

AREAS OF RESEARCH

Selection

- Photogrammetry – 3D underwater scanning
- Investigation of underwater structures and wrecks
- Development of underwater instruments for measuring the volumetric flow rates of subaqueous volcanic gases, heat flux densities and temperatures
- Development of sampling devices for water and sediments
- Hydrochemical, geochemical and marine biological studies on the ecological impact on coastal sites
- Investigation of groundwater flows into the Dead Sea, Israel
- Aquathermal energy
- Long-term underwater monitoring
- medical research on reducing the inert gas bubble load in divers

SCIENTIFIC DIVING CENTER

Contact and information

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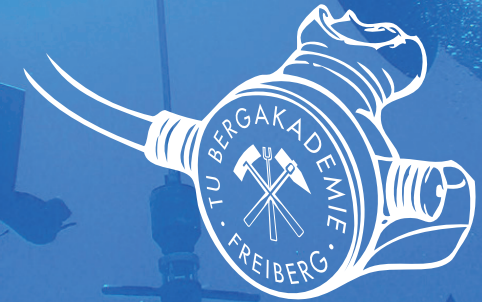
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Lecturer Scientific Diving
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TUBAF
Die Ressourcenuniversität.
Seit 1765.

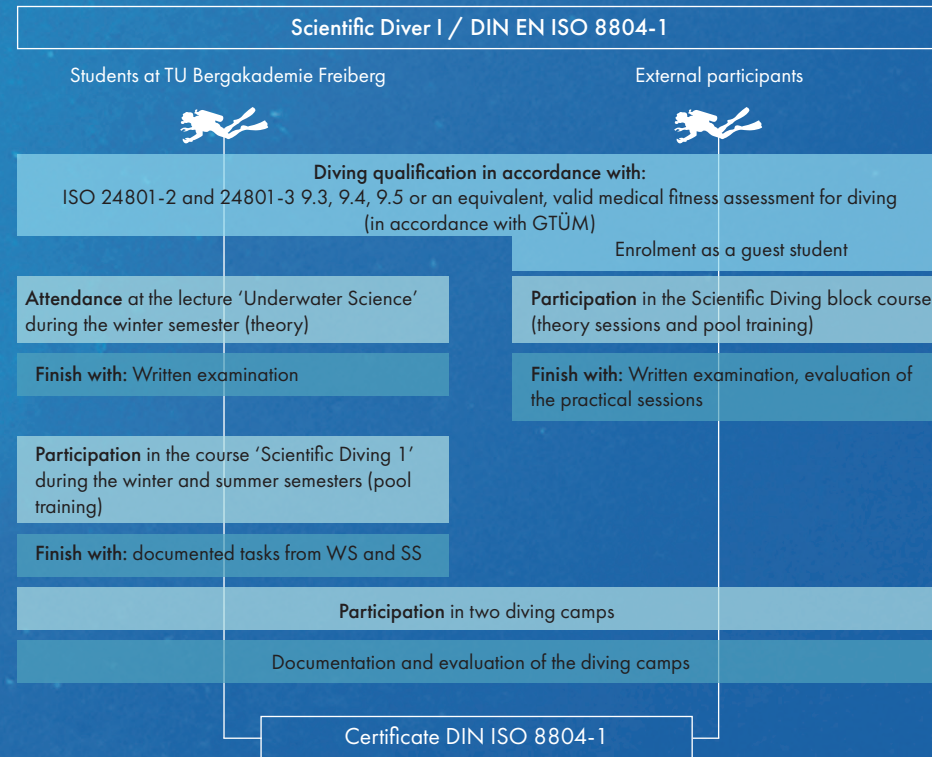
SCIENTIFIC DIVING

Around 71 percent of our planet is covered by oceans and is therefore inaccessible to direct exploration. As a result, we know the surface of the Moon or Mars better than the seabed of our own planet. The deep-sea region can only be accessed with the aid of underwater vehicles, but the shallow areas of the oceans – down to a depth of 40 metres – can be explored by scientists using compressed air and nitrox. Exploration of greater depths is possible using trimix and rebreathers. The various subject areas and fields of application underwater require targeted working methods which are taught by us. The development of social skills such as self-confidence, team spirit and a sense of responsibility is an integral part of the training.

- Geosciences
- Gas and Water Chemistry
- Microbiology/Biomineralisation
- Heat and Mass Transfer
- Measuring Instruments – Development and Application
- Photo and Video Documentation
- 3D Photogrammetry

- Safety in underwater work
- Direct and indirect observation
- Mapping the study area
- Collection of gas, water and rock samples, as well as (micro-)biota
- Measurement of thermodynamic and physico-chemical parameters (including temperature, pH, flow rate) and development of underwater measuring instruments
- Documentation: digital (photo/video) and analogue (writing board)
- Working with lifting bags, transects and underwater aids
- Communication and teamwork

TRAINING STRUCTURE



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graph TD; A[Certificate DIN ISO 8804-2] --> B[Final examination: Field trip report and assessment of the practical sessions]; B --> C[10- to 14-day international diving expedition, independent research into a specific topic]; C --> D["Diving qualification in accordance with:  
ISO 24801-2 and 24801-3 9.3, 9.4, 9.5 or equivalent, valid medical fitness certificate for diving  
(in accordance with GTÜM), DIN ISO 8804-1 certificate, scientific experience"]
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The diagram is a vertical flowchart with a blue background. At the top is a white silhouette of a diver. Below it, a light blue box contains the text "Diving qualification in accordance with: ISO 24801-2 and 24801-3 9.3, 9.4, 9.5 or equivalent, valid medical fitness certificate for diving (in accordance with GTÜM), DIN ISO 8804-1 certificate, scientific experience". Below this is a white box with the text "10- to 14-day international diving expedition, independent research into a specific topic". Below that is a light blue box with the text "Final examination: Field trip report and assessment of the practical sessions". At the bottom is a white box with the text "Certificate DIN ISO 8804-2". White lines connect the boxes from bottom to top.

In 2024, 169 ISO member countries agreed on an internationally recognised standard for the training of scientific divers. On 11 October 2024, the Scientific Diving Center at TU Bergakademie Freiberg became the world's first organisation to be certified to ISO 8804-1 and ISO 8804-2. Since then, the SDC has been offering scientific diving training in accordance with these standards – a milestone for international cooperation and exchange in research. Students, as well as external participants, benefit directly from this globally recognised qualification.

- Scientific Diver Training
- Participation in scientific diving activities within the limits of one's own diving qualifications
- Learning how to use scientific diving equipment
- Part of a dynamic team for underwater collaboration

- Advanced Scientific Diver Training
- Leading scientific dives under the supervision of a project leader in accordance with ISO 8804-3
- Coordinating the team with other teams
- Participation in scientific dives under challenging environmental conditions



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