



# ICS Cyber Security Assurance

## Course Syllabus

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**The ICS Cyber Security Assurance – Core Content and Approach****Integrated Course (3 Days Class Session + 2 Days Workshop)**

Total 3 days for class session + 2 days for workshop session that include the essentials of IT Engineering, Cyber Security Engineering, ICS Engineering and ICS Cyber Security Engineering to form the building knowledge of the ICS Cyber Security Assurance.

- **3 Days Class Session**, these 3 days class session will include body of knowledge of ICS Cyber Security Assurance including the case studies and integrated workshop. Following are some of the material contents as the scope of this session:
  - IT & ICS Engineering + Cyber Security & ICS Cyber Security Engineering
    - The baseline knowledge is covered under the ICS Cyber Security Management System course
    - This course will explore some flashback and more advance context and practices of those topics in correlation with ICS Cyber Security Assurance body of knowledge
  - ICS Defense-in-Depth & Reference Model
  - ICS Security Architecture Management
  - ICS Cyber Security Assurance
    - ICS Cyber Attack & Case Studies
    - Securing the Critical Infrastructure
    - Recommended Practices of Securing ICS
    - ICS Cyber Security Assessment
    - The Next Step
- **2 Days Workshop Session** to cover ICS Cyber Security Grand Workshop as per following:
  - ICS Cyber Security Audit & Assessment with integrated workshop (Maturity Assessment, Vulnerability Assessment, Penetration Testing, and non-Intrusive Assessment using ICS Security Monitoring).
  - Grand Workshop
    - FedPlant testbed (custom PLC using Raspberry Pi and Arduino families with 3D printed and bricks structure of process miniature simulated)
    - Emulated environment using virtualization combined with the FedPlant testbed
    - Integrated workshop to explore the ICS Cyber Security posture of the ICS environment using CSET Tools combined with several methods of ICS Cyber Security assessment (Maturity Assessment as the role play, VA & PT as the further assessment methods, and non-Intrusive assessment using ICS Security Monitoring as an alternative)
    - Group exercise (team of 2-4 members, depends on the total training participants) to simulate real world ICS Cyber Security Assurance practices in form of simplified full scale of ICS Cyber Security audit & assessment and performing detailed ICS Cyber Security Risk Assessment in order to generate the proper Final Report

- Final Report will reflect the actual ICS Cyber Security posture, existing vulnerabilities, security gaps, risk summary, risk register and the recommendation to secure the ICS environment.

▪ **Core Contents**

This training is a mixed training that combines four fundamental of engineering subject (IT, ICS, Cyber Security, and ICS Cyber Security) as the next milestone of an advanced ICS Cyber Security Assurance training experience.

▪ **Building the Mindset, Develop the Skills**

The main goal of this training is to develop the proper mindset and develop the skills related to ICS Cyber Security Assurance. This training combines all of the essential aspects of IT, ICS, Cyber Security, and ICS Cyber Security engineering to blend it into one single package that has pure emphasis to create the next ICS Cyber Security professional.

▪ **FedPlant ICS Engineering and Cyber Security Testbed**

FedPlant as the ICS Testbed to be used across the course learning process to help participants understand the ICS in its engineering aspect, design, function, operations, maintenance, audit and assessment, vulnerability assessment, penetration testing, and cyber security assurance. This testbed will be used during the offline course setup.

# FEDPLANT



## OVERVIEW

An ICS testbed to simulate real process (pumpjack and oil processing) through real device (PLC and HMI) to bring new learning environment in exploring ICS engineering and its Cyber Security Assurance. Safety operational features also integrated into the physical control mechanism integrated with logical setup



**ICS REAL PROCESS**

Production and processing plant process simulation using embedded system, 3D Printing and bricks model.



**PLC AND HMI**

PLC using Raspberry Pi with 16 Digital I/O, remote PLC using Arduino with more than 16 digital and analog I/O programmed using FBD (IEC 61311-3). Local and remote supervision and control provided through push button and HMI.



**MODULAR & EXPANDABLE**

Modular system with baseline platform for ICS testbed simulation. Expandable option to include more models and to explore more on ICS Cyber Security.

## Your ICS Engineering & Cyber Security Testbed



Design, program, test, manage and explore your own ICS process. Fully compatible to be interconnected to other Purdue Model ICS layers (L2, L3 and L4) either via real or virtual environment to explore more on ICS Cyber Security Assurance

FedPlant - Your ICS Engineering and Cyber Security Testbed

**Course Syllabus**

▪ The Coverage

Following is the big idea to summarize the content inside the ICS Cyber Security Assurance Course:

CLASS SESSION



The Essentials of IT Engineering



The Essentials of ICS Engineering



The Fundamental of Cyber Security



The Fundamental of ICS Cyber Security



The ICS Cyber Security Assurance



ICS Security Controls, Recommendation and Best Practices

LAB & WORKSHOP



ICS Cyber Security Risk Assessment



Developing the Emulation Environment for Audit



ICS Cyber Security Audit



Exploring the TESTBED Environment



Formulating the Risk Register and Final Report



Lab & Workshop Completion

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