Introduction to C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance)

- Introduction to Command & Control (C2)
- C2 based Terms and Definitions
- Communications and Computers
- Intelligence, Surveillance and Reconnaissance (ISR)

C2 Processes & C4ISR Architecture Framework

- The OODA Loop
- Operational View C2 Architecture
- DoD Architecture Framework (DoDAF)
- C4ISR Architecture View, Definitions and Roles

Modular Command and Control Evaluation Structure (MCES)

- C2 System Boundary Formulation
- C2 Process Definition
- Integration of Statics and Dynamics
- Specification of Measures
- Aggregation of measures

Decision Making

- Decision Making Process
- Decision Making Styles and Decision Support
- Decision Analysis

Combat Theory & Combat Modeling

- Introduction to combat theory & combat modeling
- Combat Processes
- Case Study: Navy Battle Modeling
- Deterministic models
- Monte Carlo models
- DIME on PMESII models

**Attrition Models & Measure of Effectiveness**
- Measure of Effectiveness
- Estimating Future Performance
- Lanchester Equations
- Not-Attrition based Models

**Introduction to ISR**
- Overview of Intelligence, Surveillance and Reconnaissance (ISR)
- ISR Processes
- Information and knowledge obtained through observation, investigation, analysis, or understanding
  - Imagery Intelligence-IMINT
  - Signals Intelligence -SIGINT
  - Measurement and Signatures Intelligence (MASINT)
- Surveillance versus Reconnaissance

**Sensor & Data Fusion**
- Platforms, Sensor Systems and Target Signatures
- Signals Intercept and Direction Finding
- IR- Multi-, Hyper-, Ultra-Spectral
- Sensor Fusion

**Communications**
- Communications: Overview, Fundamentals and Definitions,
- Networks, Coding and Error Detection
- Military Communication Channels
- SATCOM and C4ISR Architecture Evolution
- Digital Security

**Interoperability - Enterprise Architecture as Strategy**

- Interoperability Principles
- Syntactic interoperability
- Semantic interoperability
- Cross-domain interoperability
- Service Oriented Architectures
- Open Standards for interoperability

**Network Enabled Capability (NEC) and Network Centric Warfare (NCW)**

- NEC Concepts & Principles
- Information Sharing, Collaboration
- Shared Situational Awareness
- NCW Principles, Network Centric Operations
- NCW Frameworks & Architectures

**Defense Information Enterprise (IE) Architecture (DIEA)**

- Operational Requirements Basis
- Required IE Capabilities
- Services View
- Linkage of Activities, Services, and Rules to Capabilities
- Compliance Criteria
- Illustrative Use Cases

**An Example - Naval C4ISR System**

- Sensors
- Weapons
- Air Defense Systems
- Submarine Defense Systems
- Surface Defense Systems
- Navigation
- Link Systems (Link 11, 16, 22 etc.)