

Newtonian Mechanics
8.01

8.01
W01D2

Learning Objectives of TEAL

- Create an engaging and technologically enabled active learning environment
- Move away from passive lecture/recitation format
- Incorporate hands-on experiments
- Enhance conceptual understanding and problem-solving ability

Broader Educational Learning Objectives

- Develop communication skills in Core Sciences
- Develop collaborative learning
- Create an environment conducive to learning and teaching



<http://hubblesite.org/gallery/tours/tour-hudf>

Textbook

Authors: Young and Freedman
University Physics 12th Edition Volume 1

In-Class Active Participation

Students are expected to complete weekly reading assignments and problems before the first class of the week.

Active Participation:

- Concept Questions using Turning Point Clickers
- Short Group/Table Problems with student presentation of work at boards
- Mini-experiments and quantitative experiments

Integrated Modular Approach

Sun: Tutoring Center Help Sessions for previous week's Problem Set, Students read textbook, answer questions based on readings.

Mon/Tue: In-Class (2 hr): Hand In Answer to Mon/Tues Reading Question, Reading Quiz, Presentations, Concept Tests, Table Problems.

Tue Night: Hand Written Problem Set Due 9 pm including answer to Wed/Thurs Reading Question; Math Review 9-11 pm.

Wed/Thurs: In-Class (2 hr): Reading Quiz, Presentation, ..., Experiments

Thurs Night: On-line Mastering Physics Due 11 pm Problem Solving/Tutorials based on MIT and WIR classes and Problem Solving for Friday Quiz.

Fri In-Class (1 hr): 9 Half-hour Quizzes, Group Problem Solving, Mini-experiments.

Problem Solving

A MIT Education requires solving 10,000 Problems

Measure understanding in technical and scientific courses

Regular practice

Expert Problem Solvers:

Problem solving requires factual and procedural knowledge, knowledge of numerous models, plus skill in overall problem solving.

Problems should not 'lead students by the nose' but integrate synthetic and analytic understanding

Problem Solving/Exams

On-Line Mastering Physics:

1. One assignment per week with hints and tutorials
2. Review problems for quizzes/exams

In-Class Concept Questions and Table Problems

In-Class Group Problems (Friday)

Weekly Problem Sets

1. Multi-concept analytic problems
2. Pre-class Reading Questions
3. Pre-lab questions and analyze data from experiments

8.01 Mechanics: Nine Quizzes, Two Exams and Final Exam
