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JINAN UNIVERSITY

Fundamentals of Physics I

Lecturer: Dr. Stefan Kautsch

Time: Monday through Friday (July 2, 2018 - August 3, 2018)

Office hours: 2 hours (according to the teaching schedule)

Contact hours: 50 (50 minutes each)

Credits: 3

Location: School of Tourism

Office: School of Tourism 210

E-mail: skautsch@nova.edu

Course Description

This course is an introduction to physics. The main emphasis will be on the branch of physics known as *mechanics and dynamics*. This is the study of motion and the causes of motion through the applications of fundamental principles of physics. We begin with kinematics, the quantitative description of the motion. We then build on kinematics to learn how and why motion occurs, through the application of Newton's laws of dynamics. Many examples will be considered as we explore the properties of specific forces and the details of the motion they bring about. The next step will be to describe physical processes in terms of energy and momentum, quantities that are always "conserved." Conservation laws allow us to solve problems in mechanics that would be very difficult by other techniques and provide a powerful approach to the analysis of physical systems in general. We then will extend our understanding of

motion to the kinematics and dynamics of rotation. Finally, we will briefly study some of the physical properties of solids and fluids. By the end of this session, you should have a deeper understanding of the phenomena occurring in your surrounding physical world. You should have a clearer picture of the behavior of the universe on the largest (cosmic) scale, and on the smallest (subnuclear) scale. You should also understand more about the physics of biological systems, including your own body. In addition, you should be more competent at measurement and quantitative reasoning concerning physical processes.

Required 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.

Course Hours

The course has 20 sessions in total. Each class session is 120 minutes in length. The course meets from Monday to Thursday.

Assessment

Your final grade is based on the following components:

Quizzes/Assignments	40%
Midterm Exam	30%
Final Exam	30%
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Total	100%

Grading Scale

The instructor will use the grading system as applied by JNU:

Definition	Letter Grade	Score
Excellent	A	90-100

Good	B	80-89
Satisfactory	C	70-79
Poor	D	60-69
Failed	E	Below 60

Policies

I want you to succeed in this course and at Jinan University. Here are some tips how to be successful in class: attend all lessons on time, prepare yourself by reading the textbook and not only rely on my slides, prepare your own study plan, stay awake during class. I encourage you to come see me during office hours or to schedule an appointment with questions or concerns about the course, and the universe. Any use of an electronic computational/communication device is strictly prohibited. Using such a device will result in a 5 point penalty on your final grade. Audio and/or video recording during, before, and after the course is strictly forbidden. There will be no makeup exams. Missed or late homework assignments and/or quizzes and reports will receive zero points.

Class Schedule

Week 1

- Lecture 1: Physics – The Foundation of Nature
- Lecture 2: Motion in Space and Time
- Lecture 3: Motion in Gravitational Fields
- Lecture 4: Kepler's and Newton's Laws

Week 2

- Lecture 5: A Variety of Daily-life Forces
- Lecture 6: Gravitation in the Universe
- Lecture 7: Orbits and Circular Motion
- Lecture 8: Work and Energy

Week 3

Lecture 9: Momentum and Impulse
Lecture 10: Collisions
Mid-Term Exam
Lecture 11: Conservation of Momentum

Week 4

Lecture 12: Rotational Motion
Lecture 13: May the torque be with you
Lecture 14: Angular Momentum
Lecture 15: Balance and Center of Gravity

Week 5

Lecture 16: States of Matter
Lecture 17: Fluids Dynamics and Archimedes' Principle
Lab 5: Temperature and Heat Outlook
Final Exam Review
Cumulative Final Exam

Academic Honesty

Jinan University defines academic misconduct as any act by a student that misrepresents the students' own academic work or that compromises the academic work of another scholastic misconduct includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e. misrepresenting as one's own work any work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of the instructors concerned; sabotaging another's work within these general definitions, however, instructors determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties ranging from lowering of their course grade to awarding a grade of E for the entire course.