

# B.S. IN APPLIED PHYSICS

| Code                                   | Title  | Credits        |
|--|--|----------------|
| <b>Major in Applied Physics (B.S.)</b> |  |                |
| CHE 113<br>& CHE 113D                  | General Chemistry<br>and General Chemistry Lab   | 4              |
| COS 111                                | Introduction to Programming  | 4              |
| ENR 321                                | Statistical Methods in Engineering   | 2              |
| MAT 125                                | Calculus 2 <sup>1</sup>  | 4              |
| MAT 222<br>or MAT 224                  | Differential Equations<br>Differential Equations with Linear Algebra                               | 4              |
| MAT 223                                | Multivariable Calculus   | 4              |
| PHY 260                                | Careers in Engineering and Physics Seminar   | 1              |
| PHY 292<br>& PHY 292D                  | General Physics I<br>and General Physics I Lab <sup>1</sup>  | 4              |
| PHY 296<br>& PHY 297                   | General Physics II<br>and General Physics II Lab   | 4              |
| PHY 302<br>& PHY 303                   | Electronics<br>and Electronics Lab   | 4              |
| PHY 312<br>& PHY 313                   | Modern Physics<br>and Modern Physics Lab   | 4              |
| PHY 322                                | Mathematical Methods in Physics and Engineering  | 2              |
| PHY 340                                | Mechanics  | 4              |
| PHY 352<br>& PHY 353                   | Computer Methods in Physics and Engineering<br>and Computer Methods in Physics and Engineering Lab | 4              |
| PHY 365                                | Physics Research Seminar   | 1              |
| PHY 490                                | Research   | 3              |
| <b>Code</b>                            | <b>Title</b>   | <b>Credits</b> |
| Major                                  |  | 53             |
| General Education *                    |  | 44-52          |
| Emphasis                               |  | 16-24          |
| Electives                              |  | 0-9            |
| <b>Total Credits</b>                   |  | <b>122-129</b> |

<sup>1</sup> MAT 124M with a C- or higher is a prerequisite for this course.

\* Courses whose number is followed by a letter fulfill a General Education requirement.  
Students may not declare a B.S. in Applied Physics and a Minor in Physics.

## Biomedical Emphasis (24 credits)

| Code                  | Title  | Credits |
|-----------------------|--|---------|
| BIO 120<br>& BIO 120D | Introduction to Molecular and Cellular Biology<br>and Introduction to Molecular and Cellular Biology Lab | 4       |
| BIO 214<br>& BIO 215  | Human Anatomy<br>and Human Anatomy Lab   | 4       |

|   |   |           |
|---|---|-----------|
| BIO 216<br>& BIO 217  | Human Physiology<br>and Human Physiology Lab  | 4         |
| PHY 422<br>& PHY 423  | Fluid Mechanics<br>and Fluid Mechanics Lab  | 4         |
| Choose from one of the following Optics courses:                |   | 4         |
| PHY 332<br>& PHY 333  | Optics<br>and Optics Lab  |           |
| PHY 432<br>& PHY 433  | Laser Fundamentals<br>and Laser Fundamentals Lab                                    |           |
| Choose one of the following courses on properties of materials: |   | 4         |
| PHY 400   | Electricity and Magnetism   |           |
| PHY 424<br>& PHY 425  | Electronic Materials and Devices<br>and Electronic Materials and Devices Laboratory |           |
| <b>Total Credits</b>  |   | <b>24</b> |

## Computational Emphasis (18 credits)

| Code   | Title                               | Credits   |
|--|-------------------------------------|-----------|
| COS 211  | Data Structures                     | 4         |
| MAT 242  | Introduction to Proofs <sup>1</sup> | 2         |
| MAT 248  | Mathematics of Computer Science     | 4         |
| Choose one of the following courses:           |                                     | 4         |
| COS 235  | Computer Systems                    |           |
| COS 277  | Software Development Fundamentals   |           |
| One computer science course 300 level or above |                                     | 4         |
| <b>Total Credits</b>                           |                                     | <b>18</b> |

<sup>1</sup> MAT 124M with a C- or higher is a prerequisite for this course.

## Electronics Emphasis (20 credits)

| Code   | Title   | Credits   |
|--|---|-----------|
| ENR 306<br>& ENR 307                                 | Digital Logic and Design<br>and Digital Logic and Design Lab                        | 4         |
| ENR 326  | Circuit Analysis & Simulations  | 4         |
| PHY 400  | Electricity and Magnetism   | 4         |
| PHY 424<br>& PHY 425                                 | Electronic Materials and Devices<br>and Electronic Materials and Devices Laboratory | 4         |
| Choose one of the following Optical Science courses: |   | 4         |
| PHY 332<br>& PHY 333                                 | Optics<br>and Optics Lab  |           |
| PHY 432<br>& PHY 433                                 | Laser Fundamentals<br>and Laser Fundamentals Lab                                    |           |
| <b>Total Credits</b>                                 |   | <b>20</b> |

## Mechanics Emphasis (16 credits)

| Code                 | Title  | Credits   |
|----------------------|--|-----------|
| ENR 308              | Statics and Mechanics of Materials   | 4         |
| ENR 356<br>& ENR 357 | Applied Strength of Materials<br>and Applied Strength of Materials Laboratory <sup>1</sup> | 4         |
| PHY 410              | Thermodynamics   | 4         |
| PHY 422<br>& PHY 423 | Fluid Mechanics<br>and Fluid Mechanics Lab   | 4         |
| <b>Total Credits</b> |  | <b>16</b> |

<sup>1</sup> ENR 265 and ENR 304 are prerequisites for this course.

## Optics Emphasis (16 credits)

| Code                 | Title  | Credits   |
|----------------------|--|-----------|
| PHY 332<br>& PHY 333 | Optics<br>and Optics Lab                         | 4         |
| PHY 400              | Electricity and Magnetism                        | 4         |
| PHY 432<br>& PHY 433 | Laser Fundamentals<br>and Laser Fundamentals Lab | 4         |
| PHY 440              | Quantum Mechanics                                | 4         |
| <b>Total Credits</b> |  | <b>16</b> |