

Bemidji State University

PHYS 3700: Classical Mechanics

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 0

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

Newton's laws applied to systems of particles and rigid bodies. Topics includes energy and momentum conservation, non-inertial reference frames, Lagrangian and Hamiltonian mechanics. Prerequisites: PHYS 2101, PHYS 3400 or MATH 2490.

B. COURSE EFFECTIVE DATES: 01/12/2020 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Mechanics
2. Momentum
3. Energy and Work
4. Oscillatory Motion

D. LEARNING OUTCOMES (General)

1. use Newtonian mechanics with forces and torques to analyze physical systems in Cartesian and curvilinear coordinates.
2. solve mechanics problems using the work-energy principle and conservation of energy, momentum and angular momentum.
3. solve and analyze rigid-body problems and problems in non-inertial frames.
4. use Lagrangian and Hamiltonian mechanics to obtain the equations of motion for a variety of physical systems.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted