



Your University of Choice

## **LAB SYLLABUS**

**Term: Fall 2016**

**Course: PHYS 300A - Physics I lab**

### **Instructor Information:**

<b>Instructor Name</b>	Dr. Ahmed Lakhani
<b>Office Number:</b>	Room 333
<b>Phone Number:</b>	219-473-4275
<b>Email:</b>	alakhani@ccsj.edu
<b>Hours Available:</b>	Office hours will be available outside my office (333) and will be posted on the Blackboard (BB)
<b>Instructor Background:</b> B.S. in Biochemistry & Minor in Chemistry; University of Illinois at Urbana-Champaign. Ph.D. University of Illinois at Chicago (Physical Chemistry 2011). Research Interest: Structures Elucidation of Bio system, optical Spectroscopy	

### **Course Information:**

<b>Course Time:</b>	
	Lab: Monday: 3:30 – 5:00 pm
<b>Classroom:</b>	
	Room 336
<b>Prerequisites:</b>	
	Concurrently enrolled in MATH 230 (or placed in a higher math course) and concurrently enrolled in PHYS 300L.
<b>Required Books and Materials:</b>	
	Physics (Fourth Edition), Written by: James S. Walker
<b>Learning Outcomes/ Competencies:</b>	
Students will:	
<ol style="list-style-type: none"><li>gather, interpret and analyze data<ul style="list-style-type: none"><li>Students will learn to collect data in the laboratory, create graphs, compare qualitative and quantitative data and draw conclusions about the data obtained.</li></ul></li><li>demonstrate the ability to think critically, abstractly and logically<ul style="list-style-type: none"><li>The Scientific Method is predicated upon deductive and inductive logical reasoning. Students will study applications of the scientific method to information gathered by the scientific community. Students will use the scientific method during laboratory activities.</li></ul></li><li>work with a variety of technologies<ul style="list-style-type: none"><li>Students use computers, digital imaging devices, media, the Internet, podcasts, all in the pursuit of scientific knowledge.</li></ul></li><li>exhibit social and ethical responsibility</li></ol>	

- This very serious goal is addressed on many levels in the physical science course, from the discussion of the factors that brought about the destruction of New Orleans during hurricane Katrina to the problems with disappearing groundwater. Many references are made to the connection between geology, meteorology and astronomy to social and ethical responsibility.
5. perform productively in the workforce
    - Organizational skills are improved in this general education course. Scientific literacy is developed.
  6. demonstrate the ability to learn independently
    - Students are given independent projects to complete in the course. They are also given questions to research independently. Reporting these results to the class develops their ability to speak confidently to their peers.
  7. To provide students with a thorough understanding of the basic concepts of physics and the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.
  8. To instruct students of the fundamental laws of physics and the application of scientific data, concepts, and models for use in the natural sciences and real world situations.
  9. To provide students with problem solving skills by an approach that describes physical phenomena with relevant mathematical models and formulae.
  10. To develop the student's mathematical ability to manipulate formulae and derive correct numerical solutions that can be measured in the real world.
  11. To instruct students in the competent use of laboratory equipment to collect and record data, apply relevant mathematical models and perform required computations, and present the derived results as an application of a measured observation of the physical world.
  12. To have students prepare a written laboratory report that effectively interprets and communicates their results.
  13. To have students effectively use computers as a tool for data collection, analysis, and communication.

By the end of this course, students will be able to be half way between the beginning stage and mastery of the following programmatic outcomes:

1. **Scientific Knowledge and Critical Thinking:**
  - Students will demonstrate substantial and up to date core knowledge of broad areas in basic biomedical, translational, or clinical research.
2. **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

By the end of this course, students will be able to master the following both in the course outcomes and programmatic outcomes:

1. **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 sciences and human health.
2. **Specific Expertise:**
  - Students can articulate the significance of their own work to their chosen research area in both historical and forward-looking contexts.

<ul style="list-style-type: none"> <li>○ Students will demonstrate mastery of a range of technical and conceptual approaches used in their selected research area.</li> </ul>
<b>3. Communication:</b> <ul style="list-style-type: none"> <li>○ Students will demonstrate the oral, written and media communication skills required to be effective communicators, teachers and mentors of peers, future scientists and scientifically literate citizens</li> </ul>
<b>4. Ethics and Advocacy:</b> <ul style="list-style-type: none"> <li>○ Students will apply highest standards of ethics to their research (data management, research subjects, stewardship of research funds)</li> <li>○ Students will improve their confidence and interactions with colleagues and the public.</li> <li>○ Students will be able to advocate for the role of science in medicine and society</li> </ul>
<b>Course Description:</b> 3-credit hour calculus based physics course implementing 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.
<b>Learning Strategies:</b> Blackboard, Technology, Service Learning, Group Discussions, Team Projects, Collaborative Learning, and Lecturing
<b>Experiential Learning Opportunities:</b> following experiential learning activities are used in this class: problem-based learning, and project-based learning activities.

<b>Assessments:</b>		
<b>Major Assignments:</b>	There will be approximately 7 – 8 (points will be adjusted accordingly) major assignments. Each student will be expected to solve the problems on his/her own time. Some of the 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.	
<b>Class Participation</b>	Your participation is expected and required. You are responsible for doing the reading in advance, and taking an active role in class activities and discussion.	
<b>Grading Scale</b>		
	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	

Course grading and Exams: Final grades are determined from the total points acquired from exams, quizzes, lab reports, and homework. The number of points possible is shown below:

Graded Assignment	Points possible
~7 Lab performance (@ 25 points each)	175 points
~7 Homework Assignments (80 pt max)	70 points

~5 quizzes (@ 10 points each)	50 points
2 Exams (@ 100 points each)	200 points
Final comprehensive exam	200 points
Total	695 points

### Lab Experiments

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

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

### Responsibilities

Responsibilities	
<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. However, we do not want to penalize students for participating in college-sponsored events. When you miss class because of a college event, you must give notice of your absence in advance, and you are responsible for all missed work. 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.  Attendance is mandatory. <b>Three (3)</b> unexcused absences will result in an administrative withdrawn from the course.
<b>Turning In Your Work</b>	You cannot succeed in this class if you do not turn in all your work on the day it is due.
<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 discussion, 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 are subject to judicial review, and these procedures can be found in the College Catalog and the Student Planner. The maximum penalty for any form of academic

	<p>dishonesty is dismissal from the College.</p> <p>Using standard citation guidelines, such as MLA or APA format, to document sources avoids plagiarism. The Library has reference copies of each of these manuals, and there are brief checklists in your Student Handbook and Planner.</p> <p><b>PLEASE NOTE:</b> All papers may be electronically checked for plagiarism.</p>
<b>Withdrawing from Class</b>	After the last day established for class changes has passed (see the College calendar), you may withdraw from a course by following the policy outlined in the CCSJ Course Catalog.

<b>Resources</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>	<b>Required:</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>CCSJ Alerts:</b>	<p><b>Required:</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>.</p> <p>In addition, you can check other media for important information, such as school closings:</p> <p><b>Internet:</b> <a href="http://www.ccsj.edu">http://www.ccsj.edu</a>  <b>Radio:</b> WAKE – 1500 AM, WGN – 720 AM, WIJE – 105.5 FM, WLS – 890 AM, WZVN – 107.1 FM, WBBM NEWS RADIO 78  <b>TV Channels:</b> 2, 5, 7, 9, 32</p>

## Emergency Procedures

### MEDICAL EMERGENCY

#### EMERGENCY ACTION

1. Call 911 and report incident.
2. Do not move the patient unless safety dictates.
3. Have someone direct emergency personnel to patient.

4. If trained: Use pressure to stop bleeding.
5. Provide basic life support as needed.

## **FIRE**

### **EMERGENCY ACTION**

1. Pull alarm (located by EXIT doors).
2. Leave the building.
3. Call 911 from a safe distance, and give the following information:
  - Location of the fire within the building.
  - A description of the fire and how it started (if known)

## **BUILDING EVACUATION**

1. All building evacuations will occur when an alarm sounds and/or upon notification by security/safety personnel. **DO NOT ACTIVATE ALARM IN THE EVENT OF A BOMB THREAT.**
2. If necessary or if directed to do so by a designated emergency official, activate the building alarm.
3. When the building evacuation alarm is activated during an emergency, leave by the nearest marked exit and alert others to do the same.
4. Assist the disabled in exiting the building! Remember that the elevators are reserved for persons who are disabled. **DO NOT USE THE ELEVATORS IN CASE OF FIRE. DO NOT PANIC.**
5. Once outside, proceed to a clear area that is at least 500 feet away from the building. Keep streets, fire lanes, hydrant areas and walkways clear for emergency vehicles and personnel. The assembly point is the sidewalk in front of the college on New York Avenue.
6. **DO NOT RETURN** to the evacuated building unless told to do so by College official or emergency responders.

## **IF YOU HAVE A DISABILITY AND ARE UNABLE TO EVACUATE:**

Stay calm, and take steps to protect yourself. If there is a working telephone, call 911 and tell the emergency dispatcher where you are **or** where you will be moving. If you must move,

1. Move to an exterior enclosed stairwell.
2. Request persons exiting by way of the stairway to notify the Fire Department of your location.
3. As soon as practical, move onto the stairway and await emergency personnel.
4. Prepare for emergencies by learning the locations of exit corridors and enclosed stairwells. Inform professors, and/or classmates of best methods of assistance during an emergency.

## **HAZARDOUS MATERIAL SPILL/RELEASE**

### **EMERGENCY ACTION**

1. Call 911 and report incident.
2. Secure the area.
3. Assist the injured.
4. Evacuate if necessary.

## **TORNADO**

### **EMERGENCY ACTION**

1. Avoid automobiles and open areas.
2. Move to a basement or corridor.

3. Stay away from windows.
4. Do not call 911 unless you require emergency assistance.

## SHELTER IN PLACE

### EMERGENCY ACTION

1. Stay inside a building.
2. Seek inside shelter if outside.
3. Seal off openings to your room if possible.
4. Remain in place until you are told that it is safe to leave.

## BOMB THREATS

### EMERGENCY ACTION

1. Call 911 and report incident.
2. If a suspicious object is observed (e.g. a bag or package left unattended):
  - Don't touch it!
  - Evacuate the area.

## TERRORISM AND ACTIVE SHOOTER SITUATIONS

### EMERGENCY ACTION

1. Call 911 and report intruder.

## RUN, HIDE OR FIGHT TIPS:

1. **Prepare** – frequent training drills to prepare the most effectively.
2. **Run and take others with you** – learn to stay in groups if possible.
3. **Leave the cellphone.**
4. **Can't run? Hide** – lock the door and lock or block the door to prevent the shooter from coming inside the room.
5. **Silence your cellphone** -- use landline phone line.
6. **Why the landline?** It allows emergency responders to know your physical location.
7. **Fight** – learn to “fight for your life” by utilizing everything you can use as a weapon.
8. **Forget about getting shot – fight!** You want to buy time to distract the shooter to allow time for emergency responders to arrive.
9. **Aim high** – attack the shooter in the upper half of the body: the face, hands, shoulder, neck.
10. **Fight as a group** – the more people come together, the better the chance to take down the shooter.
11. **Whatever you do, do something** – “react immediately” is the better option to reduce traumatic incidents.