

Skilltrade e-learning

Skilltrade has developed several interactive e-learning courses that can be followed by anybody interested in the subject at hand. These modules are also part of the Hydrographic Survey Category B Course.

We offer the following e-learning courses:

Preparation modules

- Mathematics preparation
- Physics preparation
- Hydrography induction

The modules Mathematics and Physics are designed to test the students' knowledge of these subjects as required at the entry level for the Skilltrade Hydrographic Survey Category B Course. These modules are free of charge with the purchase of one of the paid modules.

On the theory slides the student can also find links to specific modules from the worldwide renowned Khan Academy to enhance their knowledge.

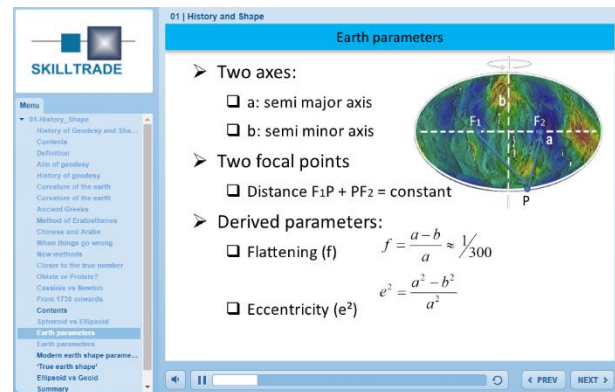
The modules Mathematics and Physics are accompanied by background material; an extract from the Skilltrade Mathematics vs Physics book.

The Hydrography induction is an overview of hydrography and its processes and instruments. It is based on the first chapter of the Handbooks of Offshore Surveying (which is included). The course is free to everybody interested (after registration).

Essential modules

- Underwater Acoustics
- Bathymetric systems
- Landsurveying
- Coordinate Reference Systems (Geodesy)
- GNSS Operations
- Positioning

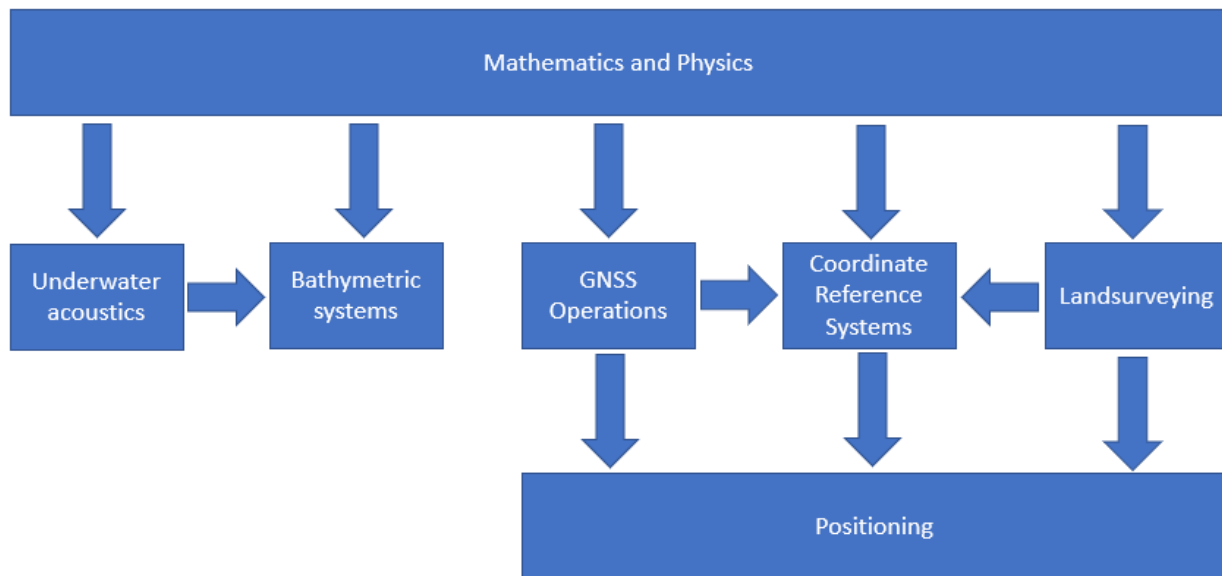
The other 6 comprehensive modules are presented as an interactive Power Point video with an overlay of spoken instructions. The design has been updated in 2020 and is now more interactive with a menu structure giving alternative learning routes and questions interwoven with theory to apply the theory directly. Please refer to the appendix for the content of the specific modules.



Throughout the modules interactive questions are asked which form the final assessment of the module. Each question consists of a number of randomly drawn questions from a question bank ensuring that different attempts lead to different sets of questions. After answering the questions, the results will be displayed per topic and for the entire module. A student can take the assessment as often as required.

A lecturer is available for questions / tutoring via e-mail.

You can access the modules on your desktop computer, but also offline through the Moodle Mobile app on your mobile device. Each module is accompanied by background material; an extract from the Handbook of Offshore surveying.



Content of the Essential modules

Underwater Acoustics

- Parameters of sound
- Speed of sound
- Generating sound
- Sonar equation
- Range computations

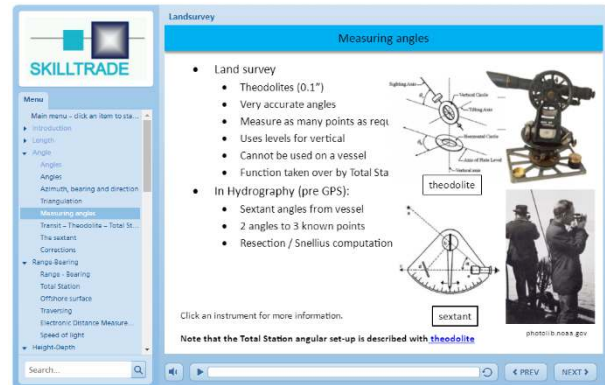
Bathymetric systems

- Singlebeam echo sounder
- Multibeam echo sounder
- Other bathymetric systems



Landsurveying

- Position measurement
- Length measurement
- Angle measurement
- Range-bearing positioning
- Height measurement including tidal measurements
- Position computations
- Elementary statistics



The screenshot shows a Skilltrade interface for the 'Landsurveying' module. The main content area is titled 'Measuring angles' and lists two categories of surveying:

- Land survey**
 - Theodolites (0.1")
 - Very accurate angles
 - Measure as many points as reqd
 - Uses levels for vertical
 - Cannot be used on a vessel
 - Function taken over by Total Sta
- In Hydrography (pre GPS):**
 - Sextant angles from vessel
 - 2 angles to 3 known points
 - Resection / Snellius computation

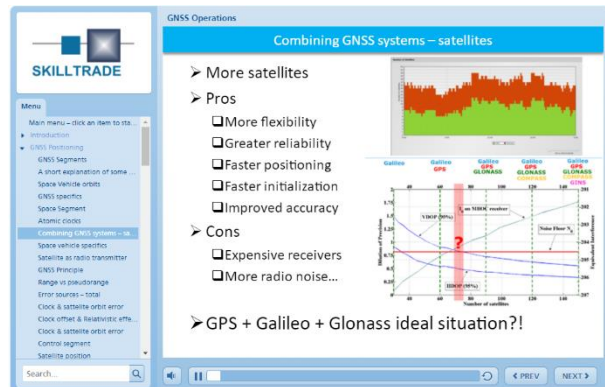
Accompanying diagrams include a theodolite setup on a tripod and a sextant. A note at the bottom states: 'Note that the Total Station angular set-up is described with theodolite'.

Coordinate Reference Systems (Geodesy)

- Overview of Coordinate Reference Systems
- Horizontal datums
- Datum transformation
- Projections
- Vertical datums including tidal theory

GNSS Operations

- GNSS positioning
- GNSS Augmentation
- Using GNSS
- GNSS Signal structure
- Geodesy for GNSS
- GNSS Statistics



The screenshot shows a Skilltrade interface for the 'GNSS Operations' module. The main content area is titled 'Combining GNSS systems - satellites' and lists the following:

- More satellites
- Pros
 - More flexibility
 - Greater reliability
 - Faster positioning
 - Faster initialization
 - Improved accuracy
- Cons
 - Expensive receivers
 - More radio noise...
- GPS + Galileo + Glonass ideal situation?!

The content includes a bar chart showing satellite counts for Galileo, GPS, GLONASS, and BeiDou, and a graph showing error sources like clock offset and relativistic effects.

Positioning

- Position sensor integration
- Ships Reference Frames
- Inertial Navigation Systems
- Time as a variable
- Advanced GNSS positioning
- Computing position statistics

Study load and costs

	<i>Module</i>	<i>Study load in hours¹</i>	<i>Price²</i>
Mathematics preparation		20-25	Free of charge
Physics preparation		20-25	Free of charge
Hydrography induction		5-10	Free of charge
Underwater Acoustics		20-25	€ 250
Bathymetric systems		20-25	€ 250
Landsurveying		20-25	€ 250
Coordinate Reference Systems		20-25	€ 250
GNSS Operations		30-35	€ 500
Positioning		20-25	€ 250

¹ The study load mentioned above is including time spent by the average student viewing the lecture, reading the included background material and answering the questions. Excluding any tele-conferencing sessions.

² All mentioned prices are exclusive of VAT.

The modules Mathematics and Physics are free of charge with the purchase of one of the paid modules.

The module Hydrography induction is free to everybody after (free) registration.

Supervision

The e-learning platform is supervised using a 'triple' strategy:

- **Progress monitoring**

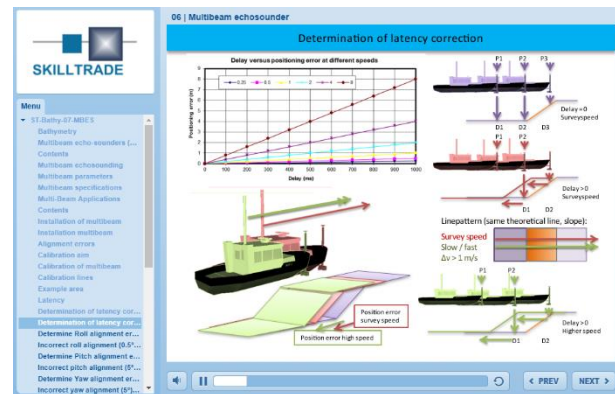
Progress is monitored through the e-learning system and visible to both student and tutor.

- **Assessments**

Each e-learning module is accompanied by an interactive assessment. In the assessment a number of randomly drawn questions from a question bank are asked. After answering the questions, the results are available from the e-learning system. A student can take the assessment as often as required.

- **Tutoring**

A lecturer is available for questions / tutoring via e-mail. We also offer the possibility to arrange a distant tutoring session by video conference. Registration through Skilltrade and payment is required before participation.



Level

The entry level of the training course is undergraduate (HND / HNC or equivalent or relevant experience). All course material and lectures will be in English. Participants should therefore have a good command of English, including knowledge of the appropriate technical terms.

No special preliminary training required. The exit level of the course is equivalent to the Cat A or Cat B level depending on the subject and the level achieved by the student.

Completion

Upon acquiring acceptable results for the essential modules each student will be issued a Skilltrade certificate.

After completion of the full e-learning programme, the student who has been admitted to the Hydrographic Survey Category B Course can participate in the 13-week training in Ijmuiden.

I hope that the above information will be of interest to you and will suit your intentions for enhancing your skills. Should you have any further questions or wish to register, please do not hesitate to contact us.

Yours sincerely,



Johan Stam,
Managing Director

