

Decision Making Simulation

Module Learning Outcomes.

Participants will:

1. Apply the knowledge gained throughout the week's instruction to understand better the cause and effect of cybersecurity practice by reacting to and solving real-world, scenario-based unexpected inimical events
2. Recognize different types of attacks on computing systems and the ensuing "real world" problems these attacks can produce
3. Hypothesize the connectivity between the various unexpected events and develop courses of action to respond to the larger connected implication.
4. Develop educated skills needed for decision making to prevent and defeat various mal- and social engineering attacks activity in the first place
5. Connect the important role humans play in the digital world to what might happen and understand how to minimize accidental and intentional human errors

The Module addresses the following First Principles:

- least privilege,
- process isolation,
- domain separation
- modularity, and
- abstraction

Description

This module is a decision making simulation that addresses the least privilege, modularity, process isolation, and abstraction cybersecurity First Principles by illustrating the essential role and fallibility of the human user in cybersecurity, the interconnectivity and aggregation of activity globally, and the "real world" implications of the lack of cybersecurity practice. The exercise demonstrates the ambiguity of the origin and intention of interruption to and/or corruption of digital media using "real world" situations.

Participants as an entire group will be informed of various cyberactivities occurring globally over a period of time with the international security situation becoming increasingly more perilous. A brief description of the interconnectivity of critical infrastructure will be provided to inform novices of the critical synthesis of aggregated activities occurring in one infrastructure.

The will then be divided into teams to assess the situation and prepare recommendations to a “decision maker” on how to respond to the aggregated activities and which Cybersecurity First Principles are violated and how. The recommendations will be presented to the assembled entire group to provide all participants the opportunity to observe and evaluate and respond to each group’s different assessment and analysis of and recommendations for responding to the individual and aggregated activities.

Learner Centered Classroom

All participants will be actively learning as part of the different groups’ assessing the situation and preparing the group’s recommendation and Cybersecurity First Principles involved. Since this is a combination camp, the middle and high school students will be integrated into groups incorporating both. After an initial short introduction of the global situation, the different teams will be provided group work space to assess and analyze the situation and prepare their recommendations to the decision maker. Teachers will serve as an “informational resource” and provide supervision (as needed) for the student groups.

The first task for each group will be to organize to solve the problem provided them. Then each participant not only will be participating as part of the group’s efforts to assess and analysis the situation and prepare recommendations for addressing the identified activities, but completing different tasks as assigned by the leadership core of the group. Not only does each group have to assess the situation and develop responses to what is happening and the cybersecurity First Principles involved, but each group also must prepare an oral briefing of their recommendations to the decision maker and the other groups.

Assessment

Assessment will be continuously conducted by both the teachers with each group and by the instructor and the instructor’s knowledgeable assistant instructors. The instructor and the assistant instructors will continuously move between the groups assessing the groups’ progress and providing knowledgeable guidance, advice, and recommendations. Each group’s recommendation and oral presentation will be provided “feedback” by the instructor and other student and teacher participants at the end of the oral presentation.

Suitability to Various Groups

This activity is designed to occur at the end of the camp’s instruction so all participants should have some knowledge of the cybersecurity First Principles and the different types of attacks of the information network. The middle school students should have at least a summary knowledge of cybersecurity’s First Principles if not the implications of the global situation being assessed and analyzed. The middle school students should also be able to contribute to preparation of the oral briefing to be delivered at the end of the assessment and analysis at the very least.

The high school students should have better than summary knowledge not only of cybersecurity's First Principles but also the implications of the scenario's aggregated cyberactivities from the camp's instruction and greater learning from an additional 3-5 years of education. High school students will be able to exercise this greater knowledge to organize, assess, analyze, synthesize, and develop responses to the cyberactivities and their implications.

Teachers have the experience of supervising middle and high school students, monitoring classroom activity, and guiding students in searches for solutions from data given.

Teacher Student Interaction

All participants will have interaction with the primary and assistant instructors during the entire simulation. All will receive the data about the global situation and the cyberactivity happening and their instructions. Middle and high school students will have the opportunity to interact with the instructor and assistants as they circulate between working groups assessing progress and providing advice and guidance. Teachers will further have access to the instructor and assistants for additional expertise on the situation depicted and advice on what is expected of the students at the end of the work session.

Students will have access to their assigned teacher "experts" during the group work session for advice, guidance, and recommendations on what to do and how to do it.