both physical and chemical) observed at the atomic and molecular level.

**Learning Outcomes:** Each student will acquire a basic understanding of thermodynamic and kinetic behavior of matter. Also, the student will be able to distinguish which model to use based on the experimental conditions (*ideal versus non-ideal*) and to make the necessary assumptions necessary for the chosen model.

<b>Instructor:</b>	<b>Dr. Slattery</b>
<b>Phone:</b>	<b>(678)839-6016</b>
<b>E-mail:</b>	<b><a href="mailto:sslatt@westga.edu">sslatt@westga.edu</a> (You must use your MyUWG address)</b>
<b>Office Hours:</b>	<b>TR (3:30 – 5:00 pm); Wed (10:00 am – 5:00 pm); Room (2128)</b>
<b>Class Meetings:</b>	<b>Tues. &amp; Thurs. (2:00 - 3:15 p.m.)</b>
<b>Location:</b>	<b>TLC Building (Room 2128)</b>
<b>Text:</b>	<b>“Physical Chemistry for the Chemical and Biological Sciences” (Author: Raymond Chang; Publisher – University Science Books)</b>
<b>Note:</b>	<b>General Chemistry, Organic and other Physical Chemistry texts may be helpful for understanding the topics in this course.</b>

**Evaluation:** Your *course grade* will be computed as shown below:

A (90.0 - 100%); B (80.0 – 89.9%); C (70.0 – 79.9%); D (60.0 – 69.9%)	Percent of Total
Homework	12%
*Exam #1	22%
*Exam #2	22%
*Exam #3	22%
*Exam #4	22%
<b>Total</b>	<b>100%</b>

\*The date of each test will be announced at least one week in advance. ***Cheating will not be tolerated. Any infraction will be taken before the disciplinary committee and played out to the fullest extent.***

**UWG Website – Important Information for all STUDENTS to read**

[http://www.westga.edu/assetsDept/vpaa/Common\\_Language\\_for\\_Course\\_Syllabi.pdf](http://www.westga.edu/assetsDept/vpaa/Common_Language_for_Course_Syllabi.pdf)

## **CORRESPONDENCE**

Please use your “myUWG” or “CourseDen” e-mail account for all written communication. E-mails from other service providers (aol, gmail, hotmail, yahoo) will be ignored.

## **CHEATING**

Cheating and plagiarism are prohibited. Any student who cheats or plagiarizes material will receive a grade of “F” for the course. THERE ARE NO SECOND CHANCES!!

### *List of Topics to be covered:*

Assigned problems will be announced in class at the start of each chapter. The assigned problems will be turned in (on an announced day).

**Chapter 1: Introduction**

**Chapter 2: The Gas Laws**

**Chapter 3: Kinetic Theory of Gases**

**Chapter 4: 1<sup>st</sup> Law of Thermodynamics**

**Chapter 5: 2<sup>nd</sup> Law of Thermodynamics**

**Chapter 6: Gibbs and Helmholtz Energies**

**Chapter 9: Chemical Equilibrium**

**Chapter 12: Chemical Kinetics**

**Chapter 13: Enzyme kinetics**