

9/13/2022 DATE

☒ REQUIRED COURSE  
☐ ELECTIVE COURSE

MSD DIVISION  
☐ NEW COURSE  
☒ REVISION

# Lake Land College

## Course Information Form

COURSE NUMBER:	CHM-121	TITLE: (30 Characters Max)		General, Organic and Biochemistry II							
SEM CR HRS:	5	Lecture:	4	Lab:	2	SOE/ Internship:	0	ECH:	6		
Course Level:	<input type="checkbox"/> Gen Ed / IAI <input checked="" type="checkbox"/> Baccalaureate /Non-IAI		<input type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/ Not in Degree Audit		Clinical Practicum:	0	SOE/ Internship:	0	SOE ECH:	0	
COURSE PCS #	11 - 40.0501		IAI Code				Contact Hours (Minutes Per 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-120										
Catalog Description: (40 Word Limit)	Study of organic and biological chemistry for students in allied health programs, agriculture, forestry, and other majors with comparable requirements.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Non-Clinical Internship/ SOE
Careers in Chemistry	1			
Hydrocarbons and Halogen Derivatives	4	2		
Alcohols, Ethers, Thiols, Phenols	4	2		
Aldehydes, Ketones, and Carbohydrates	4	4		
Carboxylic Acids, Esters, and Lipids	5	4		
Organic Nitrogen Compounds	5	2		
Proteins	4	2		
Enzymes and Coenzymes	4	2		
Body Fluids and Hormones	4	2		
Introduction to Metabolism	5	2		
Metabolism of Carbohydrates, Lipids and Amino Acids	17	6		
Nutrition and Vitamins	3	2		
<b>TOTAL</b>	<b>60</b>	<b>30</b>	<b>0</b>	<b>0</b>

## 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:	General, Organic & Biological Chemistry
AUTHOR:	H. Stephen Stoker
PUBLISHER:	Cengage Learning
VOLUME/EDITION/URL:	6th
COPYRIGHT DATE:	2013

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Careers in Chemistry	1	Describe the career opportunities in chemistry and related areas.
Hydrocarbons and Halogen Derivatives	6	Name and write structural formulas for hydrocarbons and their halogen derivatives. Write chemical equations for the reactions of hydrocarbons and their halogen derivatives.
Alcohols, Ethers, Thiols, Phenols	6	Name and write structural formulas for alcohols, ethers, thiols, and phenols. Write chemical equations for the reactions of alcohols, ethers, thiols and phenols.
Aldehydes, Ketones, and Carbohydrates	8	Name and write structural formulas for aldehydes, ketones, and carbohydrates. Write chemical equations for the reactions of aldehydes, ketones and carbohydrates.

Carboxylic Acids, Esters, and Lipids	9	Name and write structural formulas for carboxylic acids, esters, and lipids. Write chemical equations for the reactions of carboxylic acids, esters, and lipids.
Organic Nitrogen Compounds	7	Name and write structural formulas for amines and amides. Write chemical equation for the reactions of amines and amides.
Proteins	6	Classify proteins with three main groups and briefly explain the primary, secondary, tertiary and quaternary structure of proteins.
Enzymes and Coenzymes	6	List the six classes of enzymes, describe the theories of action of enzymes, and explain factors that affect enzyme activity.
Body Fluids and Hormones	6	List the major enzymes found in digestive fluid and the function of each of these enzymes. Describe the components of blood and the function of each component. Briefly describe the transport of oxygen and carbon dioxide in the blood. Describe the role of the hormones, vasopressin and aldosterone.
Introduction to Metabolism	7	Give the function of the citric acid cycle, and briefly describe: role of acetyl coenzyme A, points in the cycle that feed products to the respiratory chain, intermediate products in the cycle, moles of ATP produced by the cycle, points of entry in the citric acid cycle for carbon atoms from amino acids
Metabolism of Carbohydrates, Lipids and Amino Acids	23	Give an accounting of the total moles of ATP produced by one mole of glucose entering glycolysis, citric acid cycle, and respiratory chain. Distinguish between glycogenesis and glycogenolysis. Determine the moles of ATP produced by the complete oxidation of a given fatty acid by way of $\beta$ -oxidation and the citric acid cycle. Write equations to illustrate transamination and oxidative deamination of amino acids.
Nutrition and Vitamins	5	Explain the role of carbohydrates, fats, and amino acids in a balanced diet. Explain why optimal nutrition requires a balanced amino acid mixture. Name and describe the role of the water soluble and fat soluble vitamins.
90		

COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	<ul style="list-style-type: none"> <li>Be able to name compounds using both IUPAC and common name nomenclature.</li> </ul>
	<ul style="list-style-type: none"> <li>Given a name be able to write the correct formula for the compound.</li> </ul>
	<ul style="list-style-type: none"> <li>Be able to describe the general physical properties of compounds of the type of interest and how intermolecular bonding influences the properties.</li> </ul>
	<ul style="list-style-type: none"> <li>Know the chemical properties (reactions) of compounds for all the functional groups</li> </ul>
	<ul style="list-style-type: none"> <li>Know some of the uses of the common compounds for all the functional groups.</li> </ul>
	<ul style="list-style-type: none"> <li>Describe the chemistry of addition &amp; condensation polymers.</li> </ul>
	<ul style="list-style-type: none"> <li>Be able to draw and recognize all types of isomers.</li> </ul>
	<ul style="list-style-type: none"> <li>Know the structure and chemistry of carbohydrates, lipids &amp; proteins.</li> </ul>
	<ul style="list-style-type: none"> <li>Explain in detail the catabolism and anabolism metabolism of carbohydrates, lipids &amp; proteins.</li> </ul>
	<ul style="list-style-type: none"> <li>Explain the role of nucleic acids in the body.</li> </ul>

\* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.