# Bachelor of Science in Cybersecurity Engineering

# 2023-2024

### General Program Presentation

Graduating with a Bachelor of Science in Cybersecurity Engineering necessitates the successful completion of a total of 132 credit hours (CH). These credit hours are distributed across different requirements, encompassing courses that are essential as well as those that can be chosen as elective courses. The table below shows how 132 credit hours are distributed across requirements:

Table 1: Program credit hours distribution.

| General Education Requirements | 36 Credits |
|---|---|
| College Requirements | 55 Credits |
| Program requirements | 41 Credits (Including 6 CH electives) |
| Total Credits Hours | 132 Credits |

## 1) General Education (36 Credits)

Students here are required to complete 36 credit hours distributed over five sections as follows:

### Communication (9 Credits)

Table 2: General education communication courses.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| ENL101 | English for Academic Studies | (3 credits) | 3 | | ICT095* |
| ENL102 | English Composition | (3 credits) | 3 | ENL101 | |
| ENL201 | Writing and Research | (3 credits) | 3 | ENL102 | |

*Preparatory Program: ICT 095 Information Technology Basics.

### Innovation and Creativity (6 Credits)

Table 3: Innovation and Creativity Ethics compulsory course.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| GEN150 | Professionalism and Ethics | (3 credits) | 3 | | |

Table 4: General education innovation and creativity elective courses (students should select one course from the following list).

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| GEN131 | Creativity and Problem Solving | (3 credits GEN150) | 3 | | |
| BUS101 | Entrepreneurship Essentials | (3 credits) | 3 | | |
| ENI110 | Intro. to Innovation and Creativity | (3 credits) | 3 | | |
| ENI140 | Design Thinking | (3 credits) | 3 | | |
| ENI150 | Innovation in Business Models | (3 credits) | 3 | | |
| ENI160 | Innovation and Globalization | (3 credits) | 3 | | |

## Global Citizen (6 Credits)

Table 5: General education global citizen compulsory course.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| INF120 | Computers and Information Systems | (3 credits) | 3 | ICT095 | |

Table 6: General education global citizen elective courses (students should select one course from the following list).

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| GEN201 | Globalization and Sustainability | (3 credits) | 3 | | |
| GEN202 | Global Citizenship in the Digital Age | (3 credits) | 3 | | |
| BUS201 | Global Economics and Trade | (3 credits) | 3 | | |

## Art and Humanities (9 Credits)

Table 7: General education art and humanities compulsory course.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| HST 101 | Islamic Culture and Values | (3 credits) | 3 | | |

Table 8: General education art and humanities elective course group I (students should select one course from the following list).

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| HST102 | Kuwait History | (3 credits) | 3 | | |
| ARB101 | Arabic Communication skills | (3 credits) | 3 | | |
| ART101 | Art Appreciation | (3 credits) | 3 | | |
| ART102 | Intro. To Media and Communication | (3 credits) | 3 | | |

Table 9: General education art and humanities elective course group II (students should select one course from the following list).

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| PHL101 | Introduction to Philosophy | (3 credits) | 3 | | |
| LAW101 | Law and Society | (3 credits) | 3 | | |
| PSY 101 | Introduction to Psychology | (3 credits) | 3 | | |
| SOC 101 | Introduction to Sociology | (3 credits) | 3 | | |

## Math and Science (6 Credits)

Table 10: General education math and science courses (6 credits).

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite | Note |
|---|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **MAT101** | Calculus 1 | (3 credits) | 3 | IMP099* or Equivalent | |
| **PHY101** | Physics 1 | (3 credits) | 3 | MAT101 | |

*Preparatory Program: IMP099 Precalculus.

## 2) College Requirements (55 Credits)

- **Math and Science (23 Credits)**

Table 11: Math and Science courses.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| **PHY105** | Physics Lab 1 | (1 credit) | 3 | | PHY101 |
| **MAT102** | Calculus 2 | (3 credits) | 3 | MAT101 | |
| **MAT120** | Discrete Mathematics | (3 credits) | 3 | | |
| **BIO101** or **CHM101** | Biology 1 or Chemistry 1 | (3 credits) | 3 | | |
| **BIO105** or **CHM105** | Biology 1 Lab or Chemistry 1 Lab | (1 credit) | 3 | | BIO101 / CHM101 |
| **MAT202** | Linear Algebra | (3 credits) | 3 | MAT101 | |
| **MAT221** | Number Theory | (3 credits) | 3 | MAT102 | |
| **MAT240** | Differential Equations | (3 credits) | 3 | MAT102 | |
| **ENG304** | Engineering Probability & Statistics | (3 credits) | 3 | MAT102 | |

- **Engineering requirements (32 Credits)**

Table 12: Engineering courses.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| **CCS200** | Digital Logic and Design | (3 credits) | 3 | PHY101 | |
| **CCS120** | Computational Thinking & Programming | (3 credits) | 3 | MAT120 | |
| **CCS121** | Computational Thinking & Programming Lab | (1 credit) | 3 | | CCS120 |
| **CCS220** | Object-Oriented Design & Programming | (3 credits) | 3 | CCS120 | |
| **CCS221** | Object-Oriented Design & Programming Lab | (1 credit) | 3 | | CCS220 |
| **CCS230** | Fundamentals of Database Systems | (3 credits) | 3 | CCS220 MAT120 | |
| **CCS231** | Fundamentals of Database Systems Lab | (1 credit) | 3 | | CCS230 |
| **CCS241** | Fundamentals of Computer Networks | (3 credits) | 3 | INF120 | |
| **CCS270** | Data Structures and Algorithms | (3 credits) | 3 | CCS220 | |

| | | | | | |
|---|---|---|---|---|---|
| **CCS271** | Data Structures and Algorithms Lab | (1 credit) | 3 | | CCS270 |
| **ENG308** | Numerical Methods | (3 credits) | 3 | MAT240 | |
| **CCS320** | Fundamentals of Operating Systems | (3 credits) | 3 | CCS270 | |
| **CCS330** | Web Engineering | (3 credits) | 3 | CCS230 | |
| **CCS331** | Web Engineering Lab | (1 credit) | 3 | | CCS330 |

## 3) Program Requirements (41 Credits):

- **Program Requirements (35 Credits)**

Table 13: Program courses.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| **CSE210** | Fundamentals of Cyber Security Engineering | (3 credits) | 3 | MAT202 | |
| **CSE310** | Cryptography and Data Security | (3 credits) | 3 | CSE210 | |
| **CSE311** | Cryptography and Data Security Lab | (1 credit) | 3 | | CSE310 |
| **CSE325** | Cybersecurity Risk Management | (3 credits) | 3 | CSE210 | |
| **CSE326** | Cybersecurity Risk Management Lab | (1 credit) | 3 | | CSE325 |
| **CSE341** | Network Security | (3 credits) | 3 | CCS241 | |
| **CSE360** | Ethical Hacking and Cyber Laws | (3 credits) | 3 | GEN150 CSE210 | |
| **CSE410** | Digital Forensics | (3 credits) | 3 | CSE310 | |
| **CSE411** | Digital Forensics Lab | (1 credit) | 3 | | CSE410 |
| **CSE420** | Software Security | (3 credits) | 3 | CCS320 | |
| **CSE421** | Software Security Lab | (1 credit) | 3 | | CSE420 |
| **CSE430** | Web Security | (3 credits) | 3 | CSE210 CCS330 | |
| **CSE431** | Web Security Lab | (1 credit) | 3 | | CSE430 |
| **CSE490** | Capstone Design 1 | (3 credits) | 3 | Program Approval | |
| **CSE491** | Capstone Design 2 | (3 credits) | 3 | CSE490 | |

- **Program Electives (6 Credits)**

Table 14: Program elective courses.

| Course Code | Course Title | Credit hours | Contact hours | Pre-requisite | Co-requisite |
|---|---|---|---|---|---|
| CSE480 | Internship | (3 credits) | 3 | Program Approval | |
| **CSE441** | Distributed Network Security | (3 credits) | 3 | CSE341 | |
| **CSE442** | IT Infrastructure Protection | (3 credits) | 3 | CSE325 | |

| CSE443 | Cyber Security Governance and Compliance | (3 credits) | 3 | CSE360 |
|--------|-------------------------------------------|-------------|---|--------|
| CSE445 | Operating System Security | (3 credits) | 3 | CCS320 |
| CSE446 | Fundamentals of Data Science & AI | (3 credits) | 3 | CSE310 |
| CSE495 | Special Topics in Cybersecurity | (3 credits) | 3 | Program Approval |

- Students can take up to three credits of technical electives from another program or institution.