# UIC Spring 2016: Physics 105 Course Information

## *Introductory Physics I* – Mechanics (4 credit hours)

| Course | CRN | Schedule Type | Days | Time | Location | Instructor* |
|---|---|---|---|---|---|---|
| PHYS 105 | 25616 | LECTURE | M<br>T<br>R | 02:00 PM – 02:50 PM<br>02:00 PM – 03:45 PM<br>02:00 PM – 03:45 PM | LCE E1<br>SES 130<br>SES 130 | Anjum Ansari<br>(ansari@uic.edu) |
| PHYS 105 | 16953 | LECTURE | T<br>R<br>F | 08:00 AM – 09:15 AM<br>08:00 AM – 09:15 AM<br>08:00 AM – 08:50 AM | GH 205<br>GH 205<br>GH 205 | David Hofman<br>(hofman@uic.edu) |
| PHYS 105 | 16954 | LECTURE | T<br>R<br>F | 12:30 PM – 1:45 PM<br>12:30 PM – 1:45 PM<br>12:00 PM – 12:50 PM | SES 130<br>SES 130<br>BH 305 | Randall Espinoza<br>(respin4@uic.edu) |

* **When communicating with your instructor, be sure to include "PHYS105" in the subject line**.

**Textbook:** *College Physics. A Strategic Approach*, Knight/Jones/Field, 3rd edition, Pearson.
ISBN-13: 978-0-321-87972-1 / ISBN-10: 0-321-87972-4

**i>Clicker is required for the course**. You will register your i>Clicker remote on the class Blackboard site.

**On-Line Pre-Lectures & Homework: You will need a Mastering Physics access code**. You have at least three options you can choose from:

- Purchase a new textbook with the access code included
- Purchase an e-text (electronic version of the textbook) with the access code included
- Purchase only the access code and a used textbook (any edition).

The first two options are available at the UIC Bookstore. For the access code only option, please go directly to the Mastering Physics (MP) website (see below).

***Mastering Physics – Registration and Enrollment***

**Mastering Physics access code**
**Course Title**: Spring 2016 - PHYS 105 - Introductory Physics I
**Course ID**: UICPHYS105SPRING2016
**Book:** College Physics: A Strategic Approach, 3e *Knight/Jones/Field*

***Instructions for registering to Mastering Physics (MP)***

**1. Go to the MP website:**
http://www.pearsonmylabandmastering.com/northamerica/masteringphysics/

**2. Click on "Students" under "Register Now", and then follow the instructions.**
You will need an MP access code, a course title, and a course ID (title and ID are listed above).

**3. When you need to Create a Login Name, use your UIC email address**, i.e., use your UIC email address as your MP login in name. This is very important because nobody can change that afterwards. We will use your login ID to get your marks from MP. If you use other IDs, we will have trouble getting your records.

**4. After you login, enter your 9-digit UIC ID as your student ID and the course ID given above**, then click on "save".

**Disclaimer**: The terms of this syllabus are subject to change by announcements in class, on the course website (blackboard), or by email.

## General information

Prerequisites for this course are high-school algebra and trigonometry. If you are not comfortable with these basic mathematical concepts, please review them and/or ask for help. Please be sure you have also registered for both a Physics 106 laboratory and a Physics 106 discussion section. Unless you have already passed Physics 106 prior to this semester, **Physics 105 and Physics 106 must be taken simultaneously**.

A detailed course outline is included at the end of this document.

## Course Web Site

The course web site will be handled through the UIC blackboard system **https://blackboard.uic.edu**). The blackboard site will list important course information including practice exams, solutions and contact information. It will also be the primary source of up-to-date information for what is happening in the course.

## Homework

Homework is an integral and essential part of the course. It is the method by which you receive feedback on your comprehension of the material. It is therefore very important that you spend time working on understanding the homework problems. In case of difficulty, please contact your instructor, tutors or laboratory TAs for help. Please note that tutoring is available every day in the Science Learning Center.

We will be using the ***Mastering Physics*** (**http://www.pearsonmylabandmastering.com/northamerica/index.html**) online homework system. Please make sure that you have purchased the appropriate access code that go with our textbook. These access codes will be good for a year, so you can use them again when you take PHYS 107.

## Quizzes

Quizzes will be a very important part of the course and they will enable you know if you are understanding the material on a weekly basis. **There will be a quiz on Tuesday of each week on the material on which the homework was assigned the previous week.** ***There will be no make-up quizzes offered if you miss any, but at the end of the semester your lowest quiz score will be dropped.***

## Pre-lecture Checkpoints

Reading the textbook is an essential part of the course, and you will benefit most if you read ahead the material for that week before coming to the lecture. To encourage you to do so, there will be two Pre-Lecture assignments posted each week on ***Mastering Physics***, designed to get you thinking about the material before it is introduced in the lecture. **These online assignments will need to be completed by Tuesday and Thursday by 2:00 pm of each week.** ***No extensions to the due date or time will be given.***

## In Class Participation

We will be using the *iClicker* (**http://www.iclicker.com/**) class participation remote system. You will need your own personal remote, as your attendance and participation will be part of your grade. Your same remote can be used for all *iClicker* classes at UIC, even if different courses are taken during the semester. You cannot share your remote with others as your remote must be associated (registered) with your name if you are to receive credit for your answers. You can purchase this remote at the UIC bookstore or online. Don't forget to register your remote on the class Blackboard site – select the link given for i>clicker Student Registration.

## Practice exams

Practice exam problems and their solutions will be posted on Blackboard (**https://blackboard.uic.edu**) before each mid-term and the final exam. We recommend that you attempt the practice exam on your own under

"simulated" exam conditions before looking at the solutions. This will help you identify any areas in which you need to study. If you are unable to solve a problem, put aside the exam, review your notes or the textbook, and then come back to the exam and try to finish it, again without your notes or text book open as a crutch. ***Please note that the practice exam is simply a sample exam and does not cover the range of problems that can appear on the actual exam.***

## Examinations

Three major written examinations will take place during the course. Each exam will emphasize the new material since the previous major exam, but **physics is by nature cumulative** and hence basic earlier material can appear on Mid-Term II and the Final Exam. Each exam will cover the material discussed in class and the sections of the textbook noted in the course outline below. It is your responsibility to be available for all examinations. This is the most important requirement of this course. ***No make-up exams will be given – unless there is a medical emergency***.

For each exam, you will be permitted to bring a scientific calculator only. You will be provided with a sheet of relevant equations with the exams.

## Major examinations:

**Mid-term I: Thursday, February 11 (6:00 PM – 8:00 PM, Location: TBP)**
**Mid-term II: Thursday, March 17 (6:00 PM – 8:00 PM, Location: TBP)**
**Final Exam: Date and location: TBP**
The locations of the exams will be announced in class and on Blackboard when they become available.

**IMPORTANT NOTE:**

- If you miss an exam with a valid excuse (e.g., illness or emergency), you must notify the instructor and provide supporting documentation verifying your excuse as soon as possible.
- If you miss an exam without a valid excuse (and supporting documentation), you will receive a score of 0 on that test.

## Grade distribution

| | |
|---|---|
| **Mid-Term I** | **25%** |
| **Mid-Term II** | **30%** |
| **Final Exam** | **30%** |
| **Quizzes** | **10%** |
| **Pre-Lecture Assignments/In-Class Participation** | **5%** |

A single letter grade of A, B, C, D or F is assigned at the end of the semester according to the final score each student has earned. The grade of incomplete (I) is given ***only*** in special cases according to very strict criteria.

**The final grades will be based on the following scale: A: 80-100; B: 65-79; C: 50-64; D: 40-49; F: 0-39**
*1 quiz and 2 iClicker entries with the lowest scores will be dropped at the end of the semester prior to computing your final grade*

## Instructor office hours and tutoring hours

It is essential to realize from the outset that ***the material in this course cannot be mastered simply by rote learning of facts or equations***. The key to doing well in physics is to have a firm grasp of the underlying

principles and then to learn to apply them, by practicing problem solving as much as you can. To help you in this aspect, each instructor will have a minimum of 2 office hours per week. In addition, tutors are available to you in the Science Learning Center (SLC) each day of the week. Tutoring hours for this course will be posted in SLC at the beginning of the semester. Remember that learning is an interactive process, and take full advantage of the help offered to you by your instructors and tutors. It can also be helpful to study with your classmates, but ultimately you must have a thorough understanding of the material so that you can do the work by yourself on the exams.

## Late Registration and Withdrawal

***Friday, January 22*** – Last day to complete late registration; last day to add a course(s) or make section changes; last day to drop individual courses via Student Self-Service without receiving W (Withdrawn) grade on academic record; last day to submit Withdraw from Term request via Student Self-Service and receive 100% cancellation of tuition and fees.

***Friday, March 18*** – Last day for undergraduate students to use optional late drop in college office and to receive grade of W on their academic record.

## Important University Policies

**Disability Accommodation**

The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for access to and/or participation in this course are welcome, but must be registered with the Disability Resource Center (DRC). You may contact DRC at 312-413-2183 (v) or 312-413-0123 (TTY) and consult the following:
http://www.uic.edu/depts/oaa/disability_resources/faq/accommodations.html

**Academic Integrity**

As an academic community, UIC is committed to providing an environment in which research, learning, and scholarship can flourish and in which all endeavors are guided by academic and professional integrity. All members of the campus community–students, staff, faculty, and administrators–share the responsibility of insuring that these standards are upheld so that such an environment exists. Instances of academic misconduct by students will be handled pursuant to the Student Disciplinary Policy:
http://www.uic.edu/depts/dos/studentconduct.html

**Religious Holidays and Observance**

Students who wish to observe their religious holidays shall notify the faculty member by the tenth day of the semester of the date when they will be absent unless the religious holiday is observed on or before the tenth day of the semester. In such cases, the student shall notify the faculty member at least five days in advance of the date when he/she will be absent. The faculty member shall make every reasonable effort to honor the request, not penalize the student for missing the class, and if an examination or project is due during the absence, give the student an exam or assignment equivalent to the one completed by those students in attendance. If the student feels aggrieved, he/she may request remedy through the campus grievance procedure.
http://www.uic.edu/depts/oae/docs/ReligiousHolidaysFY20132015.pdf

**Grievance Procedures**

UIC is committed to the most fundamental principles of academic freedom, equality of opportunity, and human dignity involving students and employees. Freedom from discrimination is a foundation for all decision making at UIC. Students are encouraged to study the University's "Nondiscrimination Statement". Students are also

urged to read the document "Public Formal Grievance Procedures". Information on these policies and procedures is available on the University web pages of the Office of Access and Equity: www.uic.edu/depts/oae

## UIC Resources

If you find yourself having difficulty with the course material or any other difficulties in your student life, don't hesitate to ask for help! Come to one of us, or if it is about an issue beyond this class, please contact your college advisors, or get help from any number of other support services on campus. You can get a referral to the right place, or help on the spot, from concerned advisor in the Undergraduate Success Center (USC) at usc@uic.edu.

**The Science and Learning Center,** located in the Science and Engineering South Building (SES) 201B, is a meeting place for students in Biological Sciences, Chemistry, Earth and Environmental Sciences, and Physics. At the SLC, students can meet with graduate teaching assistants for tutoring in 100-level courses, arrange informal group study sessions with other students, or meet up with friends to attend one of the workshops, seminars, or other activities sponsored by the SLC during the semester.
Visit the website at http://www.uic.edu/depts/bios/facilities/science_learning_center.shtml

**Public Computer Labs** are available throughout campus where you may write and/or print out your work. For a list of labs and the hours they're open, go to **(**www.accc.uic.edu/pclabs**).** NOTE: Do not wait until the last minute to print out papers. Sometimes labs have long lines of students waiting for access.

**The Academic Center for Excellence** can help if you feel you need more individualized instruction in reading and/or writing, study skills, time management, etc. Phone: (312) 413-0031.

**Counseling Services** are available for all UIC students. You may seek free and confidential services from the Counseling Center (www.counseling.uic.edu). The Counseling Center is located in the Student Services Building; you may contact them at (312) 996-3490. In addition to offering counseling services, the Counseling Center also operates the InTouch Crisis Hotline from 6:00 p.m.-10:30 p.m. They offer support and referrals to callers, as well as telephone crisis interventions; please call (312) 996-5535.

**Campus Security**
As a UIC student, you've chosen to live in one of the nation's largest cities. But, as at any university, crime is a reality. At UIC, we are strongly committed to our public safety programs, and we encourage students to be proactive in learning what programs and services are available in case of an emergency. You are DISCOURAGED from staying in university buildings alone, including lab rooms, after hours and are ENCOURAGED to use the POLICE/STUDENT patrol escort if you are uncomfortable traveling anywhere on campus. You may request an escort to accompany you to your campus destination on foot by calling 312-996-2830, and between 11:00 pm and 7:00 am you can dial the Red Car service (312-996-6800) if you are alone and need to leave the building. Through Red Car, the university has established a safe evening transportation service for university employees, students, visitors, and other authorized individuals. The car travels between university facilities within the following general boundaries: Clinton Street on the east; Western Avenue on the west; Jackson Boulevard on the north; and, 16th on the south. This service is available only to individuals possessing a valid UIC i-card. The i-card is required to ensure the safety of the driver and other passengers.
Consult the following for more information: http://www.uic.edu/uic/studentlife/campus/safety.shtml

Also you can subscribe your cell phone to receive text message alerts. An immediate SMS text alert will be sent in case of a serious crime in progress, a weather emergency, or other urgent situation (http://sms.accc.uic.edu).

Finally, by dialing 5-5555 from a campus phone, you can summon Police or Fire for any on-campus emergency. You may also set up the complete number, 1-312-355-5555, on speed-dial on your cell phone. For more information contact: http://www.uic.edu/uic/studentlife/campus/emergency-information.shtml

# Spring 2016 – Physics 105 Course Outline

| Week #/DAYS | DATES | TOPICS | TEXTBOOK SECTIONS | HOMEWORKS, QUIZZES and EXAMS SCHEDULE |
|---|---|---|---|---|
| 1<br>M - F | Jan 11 – 15 | **Representing Motion:** Motion: A First Look. A Sense of Scale, Dimensions and Units. Vectors and Motion.<br>**Motion in One Dimension:** Graphing 1-D Motion. Motion with Constant Acceleration. Free Fall | 1.1 – 1.6<br>2.1-2.7 | **PL #01 (due Tue 1/12)**<br>**PL #02 (due Thu 1/14)** |
| 2<br>M - F | Jan 18* – 22 | **Vectors and Motion in 2-D:** Using Vectors. Relative Motion. Projectile Motion. Circular Motion | 3.1 – 3.7 | **HW Week 1 (due Wed 1/20)**<br>**PL #03 (due Tue 1/19)**<br>**PL #04 (due Thu 1/21)**<br>**Quiz (Thu 1/21)** |
| 3<br>M - F | Jan 25 – 29 | **Forces and Newton's Laws:** Motion and Forces. Newton's Laws. Free-Body Diagrams | 4.1 – 4.7 | **HW Week 2 (due Mon 1/25)**<br>**PL #05 (due Tue 1/26)**<br>**PL #06 (due Thu 1/28)**<br>**Quiz (Tue 1/26)** |
| 4<br>M - F | Feb 1 – 5 | **Applying Newton's Laws:** Translational Equilibrium. Mass and Weight. Normal Forces. Friction. Drag. Ropes and Pulleys | 5.1 – 5.8 | **HW Week 3 (due Mon 2/1)**<br>**PL #07 (due Tue 2/2)**<br>**Quiz (Tue 2/2)** |
| 5<br>M - F | Feb 8 – 12 | **Catch up/Exam review** | | **HW Week 4 (due Mon 2/8)**<br>**Quiz (Tue 2/9)**<br>**MIDTERM 1 (Chapters 1 - 5)**<br>**Date: Thursday, February 11**<br>**Time: 6-8pm**<br>**Location: TBP** |
| 6<br>M - F | Feb 15 – 19 | **Circular Motion and Gravity:** Uniform Circular Motion. Circular Orbits. Newton's Law of Gravity. Gravity and Orbits | 6.1 – 6.6 | **PL #08 (due Tue 2/16)**<br>**PL #09 (due Thu 2/18)** |
| 7<br>M - F | Feb 22 – 26 | **Rotational Motion:** Rotational Kinematics. Torque. Rotational Dynamics. Newton's 2nd Law for Rotation. Rolling Motion | 7.1 – 7.7 | **HW Week 6 (due Mon 2/22)**<br>**PL #10 (due Tue 2/23)**<br>**PL #11 (due Thu 2/25)**<br>**Quiz (Tue 2/23)** |
| 8<br>M - F | Feb 29 – Mar 4 | **Equilibrium and Elasticity:** Torque and Static Equilibrium. Springs and Hooke's Law | 8.1 – 8.4 | **HW Week 7 (due Mon 2/29)**<br>**PL #12 (due Tue 3/1)**<br>**PL #13 (due Thu 3/3)**<br>**Quiz (Tue 3/1)** |
| 9<br>M - F | Mar 7 – 11 | **Momentum:** Impulse. Impulse-Momentum Theorem. Conservation of Momentum. Inelastic Collisions. Angular Momentum. | 9.1 – 9.7 | **HW Week 8 (due Mon 3/7)**<br>**PL #14 (due Tue 3/8)**<br>**Quiz (Tue 3/8)** |

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|---|---|---|---|---|
| 10<br>M - F | Mar 14 – 18 | **Catch up/Exam review** | | **HW Week 9 (due Mon 3/14)**<br>**Quiz (Tue 3/15)**<br>**MIDTERM 2 (Chapters 6 - 9)**<br>**Date: Thursday, March 17**<br>**Time: 6-8pm**<br>**Location: TBP** |
| 11<br>M - F | Mar 28 – Apr 1 | **Energy & Work:** Kinetic Energy and Potential Energy. Conservation of Mechanical Energy. Energy in Collisions. Power | 10.1 – 10.4<br>10.5 – 10.8 | **PL #15 (due Tue 3/29)**<br>**PL #16 (due Thu 3/31)** |
| 12<br>M - F | Apr 4 – 8 | **Oscillations:** Equilibrium and Oscillations. Simple Harmonic Motion (SHM). Energy in SHM. Pendulum Motion. Damped Oscillations. Driven Oscillations and Resonance | 14.1 – 14.7 | **HW Week 11 (due Mon 4/4)**<br>**PL #17 (due Tue 4/5)**<br>**PL #18 (due Thu 4/7)**<br>**Quiz (Tue 4/5)** |
| 13<br>M - F | Apr 11 – 15 | **Traveling Waves and Sound:** Types of waves. Mathematical Description of Waves. Sound and Light Waves. Energy and Intensity. The Doppler Effect | 15.1 – 15.7 | **HW Week 12 (due Mon 4/11)**<br>**PL #19 (due Tue 4/12)**<br>**PL #20 (due Thu 4/14)**<br>**Quiz (Tue 4/12)** |
| 14<br>M - F | Apr 18 – 22 | **Superposition and Standing Waves:** The Principle of Superposition. Standing Waves on String and Standing Sound Waves. The Interference of Waves from Two Sources. | 16.1 – 16.7 | **HW Week 13 (due Mon 4/18)**<br>**PL #21 (due Tue 4/19)**<br>**PL #22 (due Thu 4/21)**<br>**Quiz (Tue 4/19)** |
| 15<br>M - F | Apr 25 – 29 | **Fluids:** Fluids and Density. Pascal's Principle. Buoyancy and Archimedes's Principle. | 13.1 – 13.4<br>**Exam Review** | **HW Week 14 (due Mon 4/25)**<br>**PL #23 (due Tue 4/26)**<br>**PL #24 (due Thu 4/28)**<br>**Quiz (Tue 4/26)** |
| 16<br>M - F | May 2 – 6 | **FINAL EXAM** | | **FINAL EXAM (Chapters 10, 14 - 16)**<br>**Date: TBP**<br>**Time: TBP**<br>**Location: TBP** |

* January 18: Martin Luther King Day holiday (No classes). March 21-25: Spring break (No classes).

PL: On-line Pre-Lecture assignment

HW: On-line Homework assignment

Quiz: In-class quiz