

# BACHELOR OF ENGINEERING IN ELECTRICAL ENGINEERING, COMPUTER/DIGITAL TRACK

## Summary for Traditional Option

| COURSE                      | TITLE                                  | S.H.       |
|-----------------------------|--|------------|
|                             | Elec & Comp Engin                      | 41         |
|                             | Computer Engineering/Science           | 19         |
|                             | Science                                | 15         |
|                             | Engineering <sup>1</sup>               | 11         |
|                             | Math <sup>1</sup>                      | 18         |
|                             | Writing and Speech <sup>1</sup>        | 9          |
|                             | General Education Courses <sup>1</sup> | 18         |
| <b>Total Semester Hours</b> |  | <b>131</b> |

<sup>1</sup> See Curriculum Sheet for courses in these areas that are common to the three options.

| COURSE                                | TITLE  | S.H. |
|---------------------------------------|--|------|
| <b>General Education Requirements</b> |  |      |
|                                       | Core Competencies  | 12   |
|                                       | ENGL 1550 Writing 1  |      |
|                                       | ENGL 1551 Writing 2  |      |
|                                       | CMST 1545 Communication Foundations                                |      |
|                                       | Mathematics Requirement  |      |
|                                       | Arts and Humanities  | 6    |
|                                       | Natural Sciences   | 6    |
|                                       | Social Science   | 6    |
|                                       | Social and Personal Awareness                                      | 6    |
|                                       | General Education Elective   | 3    |
| <b>Major Requirements</b>             |  |      |
|                                       | ECEN 1521 Digital Circuits and Digital Circuits Laboratory & 1521L | 4    |
|                                       | ECEN 2611 Instrumentation and Computation Lab 1                    | 1    |
|                                       | ECEN 2612 Instrumentation and Computation Lab 2                    | 1    |
|                                       | ECEN 2632 Basic Circuit Theory 1                                   | 3    |
|                                       | ECEN 2633 Basic Circuit Theory 2                                   | 3    |
|                                       | ECEN 3710 Signals and Systems                                      | 3    |
|                                       | ECEN 3711 Intermediate Laboratory 1                                | 1    |
|                                       | ECEN 3712 Intermediate Laboratory 2                                | 1    |
|                                       | ECEN 3733 Digital Circuit Design                                   | 3    |
|                                       | ECEN 3741 Electromagnetic Fields 1                                 | 3    |
|                                       | ECEN 3742 Electromagnetic Fields 2                                 | 3    |
|                                       | ECEN 3771 Digital and Analog Circuits 1                            | 3    |
|                                       | ECEN 4803 Linear Control Systems                                   | 4    |
|                                       | ECEN 4811 Senior Laboratory  | 1    |
|                                       | ECEN 4844 Electromagnetic Energy Conversion                        | 3    |
|                                       | ECEN 4899 Senior Design Project                                    | 4    |
| <b>Computer Engineering/Science</b>   |  |      |
|                                       | CSIS 2610 Programming and Problem-Solving                          | 4    |
|                                       | CSIS 3700 Data Structures and Objects                              | 4    |
|                                       | ECEN 3734 Computer Design  | 3    |
| <b>CSCI/ECEN Electives</b>            |  |      |

|  |  |            |
|--|--|------------|
| Select 8 s.h. of approved CSCI/ECEN electives. |  | 8          |
| <b>Science</b>                                 |  |            |
| CHEM 1515 & 1515L                              | General Chemistry 1 and General Chemistry 1 Laboratory | 4          |
| PHYS 2610 & 2610L                              | General Physics 1 and General Physics laboratory 1     | 5          |
| PHYS 3705                                      | Thermodynamics and Classical Statistical Dynamics      | 3          |
| Science elective from approved courses         |  | 3          |
| <b>Math</b>                                    |  |            |
| Select 18 s.h. of MATH courses.                |  | 18         |
| <b>Total Semester Hours</b>                    |  | <b>132</b> |

## Courses Common to All Options

| COURSE                               | TITLE  | S.H.        |
|--------------------------------------|--|-------------|
| <b>Engineering</b>                   |  |             |
| ENGR 1500                            | Engineering Orientation                                | 1           |
| ENGR 1550                            | Engineering Concepts                                   | 2           |
| ENGR 1560                            | Engineering Computing                                  | 2           |
| MECH 2620                            | Statics and Dynamics                                   | 3           |
| ISEN 3710                            | Engineering Statistics                                 | 3           |
| Total Hours                          |  | 11          |
| <b>Mathematics</b>                   |  |             |
| MATH 1571                            | Calculus 1   | 4           |
| MATH 1572                            | Calculus 2   | 4           |
| MATH 2673                            | Calculus 3   | 4           |
| MATH 3705                            | Differential Equations                                 | 3           |
| MATH 3715                            | Discrete Mathematics                                   | 3           |
| Total Hours                          |  | 18          |
| <b>Writing &amp; Speech</b>          |  |             |
| CMST 1545                            | Communication Foundations                              | 3           |
| ENGL 1550                            | Writing 1  | 3           |
| ENGL 1551                            | Writing 2  | 3           |
| Total Hours                          |  | 9           |
| <b>General Education (codes)</b>     |  |             |
| ECON 2610                            | Principles 1: Microeconomics (Social Science)          | 3           |
| PHIL 2626                            | Engineering Ethics (Arts and Humanities)               | 3           |
| Arts and Humanities Elective         |  | 3           |
| Social Science Elective              |  | 3           |
| Social & Personal Awareness Elective |  | 6           |
| Total Hours                          |  | 18          |
| <b>Course</b>                        | <b>Title</b>   | <b>S.H.</b> |
| <b>Year 1</b>                        |  |             |
| <b>Fall</b>                          |  |             |
| MATH 1571                            | Calculus 1   | 4           |
| ENGR 1500                            | Engineering Orientation                                | 1           |
| ENGR 1550                            | Engineering Concepts                                   | 2           |
| CHEM 1515 & 1515L                    | General Chemistry 1 and General Chemistry 1 Laboratory | 4           |
| ENGL 1550                            | Writing 1  | 3           |
| <b>Semester Hours</b>                |  | <b>14</b>   |
| <b>Spring</b>                        |  |             |
| MATH 1572                            | Calculus 2   | 4           |
| ENGR 1560                            | Engineering Computing                                  | 2           |
| ECEN 1521 & 1521L                    | Digital Circuits and Digital Circuits Laboratory       | 4           |
| ENGL 1551                            | Writing 2  | 3           |

|                               |  |            |
|-------------------------------|--|------------|
| CMST 1545                     | Communication Foundations                          | 3          |
| <b>Semester Hours</b>         |  | <b>16</b>  |
| <b>Year 2</b>                 |  |            |
| <b>Fall</b>                   |  |            |
| MATH 2673                     | Calculus 3   | 4          |
| ECEN 2632                     | Basic Circuit Theory 1                             | 3          |
| ECEN 2611                     | Instrumentation and Computation Lab 1              | 1          |
| PHYS 2610 & 2610L             | General Physics 1 and General Physics laboratory 1 | 5          |
| General Education Requirement |  | 3          |
| <b>Semester Hours</b>         |  | <b>16</b>  |
| <b>Spring</b>                 |  |            |
| MATH 3705                     | Differential Equations                             | 3          |
| MATH 3715                     | Discrete Mathematics                               | 3          |
| ECEN 2633                     | Basic Circuit Theory 2                             | 3          |
| ECEN 2612                     | Instrumentation and Computation Lab 2              | 1          |
| MECH 2620                     | Statics and Dynamics                               | 3          |
| General Education Requirement |  | 3          |
| <b>Semester Hours</b>         |  | <b>16</b>  |
| <b>Year 3</b>                 |  |            |
| <b>Fall</b>                   |  |            |
| ECEN 3711                     | Intermediate Laboratory 1                          | 1          |
| ECEN 3733                     | Digital Circuit Design                             | 3          |
| ECEN 3741                     | Electromagnetic Fields 1                           | 3          |
| ECEN 3771                     | Digital and Analog Circuits 1                      | 3          |
| CSIS 2610                     | Programming and Problem-Solving                    | 4          |
| ISEN 3710                     | Engineering Statistics                             | 3          |
| <b>Semester Hours</b>         |  | <b>17</b>  |
| <b>Spring</b>                 |  |            |
| ECEN 3712                     | Intermediate Laboratory 2                          | 1          |
| ECEN 3710                     | Signals and Systems                                | 3          |
| ECEN 3734                     | Computer Design                                    | 3          |
| ECEN 3742                     | Electromagnetic Fields 2                           | 3          |
| ECEN 4844                     | Electromagnetic Energy Conversion                  | 3          |
| CSIS 3700                     | Data Structures and Objects                        | 4          |
| <b>Semester Hours</b>         |  | <b>17</b>  |
| <b>Year 4</b>                 |  |            |
| <b>Fall</b>                   |  |            |
| ECEN 4811                     | Senior Laboratory                                  | 1          |
| ECEN 4803                     | Linear Control Systems                             | 4          |
| CSCI/ECEN Elective            |  | 4          |
| PHYS 3705                     | Thermodynamics and Classical Statistical Dynamics  | 3          |
| ECON 2610                     | Principles 1: Microeconomics                       | 3          |
| General Education Requirement |  | 3          |
| <b>Semester Hours</b>         |  | <b>18</b>  |
| <b>Spring</b>                 |  |            |
| ECEN 4899                     | Senior Design Project                              | 4          |
| CSCI/ECEN Elective            |  | 4          |
| Science Elective              |  | 3          |
| General Education Requirement |  | 3          |
| General Education Requirement |  | 3          |
| <b>Semester Hours</b>         |  | <b>17</b>  |
| <b>Total Semester Hours</b>   |  | <b>131</b> |

## Student Outcomes

To achieve the Program Educational Objectives after graduation, our students must attain the following Student Outcomes by the time of their graduation:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to function on multi-disciplinary teams.
- An ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- A recognition of the need for, and an ability to engage in life-long learning;
- A knowledge of contemporary issues.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.