

**Department: Civil & Environmental Engineering**

**Division: Civil engineering**

**Level and Major: Graduate - Hydraulic structures and Water Engineering**

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**Course Title:** Hydraulic design of structures

**Number of Credits: 3**

**Prerequisite (Corequisite):** Structural analysis (I), Concrete Technology **Lecturer: -**

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### **Course Topic**

- A review of the types of hydraulic structures (depending on the dams and dams and their components and how to coordinate their components)
- Investigation of various environmental factors affecting site selection and dam, specification (hydrological, hydraulic, geological, geotechnical, structural)
- Familiarity with types of loads and loadings (water, under-pressure, soil, structural, static, dynamic, earthquake, fluctuations, slide, loads during construction, operating loads, stability control of reversal slip)
- Determining the height and location of dam components
- Hydraulic design of all types of valves (surface, pressurized, pressure fluctuations)
- Hydraulic design of open spillways (basin edge, shot, stepped)
- Hydraulic design of closed spillways (morning glory, syphon, slide)
- Cavitation (pressure fluctuations in high velocity, cavitation, aeration)
- Hydraulic design of dams and small dams (body and spillway)
- Hydraulic design of straw energy structures (resting basin, water projectile)
- Familiarity with methods of reducing seep (sealing the body and foundation and dam abutment, sealing wall)

Course Description:

Reading Sources:

Course Goals and objectives:

Evaluation:

Course topics:

The course aims to: