### Description of Major
The physics program is designed to help students understand the concepts of classical and modern physics while also developing their ability to solve quantitative problems in these areas. It provides the opportunity for students to acquire the skills necessary to perform experimental work. The program develops students' ability to communicate, in form and content, both verbally and in writing, the results of scientific work. The physics program offers a background suitable for students planning to pursue graduate study or careers in industry, research, or teaching. It also provides a solid foundation for any career requiring analytical reasoning.

### Skills
A liberal arts education and study in a particular major will lead to the acquisition of a group of skills which enable one to solve problems, communicate effectively, and perform complicated tasks. These skills are essential in any career. The following is a list of important and commonly agreed upon career skills identified by UMM physics faculty as a part of the project to Improve Public Understanding of Liberal Learning (IMPULL). The skills are those which all or most students studying physics are likely to acquire through classroom instruction, co-curricular or extra-curricular activities.

#### Leadership/Management Skills:
- applying data
- analyzing
- identifying people who can contribute to the solution of a problem or task
- unwillingness to automatically accept the status quo
- identifying priorities and parameters

#### Communication/Writing Skills:
- comprehending written material
- writing factual material clearly and concisely
- understanding the feelings of others
- writing effectively
- expressing one's feeling appropriately
- summarizing

#### Instructing/Educational Skills:
- explaining
- teaching a skill, concept or principle to others
- ability to hear and answer questions perpectively
- instructing

#### Research/Analytical Skills:
- applying information creatively to solve specific problems
- manipulating information using expertise in mathematics
- using library and research facilities
- calculating
- breaking down principle into parts
- perceiving and defining cause and effect relationships
- applying appropriate methods to test the validity of data
- evaluating information against appropriate standards
- analyzing and evaluating ideas and presentations
- reading
- using numbers as a reasoning tool
- reviewing large amounts of material and extracting essence
- using a variety of sources of information
- designing an experiment, plan or model that systematically defines a problem

#### Artistic/Creative Skills:
- designing and or using audio-visual aids

#### Technical/Manual Skills:
- using tools assembling
- using computers
- setting up

#### Additional Skills, or Skills Peculiar to the Physics Discipline:
- analytical thinking
### Jobs Obtained by UMM Physics Graduates

Studies conducted by the UMM Career Center have shown that graduates obtain jobs that are both related to their major and jobs that may not be formally related to the major. Over 60% of the physics graduates from 1964-1998 said their job was in the same field or related to their undergraduate major. Other studies have shown that liberal arts graduates find employment that makes use of their skills, special knowledge, values, and interests, even though the employment field may not be related to their academic major. Listed below are some jobs obtained by UMM physics graduates:

<table>
<thead>
<tr>
<th>Astronomer</th>
<th>Minister</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astrophysicist</td>
<td>Naval Officer</td>
</tr>
<tr>
<td>Attorney</td>
<td>Physician</td>
</tr>
<tr>
<td>Bank Teller</td>
<td>Physicist</td>
</tr>
<tr>
<td>Clinical Research Coordinator</td>
<td>Physicist/ US Naval Officer</td>
</tr>
<tr>
<td>Computer Analyst/Manager</td>
<td>Power Systems Engineer</td>
</tr>
<tr>
<td>Computer Network Specialist</td>
<td>Professor</td>
</tr>
<tr>
<td>Computer Operations Manager</td>
<td>Quality Assurance Manager</td>
</tr>
<tr>
<td>Computer Scientist</td>
<td>Quality Control Engineer</td>
</tr>
<tr>
<td>Computer Software Developer</td>
<td>Research Assistant</td>
</tr>
<tr>
<td>Electrical Engineer</td>
<td>Retail Owner</td>
</tr>
<tr>
<td>Electronics, General Manager Engineer</td>
<td>Road Construction Supt.</td>
</tr>
<tr>
<td>Financial Analyst</td>
<td>Software Analyst/Consultant</td>
</tr>
<tr>
<td>Hotel Owner</td>
<td>Software Engineer</td>
</tr>
<tr>
<td>Hydrodynamic Physicist</td>
<td>Teacher</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>Teaching Assistant</td>
</tr>
</tbody>
</table>

There are many occupations that do not require a specific undergraduate major; they are often learned as a result of on-the-job training rather than prior education. What is sought among prospective employees is the development of certain skills and abilities that can be developed not only through an academic major but through courses taken as part of one's general education, and through internships, directed studies, tutorials, seminars, study abroad, work-study and summer employment, and volunteer experiences.

*Physics* (Adobe Acrobat Supplement)

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