

OrcaFlex Training

COURSE CONTENT

GET IN TOUCH



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About Multisoft

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About Course

OrcaFlex training provided by Multisoft Systems is a comprehensive program designed to equip engineers and professionals in the marine and offshore industry with the skills to use OrcaFlex software proficiently. OrcaFlex is the leading software for the dynamic analysis of offshore marine systems, known for its versatility in modeling a wide range of marine structures and devices, including risers, moorings, pipelines, and renewable energy devices.

Module 1: Introduction

- ✓ General introduction / background to OrcaFlex

Module 2: Simple Catenary Riser in Statics

- ✓ Adding / editing objects
- ✓ Local origins, default data
- ✓ Making connections (not all objects can connect together)
- ✓ line end connection options
- ✓ Short cut keys and moving around the view
- ✓ Shaded vs. wire frame
- ✓ Data files – difference between .dat and .yaml
- ✓ Workspaces
- ✓ Simulation files
- ✓ F1 key

Module 3: Line Theory

- ✓ Nodes and segments
- ✓ Segments cannot bend, all bending at nodes
- ✓ How compression in segments is treated
- ✓ Including / excluding torsion

Module 4: Dynamic Calculation

- ✓ Time domain and frequency domain analysis
- ✓ Implicit integration scheme
- ✓ Explicit integration scheme

Module 5: End Connections

- ✓ End connection stiffness settings: pinned, infinity, finite
- ✓ Explain what end fitting angle is, and why this needs to be set
- ✓ Explain use of azimuth, declination and gamma

Module 6: More on Lines and Line Types

- ✓ Line Types
- ✓ Homogeneous vs. General categories
- ✓ Geometry and Mass, Structure, etc. pages on line types form
- ✓ Variable data
- ✓ Line types wizard
- ✓ Contents
- ✓ Difference between Uniform, Free Flooding and Slug Flow

Module 7: Static Analysis

- ✓ OrcaFlex solves individual line statics first then whole system statics
- ✓ Statics Progress window
- ✓ Step 1 and Step 2-line static stages
- ✓ Effect of changing Max Iterations, Tolerance, Min/Max Damping
- ✓ When to change to Mag. Std. Error & Change

Module 8: Shape Contact and Line Statics

- ✓ Only some objects are permitted to contact each other
- ✓ Brief introduction to contact options (shapes, line clashing, line contact, supports)
- ✓ Elastic solid type shape for contact
- ✓ Linear or non-linear reaction force
- ✓ Friction coefficients can be defined
- ✓ Different shape geometries possible (cylinder, block, plane, curved plate)
- ✓ Other types of shape

Module 9: Winches

- ✓ Massless, drag less
- ✓ Contrast with line feeding
- ✓ Multiple control points possible (frictionless)
- ✓ Control payout, payout rate or tension
- ✓ Simple and detailed types

Module 10: Attachments

- ✓ Types (clumps, flex joints and bend stiffeners)
- ✓ Properties data
- ✓ Clump "Align With" option
- ✓ Attachments can only be connected at a node

Module 11: Model Browser

- ✓ Copy + paste
- ✓ Move Selected Objects
- ✓ Groups
- ✓ Hide / Show and Locate features

Module 12: Seabed Friction

- ✓ Lay Azimuth

Module 13: Environment

- ✓ Sea page
- ✓ Water density settings
- ✓ Weather directions set relative to global axis system
- ✓ Seabed
- ✓ Can be flat, profiled, 3D
- ✓ Elastic and non-linear soil models for normal direction
- ✓ Current
- ✓ Defined through interpolated or power law profile
- ✓ Multiple data sets can be defined but only one active at a time
- ✓ Wind
- ✓ Constant or time-varying
- ✓ Only applies to certain objects
- ✓ Waves
- ✓ Multiple wave trains act in combination
- ✓ Regular or irregular waves

- ✓ Build-up period
- ✓ Waves Preview

Module 14: Links

- ✓ Massless, drag less etc.
- ✓ Differences between tether and spring/damper type

Module 15: Vessels

- ✓ Represent rigid bodies in diffraction regime
- ✓ Diffraction data must be pre-calculated and then imported into OrcaFlex
- ✓ Calculation page options (Primary / Superimposed Motion, Included Effects)

Module 16: Importing Diffraction Data

- ✓ Assistance for specific packages given in the OrcaFlex help
- ✓ WAMIT/AQWA files can be imported directly
- ✓ Generic text file data require some mark-up
- ✓ Check RAOs

Module 17: 3D and 6D Buoys Hydrodynamics

- ✓ Represent rigid objects in drag/inertia regime (using Morison's equation)
- ✓ Wings allow lift/drag characteristics to be applied as a function of buoy angle
- ✓ 3D buoys
- ✓ 6D lumped buoys
- ✓ 6D spar and towed fish buoys

Module 18: Constraints

- ✓ Provide a means of controlling individual degrees of freedom
- ✓ Degrees of freedom can be calculated or imposed (time history)
- ✓ Applying stiffness and damping

Module 19: Automation

- ✓ OrcaFlex spreadsheet and API options
- ✓ Pre-Processing

- ✓ Batch script
- ✓ Text data files
- ✓ File Compare
- ✓ Post-Processing
- ✓ Spreadsheet Instructions Wizard
- ✓ How to process cases
- ✓ Duplicate instructions

Module 20: Model Building

- ✓ Free time for model building