

ANALYTICAL MECHANICS II (PHY 400/500) (Credits: 3)

Instructor: Prof. Bogdan Dabrowski, Physics Department, NIU, bdabrowski@niu.edu. You can find me in my office (La Tourette Hall 216) or in my labs La Tourette Hall 215 and FR 110 (phone: 753-6472) on Mondays, Tuesdays, Thursdays and Fridays. You can also reach me on Wednesdays at Argonne National Laboratory (phone: 630-252-5541) or at email dabrowski@anl.gov.

Course meeting time and place: 2:00 – 3:15 PM on Tuesdays and Thursdays at La Tourette Hall 227.

Office hours: on Tuesdays and Thursdays from 1:00 to 1:59 PM at La Tourette Hall 216.

The required textbook: S.T. Thornton and J.B. Marion, *Classical Dynamics of Particles and Systems*, 5th Edition (Brooks/Cole, Belmont, CA, 2004).

Chapters and topics we will study:

Ch. 3.1 – 3.9: Oscillations (4 classes)

Ch. 4.1 – 4.4, and selected topics from 4.5 – 4.7: Nonlinear Oscillations (3 classes)

Ch. 6.1 – 6.7: Calculus of Variations (3 classes)

Ch. 7.1 – 7.11: Lagrangian and Hamiltonian Dynamics (5 classes)

Midterm Exam (1 class)

Ch. 12.1 – 12.4, 12.6 – 12.9: Coupled Oscillations (4 classes)

Ch. 13.1 – 13.7, and selected topics from 13.8 – 13.9: Continuous Systems (3 classes)

Ch. 14.1 – 14.11: Special Relativity (4 classes)

Catch up/Review (1 class)

Final Exam: May 7, 2:00 – 4:00 PM.

There will be several problems solved in class for every chapter we study. Additional problems will be assigned as homework every week. I will collect and grade these problems the following week – there is no substitute for solving problems on your own. There will be closed-books mid-term and final exams.

The grades will be based on the total amount of points you would accumulate during the course (homework 30%, mid-term exam 30%, and final exam 40%):

A (4.00)	90 – 100%
A- (3.67)	80 – 89 %
B+ (3.33)	72 – 79%
B (3.00)	64 – 71%
B- (2.67)	56 - 63%
C+ (2.33)	48 – 55%
C (2.00)	40 – 47%
D (1.00)	32 – 39%
F (0.00)	31% or less

Attendance: Attendance not be taken, but you can't hand in homework without being in class, and you will not do well if you do not follow the coursework. If you want to hand in homework and you are not able to attend class, it must be handed in early, not late.

Food in the classroom: Food and drink are not allowed in the classroom. If this causes trouble or difficulty, please speak to the instructors to work out an appropriate arrangement.

Phones and electronics: If your phone rings, we will know that it was you (this is a small class)! And if you are using your phone in class, we will see you, and will call you out on it.

Disability statement: If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu. Also, please contact the instructors privately as soon as possible so we can discuss your accommodations. The sooner you let us know your needs, the sooner we can assist you in achieving your learning goals in this course.