COURSE OUTLINE PHYSICS 102 Sec 011 SUMMER 2023
(updated on 5/19/2023)

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Office hours: Tuesday 10:30am - 11:30am, or by appointment

Lecture and recitation:
Monday, Wednesday, Thursday, 9am – noon, Tiernan 112

Delivery Mode: Face-to-Face (Delivery of instruction is structured around in-person classroom meeting times. Instruction is delivered in person and students are expected to attend class)

Course Website: http://web.njit.edu/~kenahn/23summer/phys102/phys102.htm
(linked at http://web.njit.edu/~kenahn)

General Information

- Description: Physics 102 is an algebra-based physics course introduction to Mechanics. It includes motion in one and two dimensions, Newton's laws of motion and their applications, work and energy, linear momentum and collisions, rotational motion, and principles of conservation.
- Prerequisite: Satisfactory completion of two high school mathematics courses and two high school science courses.

Laboratory - Physics 102A
The laboratory component of the course is Phys 102A. This laboratory course may be optional for your major; confirm it with your department. If it is required for your major, it must be taken concurrently unless you have previously taken and passed Phys 102A. The grading for the laboratory is separate from the course/recitation (Phys 102) and the grades are given by the laboratory instructors. Latest edition of **Lab manual "Physics 102A Laboratory Manual"** can be purchased from NJIT Bookstore.

YOU MUST REGISTER FOR THE LECTURE/RECITATION (Phys 102) AND THE LABORATORY COURSE (Phys 102A) SEPARATELY. WITHDRAWAL FROM ANY OF THESE WILL CAUSE A SIMULTANEOUS WITHDRAWAL FROM ALL Phys 102 COURSES.

Learning Outcomes:

For this course, you can expect to be assessed on the following learning outcomes:

1. Recall the definitions and relationships involving position, velocity, speed, acceleration, vectors, Newton's Laws, circular motion, free-body diagrams, friction, work, energy, linear and angular momentum, torque, angular velocity and acceleration, and gravitation.

2. Apply the equations governing 1-D and 2-D constant acceleration to mechanical systems for various initial conditions. Calculate unknown quantities based on physical relationships, initial conditions, and known quantities.
3. Comprehend the meaning of the equations governing net force and acceleration (Newton's Laws), and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship. Understand the extension of these equations to rotational motion, and gravitation.
4. Generalize the concepts underlying the equations of motion, such as work, kinetic and potential energy, conservation of energy, and equilibrium.
5. Comprehend the meaning of equations governing momentum, impulse, and collisions. Apply the equations governing momentum, impulse, and collisions mechanical systems for various initial conditions. Understand under what conditions momentum is conserved and how to use this relation to calculate unknown quantities based on physical relationships, initial conditions, and known quantities.
6. Understand the extension of linear motion equations to rotational motion. Comprehend the meaning of the equations governing rotational motion and acceleration, and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship.

Course Materials

Textbook:
Physics - Principles with Applications, 7th ed. by Giancoli (Publisher: Pearson)

Mastering Physics Online Homework System:
Be sure that your textbook is sold bundled with a Mastering Physics student access code card. You can also buy the student access code card separately either from NJIT bookstore or online. Homework assignments will be posted on-line. Students login, download and solve the assigned problems, and submit answers to the automated grading system. Instruction can be found on the student access code card. **To enroll for this section of the course, use course ID "ahn02184"**.

Online Class Response System:
We will use an **online** class response system called **"iClicker REEF**". The iClicker quizzes must be answered with **iClickers REEF app on iPhone/Android phone/computer only**. **Physical iClcikers cannot be used**. For those of you with **iPhone or Android Phone**, you can download an **app "iClicker REEF"** for your iPhone or Android Phone, and buy a subscription, which will turn your iPhone or Android Phone into an iClicker. Alternatively, you can sign into the iClicker Reef web app from your laptop, tablet, or smartphone, and buy a subscription. Either way, you have to buy **a paid subscription, instead of using it as a free trial.** Consult the iClicker web page **https://www.iclicker.com/** for details. You will need **the school zip code, 07102**.

Email:
NJIT email will be routinely used for announcements and to distribute material. Be sure check the NJIT email every day.

Attendance will be checked at all classes and exams. More than 3 unexcused absences (in total) is excessive. If you have excusable absences contact your instructor or the Dean of Students (973.596.3466, Room 255 Campus Center). Students may sign in only for themselves on attendance sheets for the exams; do not sign in for absent students.
Attendance sheets are the official university documents; signing the attendance sheet on behalf of another student is considered as "Misuse of Documents". No student shall intentionally furnish false information nor shall a student forge, alter, destruct, or misuse any university documents or data.

Reading Assignments

The text readings are listed below. You should read the assigned sections of the text before the lecture covering that material.

Homework

It is almost impossible to succeed in this course without working a lot of problems: do the homework. Each student must download the weekly homework assignments from Mastering Physics online homework system, work the problems, and submit the solutions online before each assignment is due. Late work will not be accepted. See Course Materials section above.

Help

Students are encouraged to meet with their instructor during their office hours

Grading

Final grades will be based on a composite score for the term's work that includes three common exams, the final exam, homework score, written quizzes, iClicker REEF quizzes, and class participation.
The approximate weights we expect to use in calculating the composite score are:

Final Letter Grades: Here are the approximate weights to be used for calculating the composite score:

- **35%** for the Midterm Exam
- **35%** for the Final exam
- **15%** for the total of homework work
- **15%** for in-class participation, written lecture quizzes, and iClicker REEF quizzes

The cutoff percentages for various letter grades will be in the range of 84.0% for A, 76.0 % for B+, 68.0% for B, 60.0% for C+, 52.0% for C, 44.0% for D, F below 44.0 %.
C or better grade is required to take further physics courses. If you get D in Physics 102, you cannot take the next level physics course.

Exams

There will be a Midterm Exam plus a comprehensive Final Exam. The schedule is:

- **Midterm Exam, June 7, Wednesday, 9am – 11:30 am, during the class**
- **Comprehensive Final Exam: June 26, Monday, 9am – 11:30 am, during the class**

The final exam will emphasize the work covered after midterm exam, but also re-caps the whole course.
Note: Midterm Exam and Final Exam are all going to be Multiple-Choice questions. Students are going to submit exam questions and scantron cards to be collected at the end of each exam. There is not going to be any partial credit for multiple-choice questions, however students are required to show work to support their answers.
It is the student's responsibility to take the exam in the class that is scheduled.

In-class written and iClicker quizzes covering the preceding or current work may be given during lectures and/or recitations. Those scores count toward your final course grade. **There are no make-ups for in class activities**. Students missing a quiz will receive a grade of zero for that item.

Missed Exams
The general policy is that students who miss a common exam will receive a score of zero for that Exam. That score will be included in the calculation of your final grade. Students that miss two common exams automatically fail the course. Students who anticipate an absence from a common exam should discuss their situation with the Dean of Students PRIOR TO their absence. In order to be qualified to receive an "excused absence" for the common exam (a very rare occurrence), the student should present documentation for not being able to take the test as scheduled. As is the standard policy of NJIT, the student should present this document to the **Dean of Students - (973) 596-3466, Room 255 Campus Center** for evaluation. BOTH the Physics 102 instructor and Dean of Students must concur in permitting a "excused absence" for the common exam. Students who miss common exams that do not present documentation within 7 days of the common exam will receive a score of zero for the common exam.
In the event that the above qualification is met, a separate make-up test for the missed common exam will not be offered. Instead, the final exam grade will be considered for giving a grade for the missed exam. The instructor will evaluate the final exam questions from those chapters and normalize this portion of the student's grade for the missed common exam.

Course Policies
It is expected that NJIT's University Code on Academic Integrity will be followed in all matters related to this course.
Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: **https://www.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf**

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the

university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"

- Students are required to agree to the NJIT Honor Code on each exam.
- Please do not eat, drink, or create noise in class that interferes with the work of other students or instructors.
  Interfering with an instructor's ability to conduct the class or the ability for other students to learn is considered as "Disruptive Conduct".

  The use of any internet services other than following the instructor's course notes and e-textbook is disruptive for the instructor and the other students.

- Turn off all phones, wireless devices, laptops, and messaging devices of all kinds during classes and exams.

- Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

- **Student recordings**: Unauthorized student recordings of class sessions are prohibited. If a student needs to record a class because of accommodation, they need to reach out to the Office of Accessibility Resources and Services (OARS).
  https://www.njit.edu/registrar/njit-policy-recording-classes

- If the student cannot be continuously present in the exam room for the entire duration of the scheduled exam for any physical/medical reason, the student needs to seek accommodation through OARS in order to take the exam separately.

- Needless to say, do not contact any "tutoring services" for help during an exam.

Withdrawal: If you must withdraw from the course, do it officially through the Registrar before the last withdrawal date. If you simply stop attending and taking exams your instructor will have to assign a failing grade in the course.

Physics 102 Section 011 Class Schedule for Summer 2023

Weeks	Lecture Topics	Text Reading
5/22 M	Math Review, Introduction Measurement and Units	Appendix A-4, Ch 1, Sec 1-6
5/24 W	Motion in One Dimension	Ch 2, Sec 1-8
5/25 R	Vectors and Two-Dimensional Motion	Ch 3, Sec 1-6
5/31 W	The Laws of Motion - Forces and Newton's Laws	Ch 4, Sec 1-5
6/1 R	The Laws of Motion - Applications of Newton's Laws	Ch 4, Sec 6-8
6/5 M	Circular motion	Ch. 5, Sec. 1, 2, 4
6/7 W, Midterm Exam	**Midterm Exam**	**Covers: Chapters 1 to 4**
6/8 R	Energy -Work, Kinetic Energy, Work-Energy Theorem	Ch. 6, Sec. 1, 3
6/12 M	Energy -Potential Energy, Mechanical Energy, Energy conservation, Power	Ch. 6, Sec. 4-7, 9, 10
6/14 W	Momentum and Collisions -Momentum, Impulse, Conservation of Momentum	Ch. 7, Sec. 1-3
6/15 R	Momentum and Collisions -Collisions	Ch 7, Sec. 4-8, 10
6/19 M	Rotational Motion, Rotational Dynamics I	Ch 8, Sec 1-3
6/21 W	Rotational dynamics II	Ch.8, Sec. 4-8
6/22 R	Static Equilibrium The Law of Gravity	Ch. 9, Sec. 1-4 Ch 5, Sec. 5-7 (excluding Kepler's Laws)
6/26 M, Final Exam	**Final Exam**	**Everything learned in class**

*** The professor will discuss changes to the syllabus during class if they arise.**

First Summer Session: May 22, 2023 - June 26, 2023

May	22	First Summer Session Begins
May	24	Last Day to Add/Drop for First Summer Session
May	24	Last Day for 100% Refund
May	25	W Grades Posted for all Withdrawals from First Summer Session
May	25	80% Refund Begins
May	28	80% Refund Ends
May	29	Memorial Day - No Classes Scheduled. University Closed
May	29	60% Refund Begins
May	31	60% Refund Ends
Jun	1	40% Refund Begins
Jun	3	40% Refund Ends
Jun	4	20% Refund Begins
Jun	6	20% Refund Ends
Jun	10	Last Day to Withdraw from a class in First Summer Session
Jun	16	Juneteenth Holiday - No Classes Scheduled. University Closed
Jun	26	Last Day of Classes
Jun	29	Final Grades Due