

Module Name	Dam Engineering and Hydroelectric Power Engineering
Module Number	Eul-RES-E-STWKA
Responsible Lecturer	Prof. Dr.-Ing. Jürgen Stamm wasserbau@tu-dresden.de
Qualification Objectives	Students are able to assess and evaluate water management, operational, and ecological aspects of reservoir and hydropower plants. They possess advanced competencies in the structural design, hydraulic dimensioning, monitoring, rehabilitation, and modernization of reservoir structures, particularly river and dam reservoirs. Students are thus capable of comprehensively evaluating the functionality of a reservoir structure. Furthermore, students can classify energy-related terms and topics, determine the potential of renewable energies, optimally utilize turbine types, design run-of-river power plants, operationally optimize power plant chains, and design small hydropower plants. They are able to evaluate ecological conflict points and assess the components of facilities and their economic efficiency.
Contents	The module covers fundamental and specific hydraulic engineering aspects related to the planning, construction, and operation of various types of reservoir structures. Topics include the hydraulic and functional optimization of the structure, ensuring watertightness, integrating the structure securely into the subsoil, as well as construction and operational methods of reservoir structures. Additionally, the module addresses the energetic utilization of reservoirs through hydropower plants for generating renewable energy.
Teaching and Learning Forms	4 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules "Renewable Energy Systems Basics" and "Fundamentals of Fluid Mechanics" are required.
Usability	This module is an elective module from the elective area "Competence Deepening" in accordance with § 6 Paragraph 3 SO and § 33 Paragraph 3 PO in the main study phase of the diploma program "Renewable Energy Systems."
Prerequisites for the Award of Credit Points	Credit points are awarded upon passing the module examination. The module examination consists of a 120-minute written exam and an ungraded portfolio with a workload of 30 hours.
Credit Points and Grades	7 credit points can be earned through the module. If the portfolio is passed, the module grade corresponds to the grade of the written exam. Otherwise, the module grade is calculated in accordance with § 15 Paragraph 1 Sentence 5 and Sentence 6 of the examination regulations, based on the weighted average of the grades of the individual examination components, with the portfolio weighted fourfold and the written exam weighted sixfold.
Frequency of the Module	The module is offered every academic year, starting in the winter semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts two semesters.