UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS AND ASTRONOMY
COURSE OUTLINE

1. **COURSE: Physics 321 – Harmonic motion, waves, and rotation**
   L01: MWF 8:00 – 8:50, ST 132, Dr. A. Louro, SB 623 403-220-8648, louro@ucalgary.ca, office hours: MWF according to the instructor's calendar. A website for the course may be accessed by students on Blackboard.

   PHAS main office: SB 605, 403-220-5385, office@phas.ucalgary.ca.

2. **PREREQUISITES:** Physics 211 or 217 or 221; Mathematics 211 or 213 or 221; and 253 or 263 or Applied Mathematics 219.

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

   - Online assignments (13) – 37%
   - In-class tests (6) – 37%
   - Final exam – 26%

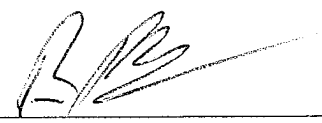
   In addition, bonus marks of up to 2% may be earned for completing the online reading quizes, and another 2% for classroom responses (1% for participation and 1% for correct answers in both cases).

   Percentage grades will be given for all elements of term work and examinations. A weighted course percentage will be calculated 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 45% or less on the final exam will result in a final course letter grade no higher than D+.

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: http://www.ucalgary.ca/pubs/calendar /current/sc-3-6.html. It is the student's responsibility to familiarize himself/herself with these regulations. See also http://www.ucalgary.ca/pubs/calendar/current/e-3.html.

5. **TEXTBOOK:** Physics for Scientists and Engineers, Vol. 1, R. Knight, PearsonAddison–Wesley, 3rd. ed.

6. **EXAMINATION POLICY:** Calculators are allowed. Students are encouraged to read the Calendar, Section G, on Examinations: http://www.ucalgary.ca/pubs/calendar/current/g.html.

Department approval  Date: Jan 4/13

7. 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 K. Studen Misconduct (http://www.ucalgary.ca/pubs/calendar/current/k.html) 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 at http://www.ucalgary.ca/emergencyplan/assemblypoints.

(c) **ACADEMIC ACCOMMODATION POLICY:** Students with documentable disabilities are referred to the following links:
Calendar entry on students with disabilities: http://www.ucalgary.ca/pubs/calendar/current/b-1.html
Disability Resource Centre: http://www.ucalgary.ca/drc/

(d) **SAFEWALK:** Campus Security will escort individuals day or night. Call 220-5333 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 will be 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. See http://www.ucalgary.ca /secretariat/privacy.

(f) **STUDENT UNION INFORMATION:**
VP Academic: Phone 220-3911, email `suvpaca@ucalgary.ca`.
SU Faculty Rep.: Phone 220-3913, email `sciencerep@su.ucalgary.ca`
website http://www.su.ucalgary.ca /home/contact.html.
Student Ombudsman: http://www.su.ucalgary.ca/services/student-services/student-rights.html.

Syllabus

- Rotational motion. Centre of mass.
- Rotational energy. Moments of inertia.
- Torque. Rotational dynamics. Rotations about a fixed axis.
- Static equilibrium. Rolling motion.
- Simple harmonic motion. Kinematics. Energy.
- Dynamics of SHM. Springs and pendulums.
- Damped oscillations. Resonance.
- Travelling waves. Sinusoidal waves.
- Pressure in fluids. Buoyancy.
- Fluid dynamics. Contiuity. Bernoulli's equation.
- Elasticity.