

13-49 14-5F

Curriculum Proposal - Undergraduate - University-Wide Undergraduate Curriculum Committee

1. **Proposal Title:** Undergraduate Curriculum Committee

2. **Proposal Number:** 13-49

3. **Proposal Description:** The Undergraduate Curriculum Committee (UCC) is a standing committee of the University of Wisconsin System. The UCC is responsible for reviewing and recommending changes to the undergraduate curriculum. The UCC is composed of representatives from all UW System campuses. The UCC meets regularly to discuss curriculum proposals and to make recommendations to the Senate. The UCC is currently reviewing a proposal for a new undergraduate program in [redacted].

4. **Justification:** The proposed program is necessary to meet the needs of students and to provide a high-quality education. The program will be offered at [redacted] and will be a major component of the undergraduate curriculum. The program will be offered as a [redacted] and will be a major component of the undergraduate curriculum. The program will be offered as a [redacted] and will be a major component of the undergraduate curriculum.

5. **Impact:** The proposed program will have a positive impact on the undergraduate curriculum and will provide a high-quality education for students. The program will be offered at [redacted] and will be a major component of the undergraduate curriculum. The program will be offered as a [redacted] and will be a major component of the undergraduate curriculum.

6. **Conclusion:** The proposed program is a necessary and high-quality addition to the undergraduate curriculum and should be approved by the Senate.

7. **Comments:** [Redacted]

8. **Recommendation:** [Redacted]

9. **Signature:** [Redacted]

10. **Date:** [Redacted]

<p><i>[Signature]</i>          [Redacted]          [Redacted]</p>	<p><i>[Signature]</i>          [Redacted]          [Redacted]</p>	<p>Reviewed and approved (if yes needed)          Director of Honors [Redacted]          Provost (as needed)          Additional signature (with title as needed)          [Redacted]</p>
<p>1          [Redacted]          [Redacted]</p>	<p>[Redacted]          [Redacted]          [Redacted]</p>	<p>[Redacted]          [Redacted]          [Redacted]</p>

COURSE SYLLABUS

**I. CATALOG DESCRIPTION**

PHYS 131 Physics I-C Lecture

3c-01-3cr

A calculus based course in general college physics; topics covered are similar to those covered in PHYS 111 but treated in more depth through the use of calculus.

**II. COURSE OBJECTIVES**

Objective 1

The student will be able to make predictions about: motion, the behavior of fluids, longitudinal waves (sound) and thermodynamics.

Expected Student Learning Outcome 1 *Informed Learners*

**Rationale:** Assigned readings from the text as well as outside sources will discuss the great moments in science, as well as contributions from women and minorities.

### III. COURSE OUTLINE

- A. Kinematics and vectors (7 hours)
  - 1. Motion in straight line
  - 2. Vectors
  - 3. Motion in a plane
    - a) Projectile motion
    - b) Uniform circular motion
    - c) Relative motion
- B. Forces & Motion (4 hours)
  - 1. Force & mass
  - 2. Newton's laws of motion
  - 3. Friction
  - 4. Uniform circular motion
- C. Work and Energy (4 hours)
  - 1. Work
  - 2. Kinetic energy
  - 3. Power
  - 4. Potential energy
  - 5. Conservative & non-conservative forces
  - 6. Conservation of energy
- D. Collisions (3 hours)
  - 1. Center of mass
  - 2. Momentum
  - 3. Conservation of momentum
  - 4. Impulse and momentum
  - 5. Elastic and inelastic collisions

3. Superposition and interference
4. Standing waves
5. Sound waves
6. Doppler effect

H. Thermodynamics

(7 hours)

1. Temperature

- a) Measuring temperature
- b) Temperature scales
- c) Thermal expansion

2. Heat and the first law of thermodynamics

- a) Heat capacity
- b) First law of thermodynamics
- c) Thermodynamic processes
- d) Heat transfer

## VII. REQUIRED TEXTBOOKS, SUPPLEMENTAL BOOKS AND READINGS

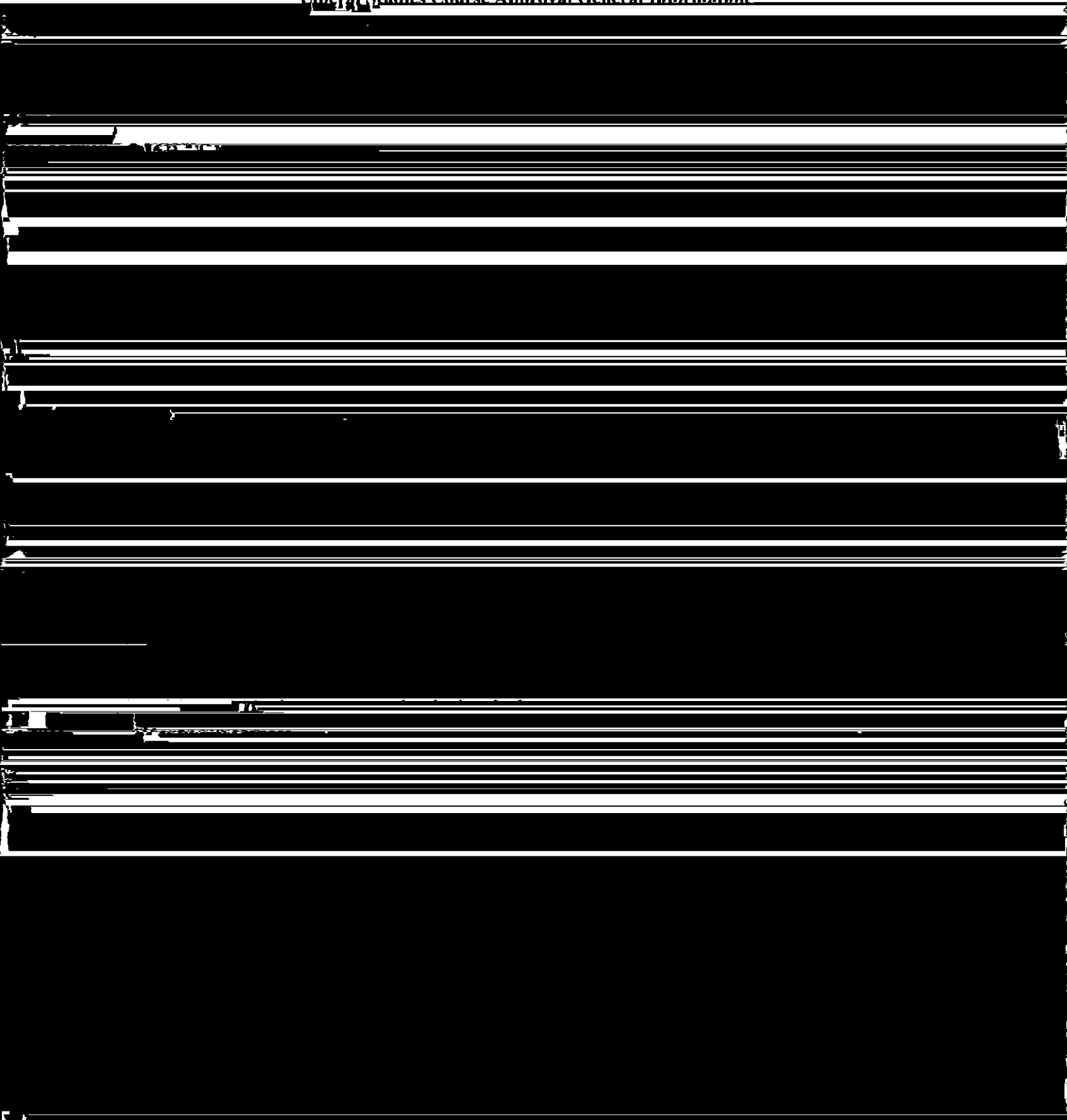
Textbook: Halliday, David and Resnick, Robert; Fundamentals of Physics (9<sup>th</sup> Edition) John Wiley & Sons, Inc, 2011.

## VIII. SPECIAL RESOURCES

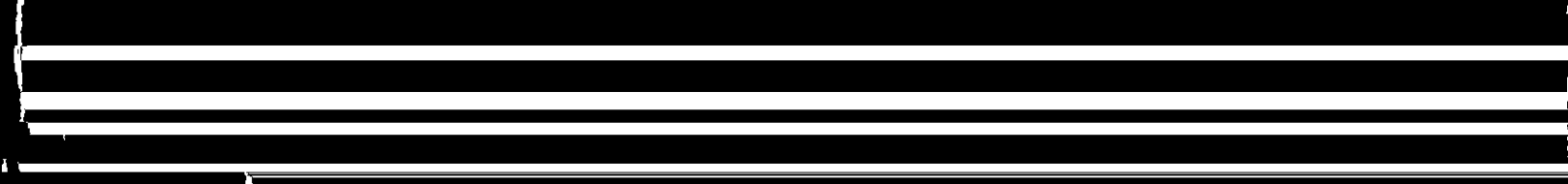
None noted.

## IX. BIBLIOGRAPHY

Liberal Studies Course Approval General Information



[Redacted text block]

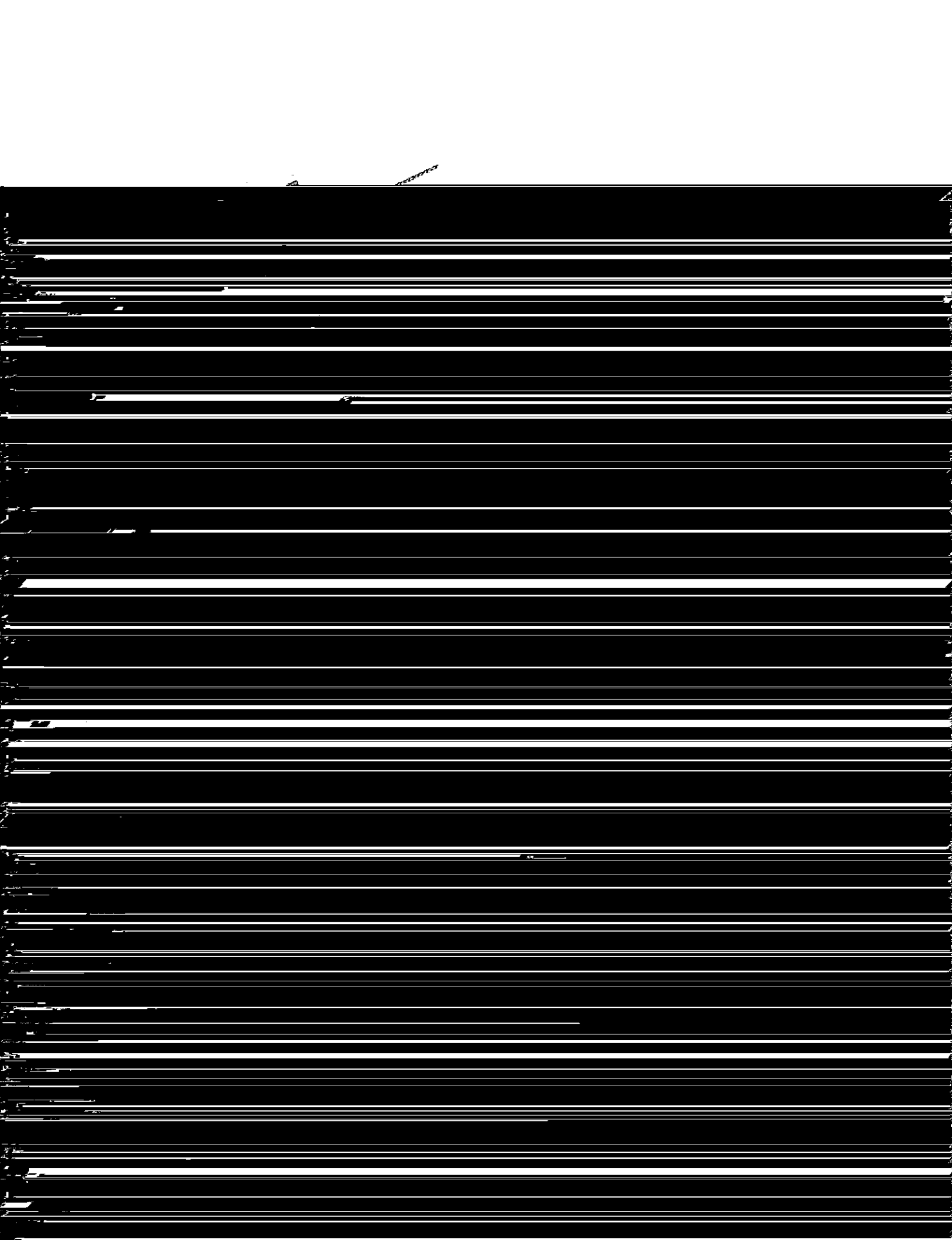


## Sample Assignment

The first basic step in solving force and motion problems generally involves identifying all of the forces acting on an object. This tactics box provides a step-by-step method for identifying each force in a problem.

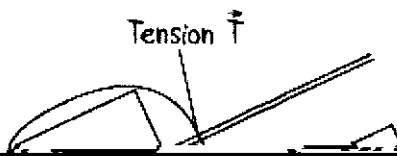
### Identifying forces

1. Identify the object of interest. This is the object whose motion you wish to study.
2. Draw a picture of the situation. Show the object of interest and all other objects—such as ropes, springs, or surfaces—that touch it.
3. Draw a closed curve around the object. Only the object of interest is inside the curve; everything else is outside.
4. Locate every point on the boundary of this curve where other objects touch the object of interest. These are the points where contact forces are exerted on the object.
5. Name and label each contact force acting on the object. There is at least one force at each point of contact; there may be more than one. When necessary, use subscripts to distinguish forces of the





Tension  $T$



## OLD COURSE SYLLABUS

PHYS 131 Physics I-C Lecture

3c-01-3cr

3 credits

3 lecture hours

Prerequisites: MATH 121, 125, at least concurrently

A calculus based course in general college physics; topics covered are similar to those covered in Physics 111 but treated in more depth through the use of calculus.

### II. COURSE OBJECTIVES

1. To provide through demonstrations examples of: motion and its causes, the physics of fluids, longitudinal waves (sound) and thermodynamics.

3. Moment of inertia
  4. Kinetic energy, work, power
  5. Conservation of angular momentum
- F. Other mechanics topics (6 lectures)
1. Rigid bodies in static equilibrium
  2. Elasticity
  3. Oscillatory motion
    - a) Simple harmonic motion
    - b) Energy of a simple harmonic oscillator
    - c) Pendulum
  4. Newton's universal law of gravity
  5. Fluids
    - a) Pressure
    - b) Archimedes' principle
    - c) Continuity
    - d) Bernoulli's equation
- G. Waves (4 lectures)
1. Mathematical representation of waves
  2. Speed of longitudinal and transverse waves
  3. Superposition and interference
  4. Standing waves
  5. Sound waves
  6. Doppler effect
- H. Thermodynamics (7 lectures)
1. Temperature
    - a) Measuring temperature
    - b) Temperature scales
    - c) Thermal expansion
  2. Heat and the first law of thermodynamics
    - a) Heat capacity
    - b) First law of thermodynamics
    - c) Thermodynamic processes
    - d) Heat transfer
  3. Kinetic theory of gases
    - a) Ideal gas
    - b) Molecular view of pressure and temperature
    - c) Heat capacity of an ideal gas
  4. Entropy and the second law of thermodynamics
    - a) Heat engines
    - b) Second law of thermodynamics
    - c) Entropy

#### IV. EVALUATION METHODS

The final grade for the course will be determined as follows:  
 20% Problem assignments collected and graded daily.