TRAINING PROGRAMS

❙ Subsea   ❙ Offshore Structures

❙ Renewable Energy

PRINCIPIA

DEEPLINES WIND SOFTWARE
BASICS

Duration : 4 days (28 hours)

Engineering Software

For all

PROGRAM

PRESENTATION

DEEPLINES WIND software is used by design offices to simulate the dynamic behavior of systems subjected to the marine environment such as floating wind turbines. Indeed, the scale used in a DEEPLINES WIND model makes it possible to consider the wind turbine as a whole, that is to say, to take into account the different couplings between the wind forces exerted on the turbine up to the wind forces. ground at the level of the anchorages by integrating the vibrations brought by the control of the blades and the hydrodynamic forces on the floating platform.

The interface forces between the different components of a wind turbine are the main results of these simulations; post processing integrated into DEEPLINES WIND directly combine these efforts to translate them in terms of mechanical integrity under extreme conditions or in terms of service life.

TRAINING GOALS

Thanks to this training, you will be able to:
- Create a mechanical model of a wind turbine on an anchored platform ;
- Define the regulatory loading cases and the correct calculation parameters ;
- Manage simulations, check the consistency of results ;
- Set up the appropriate post-processing.

PUBLIC AND PREREQUISITE

This training covers all the stages of analysis of a floating wind turbine carried out with DEEPLINES WIND. Each step could be the subject of in-depth training. Also, to facilitate learning, it is recommended (but not mandatory) to have a first experience in one of the following areas:
- Use of DeepLines software or similar software (Orcaflex, Flexcom, Riflex ...) for offshore applications;
- Use of DeepLines WIND software or software for turbines (Fast, Bladed, Hawc2);
- Sizing of structures: knowledge of standard offshore standards (BV, API, DNV ...), code check and fatigue, finite element analysis.

TRAINING CONTENTS

Day 1
Playing with a simple model - Introduction to DEEPLINES WIND
- Using DEEPLINES WIND: presentation of the software operation
- Know the repositories (global & local)
- Model lines in finite elements
- Define an anchoring system
- Use a control command

Day 2
Build a model of aero generator (NREL 5MW)
- Presentation of the aero module
- Build a model of aero generator
- Create environmental loads
- Check the behavior of the turbine under constant wind
- Check the behavior of the turbine in turbulent wind

Day 3
Model the float
- Know the different modeling options
- Model a float with HDB
- Model a float as beams using ISYMOST and TDL files
- Check the model

Day 4
Run calculations & post process the results
- Launch multiple analyzes
- Use Python scripts
- Use the advanced features of DEEPLINES WIND for post processing
- Playing with degrees of freedom

DEEPLINES WIND SOFTWARE
BASICS

Duration : 4 days (28 hours)

PRINCIPIA

MOBILIZED METHODS AND EVALUATION MODALITIES

- **Educational, Technical and Coaching Means**

Each of our training is provided by an expert engineer in the field taught in an appropriate training room, for intra-company application.

The course material, projected using an overhead projector, is given to each trainee (paper version and/or computer version), each module giving rise to practical exercises to apply the theoretical aspect. The answers to the exercises are carried out progressively, during the session.

Each trainee has a computer and the license for the software used.

- **Methods of evaluating learning outcomes**

The trainer ensures the proper acquisition of knowledge throughout the training via oral questions and scenarios through practical exercises and, also, at the end of the training, via an evaluation.

The training is sanctioned by the delivery of an individual training certificate.

ACCESSIBILITY TO PEOPLE WITH DISABILITIES

We pay particular attention to adapting our training courses to people with disabilities.

This training is accessible to anyone with a disability. Contact us to tell us about your specific need and allow us to study how to adapt this training to it.

SATISFACTION ASSESSMENT

The assessment of trainees' satisfaction covers aspects related to the organization, the pedagogical qualities of the trainer, the methods and training materials used.

TERMS AND CONDITIONS OF ACCESS

Registration is effective after validation of the prerequisites and receipt of the signed agreement. As the services are intra-company training, tailor-made, requests must be sent to our teams at least one month before the start of the training.

PRICE

From 1000 € (all tax excluded) per day of training (maximum 6 people).
Don't hesitate to contact us for a custom-made quotation.

CONTACT

Mail : commercial@principia.fr
Tel : 0033.4.42.98.11.80

DIODORE SOFTWARE

Duration : 3 days (21 hours)

Engineering Software

For Diodore familiar users

PRINCIPIA

PROGRAM

PRESENTATION

Diodore™ is part of the marine software solutions developed by Principia to assess sea-keeping or stability of floaters as well as mooring, berthing and complex marine operations such as deck mating.

DIODORE is developed and validated by PRINCIPIA since 1981 in cooperation with IFP (Institut Français du Pétrole) and BUREAU VERITAS. DIODORE provides to the engineers a practical tool to assess any design matter linked to hydrostatic/hydrodynamic from conceptual studies to detailed analysis.

TRAINING GOALS

Introduction to DIODORE for sea-keeping analysis and basic hydrodynamic techniques.

PUBLIC AND PREREQUISITE

This specific Training is dedicated to DIODORE user engineers already familiar with hydrodynamics notions.

TRAINING CONTENTS

This training will consist in 2 training days and 1 additional day proposed as optional.
Training content is detailed below:

Day 1 & 2: Sea-Keeping

This module is a two days training course aiming at introducing engineers to DIODORE for sea-keeping analysis and basic hydrodynamic techniques. This course is mainly intended for beginners and engineers wishing to improve their knowledge of the software and maximize their productivity. Typical topics covered in this course are as follows:

- General introduction to DIODORE
- Meshing practice and recommendations
- Diffraction-radiation
- Motions, accelerations, deck wetting
- Roll damping
- Drift forces
- Hull girder loads and connection loads

Day 3 (Optional): Mooring Training

This module is a one-day training course aiming at introducing engineers to design of mooring system using DIODORE. The objective of the course is to provide the theoretical background required to properly carry out such engineering studies and illustrate how these analyses can be performed with DIODORE. Topics covered in this course are as follows:

- Introduction to mooring system design
- Theoretical background on low frequency wave loads and time domain simulations
- Current and wind loads
- Mooring rules and recommendations
- Multi-body analysis including lid technic
- Full QTF analysis
- Spread mooring, turret mooring,
- Single point mooring, conventional buoy mooring
- Berthing

DIODORE SOFTWARE

Duration : 3 days (21 hours)

PRINCIPIA

MOBILIZED METHODS AND EVALUATION MODALITIES

- **Educational, Technical and Coaching Means**

Each of our training is provided by an expert engineer in the field taught.
Training is done using power point presentation to be shared during the session with attendees. These presentations will be delivered at the end of the session to all attendees.
Each training module will be supported by practical exercises so that attendees can get use to practicing the software, with answers to those exercises to be progressively shared with all attendees during the session.

• For Face-to-Face Training:

- Appropriate training room and computers are made available in PRINCIPIA premises or shall be made available by CLIENT in its own office
- Each trainee will be provided a temporary Licenses for the duration of the training session for software to be used

• For Web-Training

- PRINCIPIA will send one week before the training date, a Teams invitation to each attendee
- Each trainee will be provided a temporary License for the duration of the training session for software to be used.
Chacune de nos formations est dispensée par un ingénieur expert du domaine enseigné dans une salle de formation appropriée, en vue d'une application intra-entreprise.

- **Methods of evaluating learning outcomes**

The trainer ensures the proper acquisition of knowledge throughout the training via oral questions and scenarios through practical exercises and, also, at the end of the training, via an evaluation.
The training is not sanctioned by the delivery of professional certificate.

ACCESSIBILITY TO PEOPLE WITH DISABILITIES
For face-to-face meeting, we pay particular attention to adapting our training courses to people with disabilities. This training is accessible to anyone with a disability. Contact us to tell us about your specific need and allow us to study how to adapt this training to it.

SATISFACTION ASSESSMENT
The assessment of trainees' satisfaction covers aspects related to the organization, the pedagogical qualities of the trainer, the methods and training materials used.

TERMS AND CONDITIONS OF ACCESS
Registration is effective after validation of the prerequisites and receipt of the signed agreement. As the services are intra-company training, tailor-made, requests must be sent to our teams at least one month before the start of the training.

PRICE
From 1500 € (all tax excluded) per day of training (maximum 6 people).
Don't hesitate to contact us for a custom-made quotation.

CONTACT
Mail : commercial@principia.fr
Tél : 0033.4.42.98.11.80

DEEPLINES SOFTWARE
SPECIFIC TRAINING

Duration : 3 days (18 hours)

PRINCIPIA

Engineering Software

For Deeplines familiar users

PROGRAM

PRESENTATION

DEEPLINES is specifically used for the simulation of offshore systems' dynamic behaviour, and it addresses different types of issues:

- The mechanical ones: modelling of structural behaviour, material behaviour laws;
- The contact ones: seabed contact, collisions between lines;
- The hydrodynamic ones: definition of waves and water flows, calculation of hydrodynamic loads for thin and large bodies, hydrodynamic interference in a network, vibrations induced by vortices...
- The aerodynamic ones: calculation of wind loads on large hulls or blades;
- The numerical ones: Finite element modelling ; algorithms and convergence criteria.

TRAINING GOALS

With this training you will be able to :

Load different thread models into Deeplines

Perform fatigue studies in the software

PUBLIC AND PREREQUISITE

This specific training is aimed at engineers who know the offshore environment (definition of swell, wind, water flows, etc.).

The trainees have already used DEEPLINES software.

TRAINING CONTENTS

Day 1 : Overview de DeepLines
- Introduction
- Commercial introduction
- GUI
- Solver
- Standard Workflow
- Lines modeling
- Contact modeling
- TDL/excel definition, description and loading into DeepLines

Day 2 : Continue discovering DeepLines
- Introduction
- Frames
- Zone study for post-treatments
- Multiple analysis and fatigue
- Looking at results
- Playing with DOFs
- Time domain and/or frequency domain analysis (if needed)

Day 3. Support and discussion on a true net model (to be used as protection from sharks)
- Configure a whole net model (as complex as possible)
- Start to organize all the adjacent model details
- Anticipate possible problems on DeepLines modeling
- Other ideas deemed important to perform a complete net modelling

MOBILIZED METHODS AND EVALUATION MODALITIES

- **Educational, Technical and Coaching Means**

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Each trainee has a computer and the license for the software used.

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TERMS AND CONDITIONS OF ACCESS

Registration is effective after validation of the prerequisites and receipt of the signed agreement. As the services are intra-company training, tailor-made, requests must be sent to our teams at least one month before the start of the training.

PRICE

From 1300 € (all tax excluded) per day of training (maximum 6 people).
Don't hesitate to contact us for a custom-made quotation.

CONTACT

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