



ARTIFICIAL  
INTELLIGENCE

## **COURSE CONTENTS:**

### **1. ARTIFICIAL INTELLIGENCE FUNDAMENTALS**

- a. History of AI
- b. Principals of AI
- c. Fundamental Concepts in Cyber Security
- d. Intersection of AI and Cyber Security (I- Automation, Robotics & AI ii- Big Data  
iii- Types of Data in AI & its Processing)

### **2. TYPES OF AI**

- a. Artificial General Intelligence
- b. Machine Learning
  - Basics of Machine Learning (ML) and its Types
  - Supervised and Unsupervised Learning Algorithms
  - ML Applications in Intrusion Detection
- c. Natural Language Process
- d. Deep Learning
  - Introduction to Neural Networks
  - Convolutional Neural Networks (CNNs) for Image Analysis
  - Recurrent Neural Networks (RNNs) for Sequence Data
- e. Expert Systems
- f. Secure AI Models
  - Adversarial Attacks on AI Systems

- Robustness in AI Models
- Explain ability and Interpretability in AI

### **3. LEVELS OF AI**

- a. Reactive Machines
- b. Limited memory
- c. Theory of Mind
- d. Self-aware
- e. Artificial Narrow Intelligence (ANI)
- f. Artificial General Intelligence (AGI)
- g. Artificial Super Intelligence (ASI)

### **4. APPLICATION OF AI**

- a. Use of AI in cyber security
  - a.1. Data security
  - a.2. Social media
  - a.3. Robotics
  - a.4. Astronomy
  - a.5. Education
  - a.6. E-commerce
  - a.7. Gaming
  - a.8. Agriculture
- b. Use of AI in warfare systems
  - b.1. Radar system
  - b.2. Sonar system
  - b.3. Missile system
  - b.4. Torpedo system

- b.5. Electronic warfare
- b.6. Communication system
- b.7. Autonomous ships and vessels
- b.8. Weather prediction and oceanography
- b.9. Ship maintenance and repair
- b.10. Cargo handling and logistics
- b.11. Autonomous underwater vehicles (AUVs)

c. Use of AI in Logistics and Transport

- c.1. Travel and transport
- c.2. Automotive industry
- c.3. Energy
- c.4. Finance

d. Monitoring of Threats and Safety of military systems

- d.1. Navigation and route optimization
- d.2. Maritime safety and security
- d.3. Maritime search and analysis
- d.4. Maritime risk assessment and management

**5. SECURITY CHALLENGES IN AI SYSTEMS**

- a. Challenges of Securing Information in AI
- b. Information Security and Controls
  - AAA
  - PPP
  - CIA
  - Basic three controls
- c. Attacks and Defenses