

# A.A.S. Industrial Cybersecurity Engineering Technology

(2 Years)

## Program Objectives:

1. Identify and respond to security concerns relating to operational cyber-physical systems.
2. Coordinate among key stakeholders for matters dealing with the security of cyber-physical systems.
3. Promote stakeholder awareness and education relating to cyber-physical systems security.
4. Establish optimal policies for managing risk in cyber-physical systems.
5. Use security criteria to influence technology selection and deployment.

## Student Outcomes:

1. Apply the fundamental principles of cyber-physical systems.
2. Explain the need and purpose of securing cyber physical systems.
3. Identify common weaknesses in cyber physical systems.
4. Evaluate the security of cyber physical systems by applying pertinent recognized standards.
5. Propose practices for managing cyber physical systems risk.
6. Implement techniques for defending cyber physical systems.

## Program Admissions Requirements

Students must meet with the Program Coordinator prior to beginning course work.

| Placement Test | Math |
|----------------|------|
| ACT            | 19   |
| SAT            | 460  |
| ALEKS          | 30   |

## General Education

The listing below includes program requirements that also fulfill General Education requirements.

| Code   | Title   | Credits |
|--|---|---------|
| Objective 1- ENGL 1101 or ENGL 1102 <sup>1</sup>   |   | 3       |
| Objective 2  |   | 3       |
| Objective 3 - Choose MATH 1143, MATH 1147, MATH 1153, MATH 1160, MATH 1170, or MGT 2216 <sup>1</sup> |   | 3-5     |
| Objective 5  |   | 4-5     |
| CHEM 1100  | Concepts of Chemistry                             |         |
| or CHEM 1111 & 1111L   | General Chemistry I and General Chemistry I Lab   |         |
| or CHEM 1112 & 1112L   | General Chemistry II and General Chemistry II Lab |         |

|                          |  |
|--------------------------|--|
| or PHYS 1100             | Essentials of Physics                                  |
| or PHYS 1101 & 1101L     | Elements of Physics and Elements of Physics Laboratory |
| or PHYS 1111 & PHYS 1113 | General Physics I and General Physics I Laboratory     |
| or PHYS 1112 & PHYS 1114 | General Physics II and General Physics II Laboratory   |

|                      |              |
|----------------------|--------------|
| Objective 6          | 3            |
| <b>Total Credits</b> | <b>16-19</b> |

<sup>1</sup> "P" courses are equivalent to the original course.

## Major Requirements

| Code  | Title  | Credits |
|---|--|---------|
| ESET 1121   | Basic Electricity and Electronics                            | 4       |
| ESET 1121L  | Basic Electricity and Electronics Laboratory                 | 3       |
| ESET 1140   | Applied Technical Intermediate Algebra <sup>1</sup>          | 5       |
| ESET 1162   | Industrial Safety and Regulations                            | 2       |
| ESET 1181   | Introduction to Cyber-Physical Systems                       | 3       |
| ESET 1182   | Information Technology Fundamentals                          | 3       |
| ESET 2282   | Introduction to Networking                                   | 3       |
| CYBR 3383   | Security Design for Cyber-Physical Systems                   | 3       |
| CYBR 3384   | Risk Management for Cyber-Physical Systems                   | 3       |
| CYBR 4481   | Defending Critical Infrastructure and Cyber Physical Systems | 3       |
| CYBR 4486   | Network Security for Industrial Environments                 | 3       |
| CYBR 4487   | Professional Development and Certification                   | 3       |
| INFO 4411   | Intermediate Information Assurance                           | 3       |
| Choose a minimum of twelve (12) credits from the following: |  | 12      |
| ESET 1120   | Introduction to Energy Systems                               |         |
| ESET 1120L  | Introduction to Energy Systems Laboratory                    |         |
| ESET 1122   | Electrical Systems and Motor Control Theory                  |         |
| ESET 1122L  | Electrical Systems and Motor Control Theory Laboratory       |         |
| ESET 2205   | Fundamentals of Control Logic                                |         |
| ESET 2220   | Thermal Cycles and Heat Transfer                             |         |
| ESET 2221   | Nuclear Steam Supply Systems                                 |         |
| ESET 2222   | Process Control Theory                                       |         |
| ESET 2226   | Process Control Devices Laboratory                           |         |
| ESET 2242   | Practical Process Measurements and Control                   |         |

|   |   |              |
|---|---|--------------|
| ESET 2251   | Reactor Theory Safety and Design                          |              |
| ESET 2292   | Electrical Engineering Technology I                       |              |
| ESET 2292L  | Electrical Engineering Technology I<br>Laboratory         |              |
| INST 2281   | Electrical Automation Theory                              |              |
| INST 2282   | Electrical Automation Laboratory                          |              |
| <b>Choose one of the following Objective 1 Courses:</b> |   | <b>3</b>     |
| ENGL 1101   | Writing and Rhetoric I                                    |              |
| or ENGL 1102  | Writing and Rhetoric II                                   |              |
| <b>Choose one of the following Objective 3 Courses:</b> |   | <b>3-5</b>   |
| MATH 1143   | Precalculus I: Algebra                                    |              |
| or MATH 1147  | Precalculus   |              |
| or MATH 1153  | Statistical Reasoning                                     |              |
| or MATH 1160  | Survey of Calculus  |              |
| or MATH 1170  | Calculus I  |              |
| or MGT 2216   | Business Statistics                                       |              |
| <b>Choose one of the following Objective 5 Courses:</b> |   | <b>4-5</b>   |
| CHEM 1100   | Concepts of Chemistry                                     |              |
| or CHEM 1111<br>& 1111L                                 | General Chemistry I<br>and General Chemistry I Lab        |              |
| or CHEM 1112<br>& 1112L                                 | General Chemistry II<br>and General Chemistry II Lab      |              |
| or PHYS 1100  | Essentials of Physics                                     |              |
| or PHYS 1101<br>& 1101L                                 | Elements of Physics<br>and Elements of Physics Laboratory |              |
| or PHYS 1111<br>& PHYS 1113                             | General Physics I<br>and General Physics I Laboratory     |              |
| or PHYS 1112<br>& PHYS 1114                             | General Physics II<br>and General Physics II Laboratory   |              |
| <b>Total Credits</b>                                    |   | <b>63-66</b> |

<sup>1</sup> Apprenticeship students may substitute MATH 1147 for ESET 1140.

## Degree Totals

| Code                 | Title  | Credits      |
|----------------------|--|--------------|
|                      | Program Admission Requirements                                   | 0            |
|                      | General Education  | 16-19        |
|                      | Major Requirements (Required General Education credits removed.) | 53           |
|                      | Free Electives   |              |
| <b>Total Credits</b> |  | <b>69-72</b> |

ISU Degree Requirements (<https://coursecat.isu.edu/undergraduate/degree/requirements/>)

ISU General Education for College of Technology (<https://coursecat.isu.edu/undergraduate/technology/#text>)

Major Academic Plan (MAP)