FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS AND ASTRONOMY
COURSE OUTLINE

1. **Course:** Physics 221, Mechanics Spring 2017

Instructor: Dr. Ziad Abu Sara | zabusara@ucalgary.ca | Office Hours: M: 9:00 AM – 12:00 PM in SB 130

Lecture Sections: L01: MW | 12 – 2:45 PM | ENE 243

Course website: d2l.ualgary.ca

Departmental Office: SB 605, 403-220-5385, phasugrd@ucalgary.ca

2. **Prerequisites:** A grade of 70 per cent or higher in Physics 30; 50 per cent or higher in Mathematics 31; and 70 per cent or higher in Mathematics 30-1 or Pure Mathematics 30 or a grade of "B-" or 70 per cent or better in Mathematics II (offered by Continuing Education).
Antirequisite(s): Credit for Physics 221 and either 211 or 227 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Assignments (6)	15%
Labatorials (9)	15%
Class response activity	15%
Midterm test (in-class June 9, 2017)	25%
Final examination (Registrar-Scheduled)	30%

Students who receive a weighted mean mark <40% over the term test and the Final Examination should not expect to receive a course grade higher than "D".

Percentage to letter grade conversion scale:

> = 95 %	A +	> = 75 %	B +	> = 60 %	C +	> = 48 %	D +
> = 85 %	A	> = 70 %	B	> = 55 %	C	> = 45 %	D
> = 80 %	A -	> = 65 %	B -	> = 50 %	C -	< 45 %	F

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.6 of the University Calendar

Missed Labatorials
Students are NOT allowed to attend a different labatorial section than the one in which they are registered. A make-up lab session will be scheduled in the last week of classes. You can make-up **a total of two** labatorials. Priority for scheduling the make-up labatorials will be given to students who missed a labatorial for a legitimate reason. A note from a physician/counselor should be provided. Others will be allowed to do make-up labatorials as space permits. Please contact your instructor to arrange for a make-up labatorial as soon as you know that you might need one.

Missed assignments:

Please contact your instructor if you have a legitimate reason for missing a deadline for an assignment. Sleeping in, forgetting about the deadline etc. is NOT considered a legitimate reason.

5. Scheduled out-of-class activities: None

6. Course Materials: *R.D. Knight, Physics for Scientists and Engineers: A Strategic Approach, 3rd Edition, Addison-Wesley.*

7. Examination Policy: Closed book exam and mid-term test with formula sheet provided; calculator allowed; Students should also read the Calendar, Section G, on Examinations.

8. Approved Mandatory and Optional Course Supplemental Fees: None

9. Other Important Information for Students:

(a) Academic Misconduct: (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties

(b) Assembly Points: In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

(c) Academic Accommodation Policy: Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf. Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics and Astronomy, , Dr. David Feder, by email (dfeder@ucalgary.ca) or by phone (403.220.3638).

(c) Safewalk: Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk/). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(d) Freedom of Information and Privacy: This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also http://www.ucalgary.ca/secretariat/privacy.

(e) Student Union Information: VP Academic Phone: 220-3911 Email: suvpaca@ucagary.ca. SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca; Student Ombudsman

(f) Internet and Electronic Device Information: You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(g) USRI: At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

10. OTHER COURSE RELATED INFORMATION:

(a) Course Learning Outcomes

Mechanics is the study of motion; by the end of this course, students should be able to:

- Explain how interactions between systems affect motion
- Discuss fundamental and emergent interactions

Students will also start developing systems thinking by being able to:

- Make mathematical predications about collisions using the momentum principle
- Calculate behavior of systems using the energy principle

The course also contributes to teach students to:

- Apply mathematical techniques including vectors, derivatives, and integrals to simple physical problems.

(b) Spring 2017 Schedule

Week	Lecture Dates	Textbook Material	Assignments	Labatorials
1	M May 15 W May 17 F May 19	Ch. 1: Concepts of Motion Ch. 2: Kinematics in One Dimension Ch. 3: Vectors and Coordinate Systems	Assignment 1 due: F May 19 11:59pm	Labatorial 1: Units, Equipment Introduction and Motion Diagrams *(R)*
Victoria Day: Monday, May 22				
2	W May 24 F May 26	Ch. 4: Kinematics in Two Dimensions *(excluding Section 4.4)* Ch. 5: Force and Motion	Assignment 2 due: F May 26 11:59pm	Labatorial 2: Measuring Motion *(T)* Labatorial 3: Motion on the Inclined Plane *(R)*
3	M May 29 W May 31 F June 2	Ch. 5: Force and Motion Ch. 6: Dynamics I: Motion Along a Line	Assignment 3 due: F June 2 11:59pm	Labatorial 4: Two Dimensional Motion *(T)* Labatorial 5: Statics (Newton's First Law in Two Dimensions) *(R)*
4	M June 5 W June 7 F June 9	Ch. 7: Newton's Third Law **Midterm test (in class)**	Assignment 4 due: F June 9 11:59pm	Drop-in tutorials *(T)* Labatorial 6: Newton's Second Law *(R)*
5	M June 12 W June 14 F June 16	Ch. 8: Dynamics II: Motion in a Plane Ch. 9: Impulse and Momentum	Assignment 5 due: F June 16 11:59pm	Labatorial 7: Newton's Third Law *(T)* Labatorial 8: Collisions in One Dimension *(R)*
6	M June 19 W June 21 F June 23	Ch. 10: Energy Ch. 11: Work *(excluding Section 11.6)*	Assignment 6 due: F June 23 11:59pm	Labatorial 9: Simple Harmonic Oscillation and Conservation of Energy *(T)* Make-up labatorials *(R)*

7	M June 26	Ch. 12: Rotation of a Rigid Body *(only Sections 12.5, Torque & 12.8, Static Equilibrium)*		Drop-in tutorials *(T)*
Final Exam Period: Wed, June 28 – Friday, June 30				