
Calumet College



of Saint Joseph

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Calumet College of St. Joseph is a Catholic institution of higher learning dedicated to the academic, spiritual and ethical development of undergraduate and graduate students. Informed by the values of its founding religious community, the Missionaries of the Precious Blood (C.P.P.S.), the College promotes the inherent dignity of all people, social justice, an ethic of service, student empowerment, opportunity, and lifelong learning.

We are committed to the Five Pillars of a CCSJ Education: The CCSJ graduate will be Open to Growth, Intellectually Competent, Religious, Loving, and Committed to Doing Justice. This class, as outlined below, will help you to achieve those goals.

COURSE SYLLABUS, Spring 2020

Course: CHEM 205L GENERAL & ANALYTICAL CHEMISTRY I LAB (SECTION A)

Instructor Information:

Instructor Name	Dr. Ahmed Lakhani
Office Number:	Room 512
Phone Number:	219-4734275
Email:	alakhani@ccsj.edu
Office Hours:	Monday 3:30 – 5:00, Tuesday 10:15 – 11:45, Wednesday 1:45 – 3:15, Thursday 3:30 – 5:00
Instructor Background:	B.S. in Biochemistry from University of Illinois at Urbana-Champaign. Ph.D. in Chemistry (focus in Physical Chemistry) from University of Illinois at Chicago. Research interest: Structures Elucidation of Biomolecule via Optical Spectroscopy (IR, UV-Vis, VCD, ECD, etc.)

Course Information:

Course Time:	W: 12:00 – 1:30
Classroom:	Room 332
Prerequisites:	Placement into MATH 104 C or higher grade in CHEM 200 lab
Required Books and Materials:	1) You will need any current copy of the periodic table to bring with you to class daily. 2) You will need a scientific calculator. The calculator on your phone does not count. The calculator does not to be expensive. For example, a Texas Instrument TI-30X II will suffice (\$10) 3) Lab Notebook 4) Lab Goggles

Learning Outcomes/ Competencies:

Students in this course will:

- Apply significant figures rules in all calculation providing the correct number of significant figures and units
- Convert between different units using conversion factors and dimensional analysis (**Lab 1**)
- Determine whether a substance is an acid or base, write acid-base reactions, understand how a buffer solution works and explain the concept of pH (**Lab 2**)
- Describe fundamental chemical concepts and principles, including: three-dimensional molecular structure, kinetics and reaction mechanisms (**Lab 3**)
- Calculate various solution concentrations (**Lab 2, Lab 3 and Lab 4**)
- Understand reaction rates, and how a mechanism related to the rate law (**Lab 3 and Lab 4**)
- Explain the concept of equilibrium, the equilibrium constant, solve problem using the concept of equilibrium (**Lab 5**)
- Show the mathematical relationship between K_a and K (**Lab 5**)
- Describe equilibrium in terms of Le Chatelier's principle (**Lab 6**)
- Perform pH calculators, Buffers and Their Properties (**Lab 7**)
- Explain the concept of enthalpy, entropy, and free energy and use it to solve problem and relate it to everyday occurrences (Lab 8)
- Solve problems using the Gibbs Free Energy relationships (Lab 8)
- Balance oxidation reduction reactions and relate these processes to electrochemical data
- Name simple organic compounds, identify functional groups and relate organic chemistry to biochemical processes. (**Lab 9 & Lab 10**)

This course meets the following learning objectives for the Biomedical Science program:

- Scientific Knowledge and Critical Thinking:
 - Students will demonstrate substantial and up to date core knowledge of broad areas in basic biomedical science
 - Students will demonstrate the ability to accurately and critically evaluate their own scientific work and work of others.
- Research Skills and Problem Solving Ability:
 - Students will demonstrate advanced understanding of a range of technical and conceptual approaches used in biomedical research.
 - Students can design, carry out, and interpret research projects that generate new knowledge that advances the biomedical science and human health.
- Specific Expertise:
 - Students can articulate the significance of their own work to their chosen research area in both historical and forward-looking contexts.
 - Students will demonstrate mastery of a range of technical and conceptual approaches used in their selected research area.
- Communication:
 - Students will demonstrate the oral, written and media communication skills required to be effective communicants, teachers and mentors of peers, future scientist and scientifically literate citizens.
- Ethics and Advocacy:
 - Students will apply highest standards of ethics to their research (data managements,

- research subjects, stewardship of research funds)
- Students will improve their confidence and interactions with colleagues and the public.
- Students will be able to advocate for the role of science in medicine and society.

The course also meets the following General Education Program objectives:

- Students will, at an introductory level, read analytically, synthetically, and critically in a variety of genres
- Students will, at an introductory level, write in a variety of forms using valid logic, persuasive rhetoric, and correct grammar, usage, and punctuation.
- Students can, at an introductory level, represent, apply, analyze, and evaluate relevant qualitative and quantitative mathematical and scientific evidence (i.e. equations, graphs, diagrams, tables, words) to support or refute an argument.
- The student will, at an introductory level, be able to apply ethical standards to social issues and analyze their own core beliefs and the origin of these beliefs.

This course meets Calumet College of St. Joseph’s Signature Assignment requirement to demonstrate fundamental competency in quantitative reasoning and scientific inquiry.

Course Description: A 1-credit hour course implementing through experiments the general and analytical topics including Chemical Quantities, stoichiometry, periodicity, reaction types, the gaseous state, Quantum machines, and types of chemical bonding.

Learning Strategies: Active learning, Blackboard, group discussions, team projects, collaborative learning, interactive lecturing, laboratory exercises, demonstration.

Experiential Learning Opportunities: In class discussion, comprehension and critical thinking along with laboratory experience is essential for a fundamental understanding of the scientific methods. This course has required laboratory portion that provides students with experiential learning through experimental design, hypothesis development, data interpretation, and communication of results through laboratory reports. Alongside the weekly lab reports, the students will prepare a final poster at the end of the semester to be presented and submitted to a local conference.

Assessments:		
CATEGORY	DESCRIPTION	PERCENT
Lab Reports	9 labs will be performed.	90%
Lab Practical	To test basic skills to acquire throughout the semester with respect to hands on skills	10%
Total	Total Percent	100%
Grading Scale:		
100% – 92%: A	91% – 90%: A-	
89% – 88%: B+	87% – 82%: B	81% – 80%: B-
79% – 78%: C+	77% – 72%: C	71% – 70%: C-
69% – 68%: D+	67% – 62%: D	61% – 60%: D-
59% and below:	F	

Lab Schedule:

CHEM 205 Lab	
Class Date	Lecture/Class Discussion/Activities
Jan 15 - 17	Lab 1 Introduction, Course Overview
Jan 22 - 31	Lab 2 The Standardization of a Basic Solution and the Determination of the Molar Mass of an Acid
Jan. 31	EXAM 1
Feb. 5 - Feb. 21	Lab 3 Rates of Chemical Reactions 1. The Iodination of Acetone Lab 4 Rates of Chemical Reactions II. A Clock Reaction
Feb. 21	EXAM 2
Feb. 26 - 28 Mar. 3 - 9 Mar. 12- 19	Lab 5 Determination of the Equilibrium Constant for a Chemical Reaction No Classes Spring Break Lab 6 Properties of Systems in Chemical Equilibrium - Le Chatelier's Principle
Mar. 21	EXAM 3
Mar. 26 - Apr. 11	Lab 7 pH Measurements - Buffers and Their Properties Lab 8 Calorimetry
Apr. 16	EXAM 4
Apr. 18 - May 1	April 18: Lectures/HW will be posted online Lab 9 Preparation of Aspirin Lab 10 Analysis of Vitamin C
2-May	Final EXAM
	I reserve the right to change this schedule to meet the needs of the class

Responsibilities	
Attending Class	<p>You cannot succeed in this class if you do not attend. We believe that intellectual growth and success in higher education occur through interaction in the classroom and laboratories. Being absent doesn't excuse you from doing class work; you have more responsibilities to keep up and meet the objectives of this course.</p> <p>Note: Attendance is counted as being present from the first 10 minutes of class until the end of lecture and lab. It is the students' responsibility to make attendance a priority. Anyone missing after the first 10 minutes of class will be marked absent unless a written excuse is provided within 24 hours of the occurrence. Similarly, anyone leaving early without a written excuse and/or informing the instructor prior to leaving will be counted as absent.</p> <p>Train delay, broken down cars, oversleeping, forgetting, and other personal business are example of invalid excuses. Additionally, you should plan to arrive on time and remain throughout the lecture to avoid disrupting the class. Other classroom disruptions, such as cell phone, papers, etc. are unacceptable; there device should be turned off before the start of class</p> <p>Note: it is to your benefit to attend each class meeting. You are responsible for the material presented in class and all in-class announcements and assignments. Attendance is mandatory, however, for all examinations since they cannot be made up at a later date will not be excused without a valid excuse. The validation of the excuse is left to the discretion of the instructor of the course whether or to accept that excuse.</p>
Turning In Your Work	<p>You cannot succeed in this class if you do not turn in all your work when due.</p> <p>Lab reports will not be accepted after their due dates. You may request an extension in writing at least 24 hours in advance of the due date for assignments, but it is up to the instructor's discretion whether or not to allow an extension.</p>
CCSJ Student Honor Code	<p>This course asks students to reaffirm the CCSJ Student Honor Code:</p> <p>I, as a student member of the Calumet College academic community, in accordance with the college's mission and in a spirit of mutual respect, pledge to:</p> <ul style="list-style-type: none"> • Continuously embrace honesty and curiosity in the pursuit of my educational goals; • Avoid all behaviors that could impede or distract from the academic progress of myself or other members of my community; • Do my own work with integrity at all times, in accordance with syllabi, and without giving or receiving inappropriate aid; • Do my utmost to act with commitment, inside and outside of class, to the goals and mission of Calumet College of St. Joseph.
Using Electronic Devices	<p>Electronic devices can only be used in class for course-related purposes. If you text or access the Internet for other purposes, you may be asked to leave,</p>

	<p>in which case you will be marked absent.</p> <p>No social media chatting/texting will be allowed to be used during lecture or lab times unless otherwise directed by the instructor. No videotaping or recording of lecture without discretion of the instructor. The instructor reserves the right to ask you to leave the room if you interrupt the class.</p> <p>The science faculty will address electronic device uses as follows:</p> <p>Occurrence</p> <p>1st – Students is given a verbal warning 2nd – Students is instructed to leave the classroom The student cannot return to class until they have met with the professor.</p> <p>3rd – Student is instructed to leave the classroom The student cannot return to class until they have met with V.P. of Academic Affairs.</p>
Participating in Class	You must be on time, stay for the whole class and speak up in a way that shows you have done the assigned reading. If you are not prepared for class, you may be asked to leave, in which case you will be marked absent.
Doing Your Own Work	<p>If you turn in work that is not your own, you will be subject to judicial review by the Faculty-Student Grievance Committee. These procedures can be found in the Student Planner. The maximum penalty for any form of academic dishonesty is dismissal from the College.</p> <p>Using standard citation guidelines to document sources avoids plagiarism. You'll find guides to the major citation methods at the CCSJ Specker Library Web page at http://www.ccsj.edu/library/subjectsplus/subjects/guide.php?subject=cite</p> <p>PLEASE NOTE: All papers may be electronically checked for plagiarism.</p>
Sharing Your Class Experience	At the end of the term, you will have the opportunity to evaluate your classroom experience. These confidential surveys are essential to our ongoing efforts to ensure that you have a great experience that leaves you well prepared for your future. Take the time to complete your course evaluations – we value your feedback!
Withdrawing from Class	After the last day established for class changes has passed (see the College calendar in the CCSJ Course Catalog), you may withdraw from a course by following the policy outlined in the Course Catalog.

Resources	
CCSJ Book Rental Program	The CCSJ Book Program ensures that everyone has the right course materials on the first day of class to be successful. You pay a book rental fee each semester, and in return, receive all the materials for all your classes prior to the beginning of classes. At the end of the semester, simply return the books. For traditional students, the Book Rental Program is conveniently located in the library, where students can pick up and return their books. For students in accelerated programs and graduate programs, books will be delivered to their homes and they can return them by mail. For more

	information, see http://www.ccsj.edu/bookstore . All books must be returned at the end of the semester or you will incur additional fees, which will be charged to your student account.
Student Success Center:	The Student Success Center provides faculty tutors at all levels to help you master specific subjects and develop effective learning skills. It is open to all students at no charge. You can contact the Student Success Center at 219 473-4287 or stop by the Library.
Disability Services:	Disability Services strives to meet the needs of all students by providing academic services in accordance with Americans with Disabilities Act (ADA) guidelines. If you believe that you need a “reasonable accommodation” because of a disability, contact the Disability Services Coordinator at 219-473-4349.
Student Assistance Program	Through a partnership with Crown Counseling , Calumet College of St. Joseph provides a free Student Assistance Program (SAP) to current students. The SAP is a confidential counseling service provided to students for personal and school concerns which may be interfering with academic performance and/or quality of life. The SAP counselor is available on campus once a week and off-site at the Crown Counseling offices in Crown Point or Hammond. For more information, contact Kerry Knowles SAP Counselor , at 219-663-6353 (office), 219-413-3702 (cell), or kerryk@crowncounseling.org .
CCSJ Alerts:	Calumet College of St. Joseph’s emergency communications system will tell you about emergencies, weather-related closings, or other incidents via text, email, or voice messages. Please sign up for this important service annually on the College’s website at: http://www.ccsj.edu/alerts/index.html .