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**Calumet College**

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**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.*

**COURSE SYLLABUS, Fall 2019****Course: PHYS – 300L, Physics Lab****Instructor Information:**

<b>Instructor Name</b>	Dr. Michael Keiderling
<b>Office Number:</b>	336
<b>Phone Number:</b>	
<b>Email:</b>	mkeiderling@ccsj.edu
<b>Office Hours:</b>	Mon 10:00 - 10:45, Wed 12:00 - 1:30, Rm 335
<b>Instructor Background:</b>	B.S. in Physics, Johns Hopkins University 2006. Ph.D. Physics, Rutgers University 2015. Research Interest: Low Temperature Physics.

**Course Information:**

<b>Course Time:</b>	Lab: Wednesday 5:15 – 6:45 PM
<b>Classroom:</b>	336
<b>Prerequisites:</b>	Currently enrolled in MATH 230 or higher and concurrently enrolled in PHYS Lab
<b>Required Books and Materials:</b>	Physics (Fifth edition): James S. Walker
<b>Learning Outcomes/ Competencies:</b> Students in this course will:	
<ul style="list-style-type: none"><li>• <b>Critical Thinking:</b> Gathering, analyzing, synthesizing, evaluating, and applying information</li><li>• <b>Interpersonal Skills:</b> Interacting collaboratively to achieve common goals.</li><li>• <b>Quantitative and Empirical Reasoning:</b> Applying mathematical, logical and scientific principal and methods</li><li>• <b>Technology Skills:</b> Using appropriate technology to retrieve, manage, analyze, and present information.</li></ul>	

**The goals of this course are to gain an understanding of the classical law of physics and how they are applied to real world problems. The students will learn the physics of motion, fluids, and vibratory motion. Students will be able to solve real-world problems using the laws of classical physics and the mathematics of trigonometry and algebra. Students will also understand the nature of the scientific method and how to frame questions to be able to apply the techniques of physics to obtain answers to physical problems**

This course meets the following program objectives:

1) Scientific Knowledge and Critical Thinking

Students will accurately and critically evaluate their own scientific work and the work of others

2) Research Skills and Problem Solving Ability:

Students will demonstrate successful completion of a minimally supervised research project via the use of advanced technical and instrumental approaches used in biomedical research.

Students can design, carry out, and interpret research projects that generate new knowledge that advances the biomedical sciences and human health.

3) Communication:

Students will demonstrate the oral, written and media communication skills

Students can articulate the significance of their own work to their chosen research area in both historical and forward-looking contexts.

4) Ethics and Advocacy:

Students will apply highest standards of ethics to their research (data management, research subjects, stewardship of research funds)

Students will be able to advocate for the role of science in medicine and society

5) Career Preparation:

Students can articulate an appropriate set of desired potential career paths, and are aware of the preparation and initiative required to pursue these paths

**Course Description:** A 1-credit hour calculus based physics lab course implementing through various experiments the concepts of kinematics, vectors, Newton's laws of motion; linear momentum, impulse collisions; work and kinetic energy; potential energy, conservation of energy; rotational kinematics and energy; rotational dynamics, static equilibrium; simple harmonic motion.

**Learning Strategies:** Blackboard, Technology, Service Learning, Group Discussions, Team Projects, Collaborative Learning, Lecturing and Lab

**Experiential Learning Opportunities:**

project-based learning, and/or significant undergraduate research leading to presentations or publication.

**Assessments:**

Assignment	Points possible
~8 Lab performance (@ 10 points each)	80 points
~8 Homework Assignments (@10 pts each)	80 points
~3 quizzes (@ 10 points each)	30 points
3 Exams (@ 100 points each)	300 points
<b>Total</b>	

**In-Class Quizzes:** There will be approximately 3 (points will be adjusted accordingly) quizzes, In an effort to engage the class during the lecture period, each student will be expected to participate in class. This will be accomplished both by in-class quizzing and each student being called on to answer questions during the lecture.

**Homework Assignments:** There will be approximately 6 – 8 (points will be adjusted accordingly). Each student will be expected to solve the assigned homework problems on his/her own time. Some of the homework problems will be used as examples in class; and, additional practice problems will be distributed throughout the semester to accommodate additional support. Students should come to the office and ask for help if there is a need for assistance in solving problems assignments.

**Exams:** There will be 3 hr. exams and 1 final exam during the semester. Each exam will be a closed book exam. No notes or equation cards/sheets will be allowed. Additionally, *programmable calculators* will NOT be allowed, this rule will be strictly enforced. Each student is responsible for pre-approving his or her calculator with the instructor **BEFORE** each exam. Each exam will count toward your overall course grade.

**Calculators:** A scientific calculator, with log functions, is required for the course. Calculators may not be shared during tests and quizzes. **CELLULAR PHONES or iPADS** are not acceptable substitutes and are prohibited.

**Laboratory:**

There will be approximately 8 -12 laboratory experimental (points will adjusted accordingly) reports will be required for this course. Laboratory grades will be based on the submitted, individually prepared, lab reports, performance of practice exercises, and participation. Laboratory reports are due at the beginning of the next scheduled formal lab. Late lab report submissions will not be accepted. A style sheet for lab report requirements and format is included with this syllabus. Lab information packets will typically be distributed one class day before the lab. Students must read the lab handouts and be familiar with the intention and basics of the experiment prior to performing the lab. Missed labs can be made up in an Open Lab towards the end of the semester. **A maximum of three (3) labs can be made up in this manner. PLEASE NOTE: All experimental data of completed work must have the instructor-initial signature prior to leaving the lab. This is required for the student to obtain full credit for the lab.**

**Course Schedule:**

**Lab Experiments:**

<b>Week</b>	
<b>2</b>	<b>Measurement</b>
<b>3</b>	<b>Motion in 1-D</b>
<b>4</b>	<b>Free Fall</b>
<b>5</b>	<b>Exam 1</b>
<b>6</b>	<b>Projectile Motion</b>
<b>7</b>	<b>Centripetal Force</b>
<b>8</b>	<b>Friction</b>
<b>9</b>	<b>Exam 2</b>
<b>11</b>	<b>Conservation of Momentum</b>
<b>12</b>	<b>Rotational Inertia</b>
<b>13</b>	<b>Make up lab</b>
<b>14</b>	<b>Exam 3</b>

**Laboratory Experiment (additional/Modification of Labs is at the discretion of the instructor)**

<b>Responsibilities</b>	
<b>Attending Class</b>	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 <b>more</b> responsibilities to keep up and meet the objectives of this course.
<b>Turning In Your Work</b>	You cannot succeed in this class if you do not turn in all your work when due. Work is to be handed in in class on the day it is due.
<b>CCSJ Student Honor Code</b>	This course asks students to reaffirm the CCSJ Student Honor Code: 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: <ul style="list-style-type: none"> <li>• Continuously embrace <b>honesty and curiosity</b> in the pursuit of my educational goals;</li> <li>• Avoid all behaviors that could impede or distract from the academic progress of myself or other members of my <b>community</b>;</li> <li>• Do my own work with <b>integrity</b> at all times, in accordance with syllabi, and without giving or receiving inappropriate aid;</li> <li>• Do my utmost to act with commitment, inside and outside of class, to the goals and <b>mission</b> of Calumet College of St. Joseph.</li> </ul>
<b>Using Electronic Devices</b>	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, in which case you will be marked absent.
<b>Participating in Class</b>	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.
<b>Doing Your Own Work</b>	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.  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 <a href="http://www.ccsj.edu/library/subjectsplus/subjects/guide.php?subject=cite">http://www.ccsj.edu/library/subjectsplus/subjects/guide.php?subject=cite</a>  <b>PLEASE NOTE:</b> All papers may be electronically checked for plagiarism.
<b>Sharing Your Class Experience</b>	At the end of the term, you will have the opportunity to evaluate your classroom experience. These confidential surveys are <b>essential</b> 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!
<b>Withdrawing from Class</b>	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.

<b>Resources</b>	
<b>CCSJ Book Rental Program</b>	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 <a href="http://www.ccsj.edu/bookstore">http://www.ccsj.edu/bookstore</a> . <b>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.</b>
<b>Student Success Center:</b>	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.
<b>Disability Services:</b>	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.
<b>Student Assistance Program</b>	Through a partnership with <b>Crown Counseling</b> , 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, <b>contact Kerry Knowles SAP Counselor</b> , at 219-663-6353 (office), 219-413-3702 (cell), or <a href="mailto:kerryk@crowncounseling.org">kerryk@crowncounseling.org</a> .
<b>CCSJ Alerts:</b>	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: <a href="http://www.ccsj.edu/alerts/index.html">http://www.ccsj.edu/alerts/index.html</a> .