Advanced General Physics I
01:750:323
Fall 2020

Instructor: Professor Steve Schnetzer

Summary: A one-semester course on classical mechanics intended primarily for general and applied option physics majors and others who wish to study Classical Mechanics at a greater depth than that covered in introductory physics. Topics include Lagrangian and Hamiltonian mechanics, angular momentum, special relativity, and the Lorentz force.

This course is required for the Applied and General Options. This course is a prerequisite for Advanced General Physics II (01:750:324).

Pre-requisites: 01:750:203 or 01:750:123, and Calc2, 01:640:152 preferred, 01:640:135 accepted

Co-requisites: None

Meeting times: One 80 minute lecture per week.

Lecture:	Th 4 (1:40-3:00 pm)
Recitations:	Section 1: T 5 (3:20-4:40 pm)
	Section 2: T 4 (1:40-3:00 pm)

Text: Classical Mechanics: The Theoretical Minimum, L. Susskind and G. Hrabovsky

LMS: Canvas

Provisional Plans for Remote Instruction:

Lectures and recitations will be held remotely and will be synchronous. Attendance and participation in these sessions will be counted toward the course grade. Recordings of the lectures will be posted. For an excused absence at one or more sessions, the instructor should be contacted prior to the missed session. Homework should be photographed or scanned and submitted to the LMS. There will be eight quizzes during the semester and a final exam. The quizzes will be given at a set time and are to be submitted to the LMS. Some quizzes might also contain an oral component. The final exam will be oral. There will be four 80-minute office hours each week. These are optional but students wanting extra help are strongly encourage to attend one. The times of these office hours will be determined after the start of the semester and will be chosen so that all students will be able to attend at least one.

Technology requirements:

- Internet access
- microphone
- either a phone camera or scanner for uploading work
- video camera (optional)

Provisional Grading Plans:

Quizzes:	30%
Final Exam:	30%

Attendance: 20%
Homework: 10%
Participation: 10%

Schedule (provisional):

Week 1	Newton's Laws
Week 2	3 Dimensional Motion (Vectors)
Week 3	Principle of Stationary Action
Week 4	Lagrangian Formulation
Week 5	Application of Lagrangians
Week 6	Symmetries & Conservation Laws
Week 7	Hamiltonian
Week 8	Central Forces (Planetary Motion)
Week 9	Angular Momentum I
Week 10	Angular Momentum II
Week 11	Normal Modes
Week 12	Special Relativity I
Week 13	Special Relativity II
Week 14	Lorentz Force

Academic Integrity:

Students are expected to maintain the highest level of academic integrity. You should be familiar with the university policy on academic integrity: http://academicintegrity.rutgers.edu/academic-integrity-policy/ Violations will be reported and enforced according to this policy.

Use of external sources to obtain solutions to homework assignments or exams is cheating and is a violation of the University Academic Integrity policy. Cheating in the course may result in penalties ranging from a zero on an assignment to an F for the course to expulsion from the University. Posting of homework assignments, exams, recorded lectures, or other lecture materials to external sites without the permission of the instructor is a violation of copyright and constitutes a facilitation of dishonesty, which may result in the same penalties as explicit cheating.

Not only does the use of such sites violate the University's policy on Academic Integrity, using such sites interferes with your achievement of the learning you are paying tuition for. Assignments, quizzes, and exams are given not simply to assign grades, but to promote the active learning that occurs through completing assignments on your own. Getting the right answer is much less important than learning how to get the right answer. This learning is critical to your success in subsequent courses and your careers.

Student wellness Services
Student Counseling, ADAP & Psychiatric Services (CAPS) wellness for non-emergency psychological health issues services (848) 932-7884, 17 Senior Street, New Brunswick, NJ 08901 http://health.rutgers.edu/medical-counseling-services/counseling/

Violence Prevention & Victim Assistance (VPVA), (848) 932-1181, 3 Bartlett Street, New Brunswick, NJ 08901, http://www.vpva.rutgers.edu/

Office of Disability Services (848) 445-6800, Lucy Stone Hall, Suite A145, Livingston, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854, https://ods.rutgers.edu/

Scarlet Listeners for confidential peer counseling and referral hotline, (732) 247-5555, http://www.scarletlisteners.com