Nanchang University
PHYS11: Introduction to Physics
(Last Updated in Jan. 2023)

Credit: 4

Contact Hours

This course is composed of 24 lecture sessions, 3 tutorial sessions and 9 office contact hours. Each lecture session takes 2 contact hours in length; each tutorial session takes 3 contact hours in length; There will be a Q-A review session (3 contact hours) and Final Exam (3 contact hours) at the end of this term. This course has 72 contact hours in total.

Course Description

This is an introductory course in physics, introducing students to mechanics, the quantitative description of the phenomena of motion and the mechanical properties of materials. Taking this course requires no prior knowledge of physics.
Note: Be prepared to purchase protective goggles and bring your lab manual.

Note: This Syllabus is subject to change based on the needs of the class.

Required Textbook

Textbook: *The Physics of Everyday Phenomena: A Conceptual Introduction to Physics*, 8th edition (2014), by W. Thomas Griffith and Juliet Brosing. Publisher: McGraw-Hill, ISBN 978-0073513904.
Only **simple scientific calculator** will be permitted during quizzes and the final exam. NO GRAPHINGCALCULATORS ARE PERMITTED.

Grading

•Homework Assignments	10%
•Lab Reports	20%
•Mid-Term 1	20%
•Mid-Term 2	20%
•Final Exam	30%

A+	96-100	A	90-95	A-	85-89
B+	82-84	B	78-81	B-	75-77

C+	71-74	C	66-70	C-	62-65
D	60-61	F	< 60		

Course Schedule

The course has 24 class sessions in total. All sessions are 2 contact hours in length. At the end of this term, there will be a Q-A review session(3 contact hours) and Final Exam (3 contact hours).

Note: the course outline and required readings are subject to change.

Class 1
Introduction to Mechanics – Measurements and Vectors (Chapter 1)

Class 2
Describing Motion in One and Two Dimensions (Chapter 2)

Class 3
Falling Objects and Projectile Motion (Chapter 3)

Class 4
Lecture: Introduction to Classical Mechanics (Chapter 4)

Class 5
Lab: Measurements and Uncertainty (Pre-Lab) + Vectors: Equilibrium of a Particle

Class 6
Lecture: Applications of Newton's Laws (Chapter 4)

Class 7
Lecture: Circular Motion, Angular Velocity and Acceleration (Chapter 5)

Class 8
Lecture: Planetary Motion and Newton's Law of Universal Gravitation (Chapter 5)

Class 9
Lecture: Work and Energy – Kinetic and Potential Energy (Chapter 6)

Class 10
Lab: Atwood's Machine (Pre-Lab) + Centripetal Force Apparatus

Class 11
Lecture: Conservative and Non-conservative Forces (Chapter 6)

Class 12
Lecture: Review session for the Mid-Term Exam (Chapters 1-6)

Class 13
Mid Exam (Chapters 1 to 6)

Class 14
Lecture: Momentum and Impulse (Chapter 7)

Class 15
Lab: Conservation of Mechanical Energy (Pre-Lab) + Linear Momentum

Class 16
Lecture: Elastic and Inelastic Collisions (Chapter 7)

Class 17
Lecture: Rotational Motion (Chapter 8)

Class 18
Lecture: Objects in Equilibrium – Torque, Balance, and Center of Gravity (Chapter 8)

Class 19
Lecture: Rotational Inertia and Conservation of Momentum (Chapter 8)

Class 20
Lab: Elasticity and Simple Harmonic Motion (Pre-Lab) + Harmonic Oscillator: Physical Pendulum

Class 21
Lecture 16: Solids and Fluids – States of Matter, Density, and Pressure (Chapter 9)

Class 22
Lecture 17: Fluids Dynamics and the Bernoulli's Equation (Chapter 9)

Class 23
Lab 5: Archimedes' Principle (Pre-Lab)

Class 24
Buoyancy and Boyle's Law

Laboratory Schedule

Room: 101
Hour: 18: 30 – 20:30

The lab reports have three parts, the pre-lab (to be completed on-line before the lab commences), the data and calculations and the post-lab. The pre-Lab Assignment due when you enter the lab. You and your partner will work collaboratively on the data and post-lab sections and hand in one report for the two of you.

In order to do a good job in the experiments, it is essential that you come well prepared.Reading the experiment for the first time in lab will put you and your partner at a disadvantage and make it very difficult to complete the experiment on time.

If you have any technical questions on the pre-lab, data section or post-lab assignments, you are encouraged to ask the professor.
Lab 1: Force & Acceleration
Lab 2: Friction
Lab 3: Angular Momentum
Lab4: Free Fall& Pendulum
Lab 5: Fluids

Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.

Policy on "Late Withdrawals"

In accordance with university policy, appeals for late withdrawal will be approved ONLY in case of medical emergency and similar crises.

Academic Honesty

Nanchang University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

General Expectations:

Students are expected to:
— Attend all classes and be responsible for all materials covered in class and otherwise assigned;
— Complete the day's required reading and assignments before class;
— Review the previous day's notes before class and make notes about questions you have

about the previous class or the day's reading;

— Participate in class discussions and complete required written work on time;

— Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;

— While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Special Needs or Assistance

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.