

1/7/2025

DATE

MSD DIVISION

 REQUIRED COURSE
 ELECTIVE COURSE

 NEW COURSE
 REVISION

Lake Land College

Course Information Form

COURSE NUMBER:		CHM-151		TITLE: (30 Characters Max)			General Chemistry II				
SEM CR HRS:	4	Lecture:	3		Lab:	3		ECH:	6		
Course Level:	<input checked="" type="checkbox"/> Gen Ed/IAI <input type="checkbox"/> Career/Technical <input type="checkbox"/> Baccalaureate/Non-IAI <input type="checkbox"/> Dev Ed/Not in Degree Audit		Clinical Practicum:		0		Work-based Learning:	0		WBL ECH:	0
COURSE PCS #	11 - 40.0501		IAI Code		CHM 912			Contact Hours (Minutes/Week)			
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:	Max:	16 Wks	300	8 Wks	600
Prerequisites:	CHM-150										
Corequisites:	None										
Catalog Description: (40 Word Limit)	Continuation of the General principles of chemistry for students majoring in chemistry, engineering or science professions. Topics include solids/liquids, solutions, kinetics, equilibrium, thermodynamics and electrochemistry.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Liquids and solids	5	6		
Solutions	5	6		
Chemical equilibrium	5	9		
Rates of reactions	5	3		
Acid, bases, salts, buffers and titrations	10	6		
Precipitation reactions/complex ions	5	9		
Thermodynamics	5	3		
Electrochemistry	5	3		
TOTAL	45	45	0	0

EVALUATION

QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input type="checkbox"/>	PAPERS <input type="checkbox"/>
LAB WORK <input checked="" type="checkbox"/>	PROJECTS <input type="checkbox"/>	COMP FINAL <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>

COURSE MATERIALS

TITLE:	Chemistry: Structure and Properties
AUTHOR:	Nivaldo Tro
PUBLISHER:	Pearson
VOLUME/EDITION/URL:	2nd edition
COPYRIGHT DATE:	2018

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES <i>The student will be able to:</i>
Liquids and solids	11	1. Compare molecule properties on the basis of intermolecular forces. 2. Solve problems associated with the change of physical state. 3. Examine the relationship between vapor pressure and temperature. 4. Interpret phase diagrams. 5. Differentiate the three classes of crystalline solids.
Solutions	11	1. Distinguish between solutions and pure substances. 2. Calculate and differentiate between the various units of concentration. 3. Explain the colligative properties. 4. Predict the colligative properties of solutions using concentration data.
Chemical equilibrium	14	1. Define chemical equilibrium. 2. Predict equilibrium constant expressions. 3. Solve equilibrium problems. 4. Predict reaction responses based on LeChâtelier's Principle.
Rates of reactions	8	1. Describe the factors that influence the kinetics of reactions. 2. Solve all problems associated with reaction rates. 3. Correlate rate laws and reaction mechanisms.

Acid, bases, salts, buffers and titrations	16	<ol style="list-style-type: none"> 1. Define acid and base behaviors. 2. Predict acid-base reaction outcomes. 3. Calculate the pH of all types of acid and base solutions, including buffers. 4. Examine equilibrium as it relates to weak acids and bases. 5. Construct pH curves for acid-base titrations.
Precipitation reactions/complex ions	14	<ol style="list-style-type: none"> 1. Write solubility product expressions. 2. Calculate solubility product constants. 3. Solve solubility product constant problems. 4. Deduce solubility outcomes using solubility product constant data. 5. Deduce the effects of acids and bases on solubility.
Thermodynamics	8	<ol style="list-style-type: none"> 1. Explain spontaneity. 2. Calculate thermodynamic quantities. 3. Deduce reaction tendencies based on thermodynamic quantities. 4. Integrate thermodynamics and equilibrium.
Electrochemistry	8	<ol style="list-style-type: none"> 1. Balance oxidation-reduction reactions. 2. Identify the components of voltaic and electrolytic cells. 3. Solve electrochemical problems. 4. Deduce reaction tendencies using electrochemical data. 5. Integrate electrochemistry into thermodynamics and equilibrium.
90		

Outcomes*	At the successful completion of this course, students will be able to:
Course Outcome 1	Categorize chemical transformations.
Course Outcome 2	Demonstrate proficiency in all types of equilibrium and kinetics calculations.
Course Outcome 3	Solve thermodynamic and other physical chemistry problems.
Course Outcome 4	Formulate conclusions based on the acquisition and utilization of data points in the laboratory.
Primary Laker Learning Competency	Quantitative Literacy: Students utilize mathematical knowledge to test claims and hypotheses, perform data analysis and recognize patterns in real-life situations.
Secondary Laker Learning Competency	Scientific Literacy: Students identify foundational science concepts and apply the scientific process to real-life situations.

*Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.