

# Space Domain Cybersecurity

## A Systematic Approach using the SPaCe Domain Cybersecurity (SpaDoCs) Framework

### Course Description

Space Domain Cybersecurity examines the practical issues of developing and sustaining a secure cyber environment through all phases of the space mission lifecycle. The course is organized around the SPaCe Domain Cybersecurity (SpaDoCs) Framework.

The SpaDoCs Framework provides a comprehensive and systematic model for understanding and tackling all critical issues of cybersecurity in the space domain.

An examination of the Key Objectives—confidentiality, integrity, availability—provides the foundation for the course. From there, the space domain is examined layer by layer starting from the enterprise layer, then drilling down through mission, system and DevSecOps layers. Threats and vulnerabilities at each layer are highlighted.

Finally, first principles and key enablers of cybersecurity are woven into the discussion of system designs and cyber tactics and techniques. These technical threads help frame protection strategies and operational responses to the cybersecurity issues exposed by this course.

Course exercises center around practical application of the material to real-world space mission scenarios.

### Course Objectives

At the end of this course you should be able to...

#### ◆ Space Domain Cybersecurity Fundamentals

- Describe the big picture challenges of cybersecurity in the space domain as organized in the SPaCe Domain Cybersecurity (SpaDoCs) Framework
- List and define key objectives of cybersecurity (CIA Triad), the first principles of secure systems, along with cybersecurity enablers
- Identify cyber threats to and vulnerabilities of space missions and systems
- Characterize the various layers of the space domain and the elements that comprise them

#### ◆ Cybersecurity Principles

- Apply cybersecurity first principles to specific space domain threats and vulnerabilities
- Associate specific cybersecurity enablers with various space domain threat or vulnerability scenarios

#### ◆ Cybersecurity Threats and Vulnerabilities

- Analyze threats and vulnerabilities and their attack vectors for various space domain scenarios at each layer

#### ◆ Cybersecurity Design Implementation

- Apply cybersecurity design principles to a space system architecture

In partnership with...



### Course Topics

#### ◆ Course Intro

- Course Objectives
- Framework Overview

#### ◆ Cybersecurity Fundamentals

- Space Domain Layers
- Enterprise Layer
- Mission Layer
- System Layer
- DevOps Layer

#### ◆ Threats and Vulnerabilities

- First Principles of cybersecurity applied in the space domain
- Enablers of security and mission success in space enterprises

### Who Should Attend

Cybersecurity professionals who want to understand the space domain, or space professionals who want to understand the cyber domain.

### Testimonials

*“The best part of the course was...the deep dive into each of the layers of the space domain and how they relate to cybersecurity.”*

*“The method of instruction was very interactive and engaging.”*

*“The real-life scenarios helped in understanding the material.”*