# Using Ondulus Radar Course Syllabus

Session duration:     **Classroom     4 days**

## Main Objective

In this course, you will learn how to effectively use Ondulus Radar and receive a global overview of its capabilities and data structures.

Upon completion of the course, you will be able to develop an application using Ondulus Radar.

## Target Audience

This is an ideal course for users and developers with basic PC knowledge that want to learn how to use Ondulus Radar.

## Prerequisites

This course assumes basic PC knowledge.

## Format

This Instructor-led course is taught through a series of lectures and hands-on exercises in which you learn how to use all of the components of the tool.

## Topics Covered

- Basic Concepts
- Radar Principles
- Radar Modes
- Ondulus Radar Architecture
- Ondulus Radar processes
- Diagram for radar process
- Data files for Ondulus Radar
- Running in Demonstration Mode.
- External Ownship and Entities
- Entities coming from an external simulation
- DIS identification
- Enable an External Ownship
- Radar Projects
- Terra Vista: Material Classification
- Tuning Material effects
- Terra Vista: Buildings and Trees
- Tuning Building Features
- Creating Entities
- Creating STAGE Entities
- Special Cases

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# Detailed Description

## Lesson 1: Basic Concepts

- Radar Principles
- Radar advantages
- Distance determination
- Direction determination
- Radar modes
- Real Beam Ground Map (RBGM)
- Synthetic Aperture Radar (SAR)
- Strip-mapping Synthetic Aperture Radar (StripSAR)
- Inverse Synthetic Aperture Radar (ISAR)
- Moving Target Indication (MTI)
- Ondulus Radar Architecture
- Ondulus Radar processes
- Diagram for radar process
- Data files for Ondulus Radar
- EXERCISE 1-1: Running in Demonstration Mode
- Set the radar to Demonstration mode
- Launch the radar
- Exploring the controls in Demonstration Mode
- RBGM Mode
- Spot SAR Mode
- Adding targets
- ISAR mode
- Look at Environmental Conditions
- Wx mode and Storm Fronts
- MTI mode
- Congratulations

## Lesson 2: External Ownship and Entities

- Entities coming from an external simulation
- DIS identification
- Diagram for radar process of local targets
- Radar Projects
- EXERCISE 2-1: External entities
- Create a new project and modify it
- Launch the radar
- Start the external simulation (STAGE)
- Enable an External Ownship

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- EXERCISE 2-2: External ownship
- Create a duplicate project and modify it
- Launch the radar
- Start the external simulation (STAGE)
- Congratulations

## Lesson 3: Terra Vista: Material Classification

- Ondulus Radar is using a CDB database
- CDB overview
- CDB data organization
- CDB structure
- Dataset (layers)
- Materials
- CDB materials are chosen for their relevance to simulation
- Downloading the CDB specification
- Typical CDB structure
- Preparing content for Ondulus Radar
- Terra Vista Material Classification
- EXERCISE 3-1, 3-2, 3-3: Creating a CDB database with Terra Vista
- EXERCISE 3-1: My first database
- Starting Terra Vista
- New Project wizard
- EXERCISE 3-2: Looking at the project
- Project View
- Configuring the gaming area
- CDB special Items
- EXERCISE 3-3: Building and viewing the terrain
- Building the terrain
- Viewing the terrain
- Congratulations
- Creating a 2D layer for roads and rivers
- EXERCISE 3-4: View CDB with Ondulus Radar – 1
- Create a new project and modify it
- Changing the CDB location for the project
- Launch the radar
- EXERCISE 3-5: Generating raster material from vectors
- Ensure the feature styles generate the desired raster material
- Special for Ondulus Radar .
- Generate Geospecific Sensor Textures files
- Build the raster material layer for the CDB
- Congratulations!

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- EXERCISE 3-6: View CDB with Ondulus Radar - 2
- Launch the radar
- EXERCISE 3-7: Generating raster material from imagery
- Generate Material Classification from an imagery file
- Generate Raster file from imagery
- Building the raster material layer for the CDB
- Congratulations!
- EXERCISE 3-8: View CDB with Ondulus Radar - 3
- Launch the radar
- Summary:

## Lesson 4: Tuning Material effects

- Ondulus Radar uses materials from the CDB database
- Material codes tuning
- Material values from the CDB
- EXERCISE 4-1: Modifying the material tuning
- Changing the material tuning values
- Launch the radar
Special Cases

## Lesson 5: Terra Vista: Buildings and Trees

- Ondulus Radar uses Features ID for Buildings
- Feature Codes tuning
- Feature Code Index Lookup tool
- EXERCISE 5-1: Importing models
- EXERCISE 5-2: View CDB with Ondulus Radar - 1
- Launch the radar
- EXERCISE 5-3: Modifying the feature tuning
- Changing the material tuning values
- Launch the radar
- EXERCISE 5-4: Importing trees in the CDB
- EXERCISE 5-5: View CDB with Ondulus Radar – 2
- Launch the radar

## Lesson 6: Creating Entities

- Entities definitions
- Three entity definition groups:
- Three entity definition layers:
- Template versus Project
- Adding an entity
- USER_EntityDisDefinition.xml
- USER_EntityTuning.xml

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- USER_EntityRcsMapping.csv
- OpenFlight files or .poly
- RCS files
- rdr_FeatureCodeTuning_SAR.xml
- rdr_FeatureCodeTuning_PPI.xml
- Summary for entity
- EXERCISE 6-1: Creating an entity
- Changing the entity definition and tuning
- Launch the radar
- Creating a Dash-8 aircraft
- EXERCISE 6-2: Creating a STAGE entity
- Start the external simulation (STAGE)
- Add a dash-8 entity in the scenario
- Change the 3D model and its vertical offset
- Congratulations!

## Lesson 7: Special Cases

- Entities with different RCS
- EXERCISE 7-1: Changing the RCS for a decoy tank
- Changing the entity definition and tuning
- Launch the radar
- Creating both entities from the Ondulus Radar
- EXERCISE 7-2: Soldiers in SpotSAR
- Changing the entity definition and tuning
- Launch the radar
- Creating a soldier
- EXERCISE 7-3: Viewing a tank under a tent
- Add a tent in Terra Vista
- Look at the tent with Ondulus Radar
- Modifying the feature tuning for the tent
- Changing the material tuning values

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