Grande Prairie Regional College
Department of Science

PC 1310 A3 – Mechanics
Winter Session, 2010

4.3(3-1-1.5)UT
U of A Equivalent – ENPH 131

Course Outline

Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies are covered in the course.

Prerequisite: MA 1000, EG 1300
Corequisite: MA 1010, Pre- or Co-requisite: PC 1300
Note: Restricted to engineering students only.

Instructor	Tanvir Sadiq, Ph.D., P.Eng. J209 780-539-2865 **tsadiq@gprc.ab.ca**
Lecture	TR 08:30 – 09:50 J228
Laboratory	F 14:30 – 17:20 J103
Seminar	R 13:00 – 13:50 J202
Textbooks	*Engineering Mechanics, Statics and Dynamics, 12th Edition* R. C. Hibbeler, Prentice Hall *(Old edition is OK too)* *University Physics, 12th Edition* Hugh D. Young and Roger A. Freedman, Pearson/Addison-Wesley
Laboratory Manual	*Physics 130, En Ph 131 Laboratory Manual* Department of Physics, University of Alberta
Marks Distribution	Class Participation 2% Problem Sets 5% Seminars 10% Laboratory Work 20% (Must pass the lab to pass the course.) Midterm Exam 25% **–** (Date: TBA) Final Exam (Comprehensive) 38% **–** (Date: TBA) *Note that satisfactory performance on the final exam and the aggregate mark is required in order to pass this course. "Satisfactory performance" is defined by University of Alberta every year.*
Office Hours	1000 – 1200 T, 1000 – 1130 R, **Or** by appointment

Laboratory Work

Experiment No.	Week of	Title
6	January 10/17	Acceleration Due to Gravity
7	January 24/31	Non-Uniform Motion
8	February7/14	Atwood's Pulley
10	February 21/March 14	Collision: Ramp
11	March 21/28	Moment of Inertia (Lab instructions to be provided)

Note: *Lab reports are due at the end of the lab period.* **Late reports will not be accepted and will receive zero marks. There will be no exception to this rule.** *Graded reports will not be returned before all the lab sections have submitted their reports*.

Prerequisite, Seminars, Assignments and/or Reports

Prerequisite: A good background in Calculus (including Integral and Vector Calculus) is required for this course. Students are also expected to have a fairly good knowledge of trigonometry.

Seminars[#]: These are approximately one hour sessions held weekly in which students will be required to solve several problems. The problems will be handed in at the end of the seminar period for marking. **Late submissions will not be accepted and will receive zero mark.** Limited help in solving these problems will be available from the seminar instructor. The first seminar begins the week starting January 11, 2009. Last seminar will not be graded, however, solution will be posted.

Assignments[#]: There will be several assignments throughout the semester, each consisting of a number of problems. Due dates will be announced in the class. There will be approximately one assignment weekly. **Late assignments will NOT be accepted and will receive zero mark.** All assignments MUST be written neatly and submitted on 8.5 x 11 in. (Letter size) Engineering paper. All answers should be boxed. Leave space between problems. Format to solve a problem will be explained in the class and we will strictly adhere to the given format.

Laboratory: There are six lab sessions which introduce the student to the experimental process and report writing. Students must achieve a score of at least 50% in the lab component of the course in order to obtain an overall passing grade in PC1310. Students who achieve a grade of at least 65% in the lab, but fail the remaining parts of the course may not have to repeat the lab.

Midterm Exam: The midterm will be 1½ - 2 hours long (exact duration TBD), and is a closed-book, closed-notes exam with the formulae sheet provided by the instructor. Date and location will be announced in class. **There will be NO make-up midterm exam.**

Final Exam: The final exam will be comprehensive and 3 hours long. The final exam is a closed-book, closed-notes exam with the formulae sheet provided by the instructor. Date and location will be announced by the College. **There will be NO make-up final exam.**

[#] See "PC 1310 Assignment Requirements" provided separately for more information.

Lecture Topics

Topic	Sections in Hibbeler	Equivalent sections in Young & Freedman
Introductory Material	1.1 – 1.5	1.3 – 1.5
Kinematics of Rectilinear Motion	12.1 – 12.3	2.1 – 2.6
Kinematics of Planar Motion	12.4 – 12.7, 12.9, 12.10	3.1 – 3.5
Dynamics of a Particle	13.1, 13.2, 13.4, 13.5	4.1 – 4.6
Systems of Particles	13.3, 9.1, 9.3	5.1 – 5.5
Work and Energy	14.1 – 14.6	6.1 – 6.4, 7.1 – 7.3
Linear Momentum and Impulse	15.1 – 15.4	8.1 – 8.5
Introduction to Dynamics of a Rigid Body	16.1 – 16.3, Parts of Ch 17	9.1 – 9.6, 10.1 – 10.4
Angular Impulse and Momentum	15.5 – 15.7	10.5 – 10.6

Grades

Letter Grade	4-Point Equivalent	Designation
A+	4.0	Excellent
A	4.0	Excellent
A-	3.7	First Class Standing
B+	3.3	First Class Standing
B	3.0	Good
B-	2.7	Good
C+	2.3	Satisfactory
C	2.0	Satisfactory
C-	1.7	Satisfactory
D+	1.3	Minimal Pass
D	1.0	Minimal Pass
F	0.0	Fail

The University of Alberta will only accept for transfer credit courses
where a student obtains a grade of **C**– or higher