Course Description: This course will enable students of the physical sciences, engineering, and mathematics to test and validate physical theories involving classical electricity, magnetism, optics, and selected topics from modern physics. The purpose of these exercises is both to demonstrate physical principles and to allow the student to learn and appreciate the techniques of careful measurement.


More than one student may share a lab book, so an individual copy is not essential; but most students will find it convenient to have their own copy. Books are discussed during the first class meeting.

Course Goals/Objectives: Upon successful completion of the laboratory, the student will have learned and come to appreciate the techniques of good scientific measurement. The student will have validated quantitatively a number of physical principles in classical electricity, magnetism, optics, and selected topics from modern physics.

Student Contributions and Class Policies: The student must perform satisfactorily in a laboratory situation, taking a mature and active role in the lab. One lab session (and quiz) may be missed/skipped with no penalty. If more than one is missed and if the student wishes to make it up, this will happen only with instructor’s approval in very special circumstances.

*One special rule:* In order to pass this course, the student must pass both lecture and lab. For the lab this consists of a minimum 60% average.

Midland College does not tolerate scholastic dishonesty or academic misconduct in any form. Please read the MC Student Handbook on this subject.

Evaluation of Students: The laboratory grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Reports</td>
<td>90%</td>
</tr>
<tr>
<td>Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Course Schedule: The lab meets for four hours each week for the duration of the semester. The material will cover labs related to classical mechanics, thermodynamics and wave motion and will run parallel to the class material.

Intellectual Competencies:

1. **Reading** - Understanding the material incorporated in the text used in this course will require the student to analyze and interpret various physical concepts.

2. **Listening** - The primary teaching methods used in this course are discussion and lecture. Understanding the oral presentation of material will require the student to analyze and interpret various physical concepts.

3. **Critical Thinking** - Critical thinking, as exemplified by problem solving, is inherent in the study of any scientific discipline. Physical problems will be considered, discussed, and analyzed in this course.
ADA Statement: Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible. These conditions may include documented physical or educational disabilities. Please be aware that services or accommodations are not automatic. Each student must request them and secure the proper authorizations.

### Exemplary Objectives:

<table>
<thead>
<tr>
<th>Competency</th>
<th>Course Number</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>PHYS 2426</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>University Physics II</td>
</tr>
</tbody>
</table>

Competencies:

1. To understand and apply method and appropriate technology to the study of the natural sciences.

2. To recognize scientific and quantitative methods and the differences between these approaches and the other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.

3. To identify and recognize the differences among competing scientific theories.

**Instructor Information:**

**Instructor:** Dr. Tom O'Hara

**Office:** 110 SF  
**Office Phone:** 685-4617  
**Home Phone:** 561-5789  
**email:** tohara@midland.edu  
**tomohara@sbcglobal.net**

**Office Hours:**  
M  8 – 9 am  
T  8 – 9:30 am; 12:30 – 1 pm  
W  8 – 9 am  
Th  8 – 9:30 am; 12:30 – 1 pm  
F  8 – 9 am; 11 am – 2 pm  

**Division Dean:** Dr. Margaret Wade (125 SF)  
**Division Secretary:** Ms. Norma Duran (124 SF)  
**Ms. Brenda Smith (108 SF)**