



UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE OUTLINE

**1. Course:** PHYS 341 Classical Mechanics I

Dr. David Hobill | SB 539 | (403) 220-6965 hobill@ucalgary.ca  
Office Hours: T 10:00-11:30, TR 14:00-13:30

Lecture Sections: LEC 1 | MWF 16:00-16:50 | ST 131

**Course Website:** d2l.ucalgary.ca  
**Departmental Office:** SB 605, 403-220-5385, phasugrd@ucalgary.ca

**2. Prerequisites:** PHYS 227 or 321 and MATH 211 or 213; and AMAT 219 or MATH 253 or 267 or 277 or 283.

Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2013-2014 Calendar. A student may not register in a course unless a grade at least "C-" has been obtained in each pre-requisite course; it is the responsibility of students to ensure that their registrations are in order. See <http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html> for details.

**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: 25%  
In-Class Tests (2): 30%  
Labs (5): 15%  
Final Examination: 30% (To be scheduled by the Registrar)

Percentage grades will be given for all elements of term work and examinations. A weighted course percentage will be calculated to the nearest whole number for each student after the final exam is written. A table of conversion from final course percentage to final course letter grade will be published on the course website later in the term. A percentage grade of 50% or higher in the final exam is required to pass the course.

Percentage to letter grade conversion scale:

> = 95%	A +	> = 75%	B +	> = 60%	C +	> = 45%	D +
> =85%	A	> = 70%	B	> = 55%	C	> = 40%	D
> =80%	A -	> = 65%	B -	> = 50%	C -	< 40 %	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.

5. **Scheduled out-of-class activities:** None

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** Analytical Mechanics, *Fowles and Cassiday, 6<sup>th</sup> Edition, Thompson-Brooks Cole*

**Online Course Components:** Additional Lecture notes will be posted on the UCalgary D2L Website

7. **Examination Policy:** Calculators are allowed, but no networked devices. Students should also read the Calendar, Section G, on Examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees:** None

9. **Writing across the curriculum statement:** In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See also Section E.2 of the University Calendar.

10. **Human studies statement:** Students in the course will not be expected to participate as subjects or researchers. See also Section E.5 of the University Calendar.

11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

**(a) Misconduct:** 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](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. Michael Wieser, by email ([mwieser@ucalgary.ca](mailto:mwieser@ucalgary.ca)) or by phone (403.220.3641).

**(d) Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 2205333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

**(e) 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>.

**(f) Student Union Information:** VP Academic Phone: 220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep: Phone: 220-3913 Email: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca) and  
[science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca)  
Student Ombuds Office: 403 220-6420  
Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca); <http://ucalgary.ca/provost/students/ombuds>

**(g) 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.

**(h) U.S.R.I.:** 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](http://www.ucalgary.ca/usri)). Your responses make a difference - please participate in USRI Surveys.

**PHYS 341 Syllabus:** This course will focus on the mechanics of single particles under the presence of external forces, and in particular conservative forces. PHYS 343 will follow with an emphasis on multiple particle interactions and the motion of extended objects.

- Vectors, and vector operations. Taylor series and linear approximations.
- Coordinates and coordinate transformations
- Rectilinear motion of a particle. Conservative forces. Kinetic and potential energy. Velocity-dependent forces: Fluid drag and terminal velocity.
- Newton's Second Law and First order ordinary differential equations
- Oscillations. Harmonic motion, with and without damping. Forced harmonic motion: Resonance.
- Non-linear oscillations and Chaos.
- Perturbation methods
- Central Forces, Orbital motion and Scattering, Effective Potential
- Noninertial reference frames. Accelerating frames. Rotating coordinate systems.

Please note laboratory exercises will begin on Sept 21 2015. Further information regarding the laboratories will be posted on the D2L website.

Department Approval \_\_\_\_\_ Date \_\_\_\_\_