Protected Area Technician Online Learning Journey

INTRODUCTION

Overview

- Inspiration for the course
- Is this course right for you?
- Certifications available
- Recommended Prerequisites
- What is Protected Area Technician
- Structure of the Course Path
- How to navigate the ECCP Website
- How to use Easy Networking Academy Links

1 TOOLS FOR INFORMED DECISION MAKING

Overview

Module 1 Conservation Goals, Strategy, and Management Plan

- Conservation Goals
- Strategy and Management Plan
- Protected Area Technologies
- Sustainable Tools for Protected Area Technologies

Module 2 Operational Need and Risk

- What is the Operational Need
- Different layers of operational capabilities
- The flow of data from Point to Hub

Module 3 Connectivity, Communications, and Data Transmission

- Radio Waves
- Wireless Backhaul
- VHF Radio Communications
- GSM Communications
- ETHERNET/IP Communications
- Satellite Communications

Module 4 Information and Data Capture

- Observational Reporting
- Surveillance and Monitoring Tools
- Tracking Devices (human, wildlife, and vehicle)
- Perimeter Security

Module 5 Voice of Law Enforcement

- Domain Awareness Systems
- Drone Models
- System Diagram
- Concept of Operations

Learning Outcomes

Module 1

- Analyze the goals of conservation initiatives.
- Develop and evaluate strategies and management plans for protected areas.
- Identify and assess the use of technologies that support conservation and management.

Module 2

- Describe the purpose and structure of an operational need statement.
- Understand the flow of operational requirements and how data flows from the field to HQ for decision-making.

Module 3

- Explain various communications technologies used in remote environments, including VHF, GSM, ETHERNET, and satellite systems.
- Compare the advantages and limitations of different communication methods in terms of reliability, coverage, and cost.

Module 4

- Identify and use key tools for observational reporting, surveillance, and perimeter security.
- Understand the application of drone technologies for wildlife, human, and vehicle tracking.

Module 5

- Understand how individual technologies and systems integrate into a comprehensive domain awareness system.
- Interpret data models, system diagrams, and concept of operations documents to support decision-making in protected areas.

Recommended Prerequisites

- An interest in learning about how technology is used to support conservation management.
- A passion for nature.

2 INFRASTRUCTURE FUNDAMENTALS

Overview

Module 1 Basic Radio Physics

- Fundamentals of Radio Physics
- Link Budgets
- Path Loss

Module 2 Antennas

- Importance of Antennas
- Omni Antennas Work
- Antenna Properties
- OFI Antennas
- Amplifiers
- Deploying Antennas

Module 3 Electronics and Electricity

- Basic Electronic and Electronics
- Charge, Voltage, and Current
- Resistance / Ohm's Law
- Power
- Energy and Work
- DC and AC
- Batteries
- Embedded Computing and Boards
- Sensors

Module 4 Power

- Power Sources
- Renewable Energy
- Solar
- Planning Solar Energy
- Batteries
- Charge Controllers
- Power Management
- Power Optimization

Module 5 Telecommunications

- Clarification of Telecommunications
- Carrier
- Location of Infrastructure
- Solid
- Wireless Frequency
- Use Cases
- Real Criteria Components

Learning Outcomes

Module 1

- Explain the fundamental principles of radio physics.
- Calculate and interpret link budgets and path loss in communications systems.

Module 2

- Understand the role and efficiency of various antenna types.
- Describe Omni-directional antennas and their role in point-to-multipoint systems.
- Explain the importance of small-cell gain, polarization, and radiation patterns.
- Construct basic OFI antennas and understand their limitations and applications.
- Plan and implement effective antenna deployment strategies in the field.

Module 3

- Understand basic electrical concepts including charge, voltage, current, and resistance.
- Apply Ohm's Law to practical problems and circuit analysis.
- Differentiate between DC and AC systems and understand battery technologies.
- Work with embedded computing platforms and sensors for data collection and control.

Module 4

- Identify various power sources with a focus on renewable energy, especially solar.
- Plan and implement solar power systems, including panels, batteries, and charge controllers.
- Apply principles of power management and optimization for off-grid energy use in the field.

Module 5

- Understand the fundamentals of telecommunications and the role of carriers.
- Assess infrastructure needs based on location, wireless frequency, and use case requirements.
- Compare telecommunications options using key criteria to choose the most suitable for a different use cases.

Recommended Prerequisites

- Desirable: A basic understanding of Physics

3 NETWORKING

Overview

Module 1 Introduction to Networking

- Networking Basics

Module 2 Data Team (Data Demodulator)

Assistant Language: English Spanish French Arabic Brazilian Portuguese

- Network Support and Security

Module 3 Advanced Topic (Data Networking)

Assistant Language: English Spanish French Arabic Brazilian Portuguese

- Networking Devices and Initial Configuration
- Network Addressing and Advanced Subnetting

Assistant Language: English Spanish French Arabic Brazilian Portuguese

Optional Advanced Courses

Learning Outcomes

Module 1

- Explain the importance and applications of networking technologies in modern wireless settings.

Module 2

- Describe how multiple communication devices support field operations, data collection, and environmental monitoring.

Module 3

- Understand the basics of computer networking, including network types, components, and functions.
- Identify common network support and security practices to ensure reliable and secure communication in remote environments.

Module 5

- Set up and configure basic networking devices such as routers and switches.
- Apply IP addressing techniques and perform advanced network troubleshooting.

Recommended Prerequisites

- Infrastructure Fundamentals
- Basic understanding of computer components and how to power and boot them.

4 INTERNET OF THINGS (IOT)

COMING SOON! JULY 2026

Overview

- Module 1 What is the Internet of Things?
- Module 2 Key Characteristics of IoT Systems
- Module 3 Communication Technologies for IoT (Connectivity)
- Module 4 Security and Scalability
- Module 5 Building with Arduino and Raspberry Pi
- Module 6 Designing Your Own IoT Network
- Module 7 From Plan to Field Deployment

Learning Outcomes

Recommended Prerequisites

5 DEPLOYING DEVICES

COMING SOON!

Overview

- Module 1 The Tech Stack / Device Requirements And Specifications
- Module 2 Connecting Remote To Your Network
- Module 3 Deploying Radio
- Module 4 Deploying Cameras
- Module 5 Deploying Trackers
- Module 6 Deploying Antennas
- Module 7 Field Deployment Tips And Tricks

Learning Outcomes

Recommended Prerequisites

6 DATA MANAGEMENT AND ANALYSIS

Overview

Module 1 Introduction

- Data Management
- Data Lifecycle Management

Module 2 Data Models

- Model Modeling
- Model Creation

Module 3 Data Capture

- Data Capture
- Identifying Trends and Patterns

Module 4 Data Integration

- Labeling
- Cleaning
- Slicing

Module 5 Data Storage and Backups

- Why Data Storage Matters
- Types of Data Storage
- Hardware Requirements
- Software & Databases
- Accessing the Archives
- Backup Strategies

Module 6 Data Analysis

- The OODA Loop
- Software used in Data Analysis

Learning Outcomes

Module 1

- Understand the principles and importance of data management in conservation technology projects.
- Differentiate between raw data and processed data.
- Recognize the role of data in decision-making and system performance.

Module 2

- Understand the purpose and structure of data models in conservation systems.
- Create basic data models that represent real-world conservation scenarios.
- Use modeling techniques to organize and interpret collected data.

Module 3

- Apply effective methods for capturing data, including sensors, manual entry, and automated systems.
- Identify meaningful trends and patterns within collected datasets.
- Evaluate the quality and consistency of captured data to inform system improvements.

Module 4

- Integrate data from multiple sources to create a unified, comprehensive dataset.
- Implement file management practices to ensure data is organized, labeled, and accessible.
- Understand the importance of version control and documentation for data integration.

Module 5

- Select appropriate storage solutions based on data volume, access needs, and security requirements.
- Implement backup strategies to prevent data loss and ensure long-term preservation.
- Manage data storage infrastructure, including hardware and software considerations.

Module 6

- Apply basic data analysis techniques to draw meaningful conclusions from collected data.
- Learn about different tools available used for analyzing conservation data.
- Interpret findings and apply them to support conservation decision-making and system improvements.
- Communicate findings effectively to both technical and non-technical audiences.

Recommended Prerequisites

- Infrastructure Fundamentals
- Networking
- Internet of Things (IoT)
- Deploying Devices

7 SOFTWARE INTEGRATION AND APIS

Overview

Module 1 Understanding the world of APIs

- What is an API
- Why APIs are essential for data integration
- Real-world examples

Module 2 Working with data across APIs

- Web Services and the Internet
- Understanding API requests
- Requests and Responses
- When things go wrong

Module 3 Authentication and Security

- Why API Keys is authentication
- How do you use API's and API
- What's an API Leak Crisis like?
- Basic security practices for handling API Keys

Module 4 API Specifications

- How data is structured when sent via APIs
- JSON (JavaScript Object Notation)
- JSON Examples
- CSV (Comma Separated Values)

Module 5 Working with API Data through APIs

- Typical GPS data
- Essential GPS data
- Challenges
- Strategies for Interpreting GPS data

Module 6 Practical Examples

- Popular Tools

Learning Outcomes

Module 1

- Define what an API is and explain its role in data integration and system communication.
- Identify common components and layers of an API.

Module 2

- Interact with RESTful APIs to send and receive data.
- Understand the structure of requests and responses, including methods, and status codes.
- Recognize common API errors and how to handle and understand what they indicate about the problem and how to fix it.
- Interact with RESTful APIs to send and receive data in common formats like JSON.

Module 3

- Understand the importance of authentication and security in API use.
- Identify and work with common types of authentication (e.g., API keys, OAuth).
- Implement basic security measures to secure API interactions.

Module 4

- Identify and work with common types of authentication (e.g., API keys, OAuth, JWT).
- Implement basic security measures to secure API interactions.

Module 5

- Understand the structure and meaning of common GPS data formats (e.g., NMEA 0183, GPX, proprietary).
- Identify and access key points to retrieve real-time and historical GPS data via APIs.
- Handle authentication, rate limits, and errors when working with GPS APIs.

Recommended Prerequisites

- Infrastructure Fundamentals
- Networking
- Internet of Things (IoT)
- Deploying Devices
- Data Management

8 CYBERSECURITY

Overview

CCP Introduction to Cybersecurity

Introduction to Cybersecurity (Cisco Networking)

Available Languages: English Spanish French Arabic Brazilian Portuguese Russian Simplified Chinese Traditional Chinese Thai Vietnamese

- Introduction to Cybersecurity
- Ethics, Concepts, and Techniques
- Protecting your Data and Privacy
- Protecting the Organization

Module 1 Threats and Hazards

- What is Cybersecurity and Why it Matters
- Common Cyber Threats & Conversations
- The Impact of Cyber Threats on Protected Areas

Module 2 Risk Identification, Classification, and Audit

- Why No Organization (Organization) need this Assessment
- The 5 Core Steps of a Risk Assessment
- Steps in a Security Audit

Module 3 Mitigation Measures and Best Practices

- The Layered Approach to Cybersecurity
- Negative Strategies for Common Cyber Threats
- Securing Communication Networks
- Creating an Incident Response Plan
- Sustaining Long Term Cybersecurity

Learning Outcomes

Module 1

- Identify primary cyber threats to conservation technology systems.
- Evaluate the lifestyle impact and ROI's (Unexpected hazards) and why they are important.
- Understand the CIA Triad.

Module 2

- Grab the risks of a structured Cybersecurity Audit.
- Identify and categorize critical assets in a conservation technology system.
- Classify risk based on likelihood and impact.
- Create a Risk Mitigation Plan Register to track identified risks and mitigation strategies.
- Conduct a security audit using a structured framework.
- Apply risk assessment principles through an interactive network security exercise.

Module 3

- Implement layered security strategies to protect conservation technology systems.
- Develop a Cybersecurity Incident Response Plan for handling cyberattacks.
- Establish long-term networking measures to maintain cybersecurity over time.

Recommended Prerequisites

- Infrastructure Fundamentals
- Networking
- Internet of Things (IoT)
- Deploying Devices
- Data Management
- Software Integration and APIs

9 MAINTENANCE AND SUSTAINABILITY

Overview

Module 1 System Maintenance & Remote Troubleshooting

- Scheduling Maintenance
- Maintenance Recommendations

Module 2 Documentation

- What to log on your maintenance visits

Module 3 Troubleshooting Communication Technology

- What is Troubleshooting
- Why Troubleshooting Matters
- Benefits of Troubleshooting
- The 5 Steps of Troubleshooting
- Documenting your work

Learning Outcomes

Module 1

- Understand how to schedule routine and preventative maintenance for remote systems and equipment.
- Develop maintenance recommendations, including communication hardware and systems in the field.
- Anticipate and mitigate common technical issues and logistical challenges during system upkeep.

Module 2

- Identify the key pieces of information that should be logged during maintenance visits.
- Use templates or checklists to ensure consistent and thorough documentation.
- Understand how proper record-keeping supports system reliability and knowledge transfer.

Module 3

- Define what troubleshooting is and why it is crucial for conservation operations.
- Identify the benefits of effective troubleshooting, including reduced downtime and improved system performance.
- Apply a structured five-step troubleshooting process to diagnose and resolve technical issues.
- Develop habits for clearly documenting troubleshooting steps and outcomes for future reference.

Recommended Prerequisites

- Infrastructure Fundamentals
- Networking
- Internet of Things (IoT)
- Deploying Devices
- Data Management
- Software Integration and APIs
- Cybersecurity

10 MANAGEMENT AND COLLABORATION

Overview

Module 1 Project Management Basics

- Project Management Fundamentals
- Planning
- Adaptive Management
- Roadmap and Technology Adoption Plans
- Success Metrics

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- Risk Management

Module 2 Technology Partnerships

- Types of Partnerships you may encounter
- Identify and leverage partnerships
- Evaluating the partnerships
- Securing Partnerships
- Maintaining Partnerships

Module 3 Engaging Stakeholders for Success (Data Networking)

- Business Value of Stakeholders
- Basic Processes for Determining Stakeholder Needs
- Techniques for Effective Stakeholder Engagement

Module 4 System Design

- Map Requirements And the Selection
- IP Coverage Planning And Propagation Modeling
- Point-to-Point and Point-to-Multipoint Connectivity

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- Site Visits and Line of Sight Analysis
- Equipment Selection and Vendor Matrix
- Procurement and Deployment
- Real World Challenges

Learning Outcomes

Module 1

- Understand the core principles and processes of project management in conservation technology projects.
- Apply adaptive management practices to address challenges and changes in project environments.
- Develop and implement risk assessment and management strategies for conservation projects.

Module 2

- Identify different types of technology partnerships relevant to conservation efforts.
- Evaluate potential partners based on their alignment with project goals and values.
- Leverage the strengths of various partners (e.g., NGOs, government, private sector) to enhance project outcomes.

Module 3

- Understand the importance of stakeholder engagement in conservation technology projects.
- Apply structured processes to determine stakeholder needs and expectations.
- Use effective communication techniques to build trust and alignment with stakeholders throughout the project lifecycle.

Module 4

- Design a system encompassing end-to-end solutions for optimal technology deployment.
- Use RF coverage and propagation mapping to plan effective communication networks in remote areas.
- Differentiate between point-to-point and point-to-multipoint connectivity and select the appropriate approach.
- Conduct site visits and line of sight analyses to ensure reliable connections.
- Select equipment based on functional needs, environmental factors, and budget.
- Navigate real-world challenges such as terrain, weather, and logistical constraints, and implement effective solutions.

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