

Water distribution system: management, treatment and protection

MDP PROGRAM

NATURAL SCIENCES AND ENGINEERING

SYLLABUS

**WATER DISTRIBUTION SYSTEM: MANAGEMENT, TREATMENT,
SANITARY SYSTEM AND PROTECTION**

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Course goals

"Water for Life"; this old saying reflects the importance of the distribution of water in allowing sustainable development. There is an urgent need to train managers who will pursue policies addressing the challenge of supplying the population with the appropriate quality and quantity of water. Thus, this course on water supply will be structured around the management, treatment and sanitation, and water protection that will develop skills and expertise in this field.

Pedagogical approach

Instruction will be centered on the following points:

- This course is based on the active participation of students. Readings will be given for each lecture and class will be supplemented by teacher-led discussions amongst the students.
- Students will apply their knowledge accumulated during the course to a small project at the end of the module
- Visits to industry or in the field will be organized regularly

Teaching materials

A video projector will be needed for the professor's presentations and for illustrating concepts. Computer access will be necessary for all students.

Evaluation

Concepts and techniques acquired during the course will be assessed by:

- Two individual exams that will take place in the middle and at the end of the course. Each of these count for 30% of the final grade.
- A small project done in teams of two and supervised by the instructor will count for 40% of the final grade.

Prerequisites

None. However, it will be helpful to have experience using the internet to search for information and to have word processing skills.

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Course schedule

Chapter 1: Water quality

- 1.1. Introduction
- 1.2. Quality norms
- 1.3. Characteristic of natural water
- 1.4. Criteria for selecting parameters of water quality

Chapter 2: Treatment for drinking water

- 2.1. Introduction
- 2.2. Pretreatment
- 2.3. Clearness of water
- 2.4. Filtration
- 2.5. Disinfection
- 2.6. Specific treatments

Chapter 3: Diseases and hazards linked to water

- 3.1. Introduction.
- 3.2. Risks associated with consuming contaminated drinking water and skin contact with contaminated water
- 3.3. Hazards faced by workers in water
- 3.4. Personal hygiene rules
- 3.5. Means to protect against diseases caused by viruses, bacteria, protozoa and worms.

Chapter 4: Water distribution system

- 4.1. Feeding method for the network
- 4.2. Reservoirs and pumping stations
- 4.3. Ensured pressure
- 4.4. Description of the distribution system

Chapter 5: Prior knowledge in water management

- 5.1. Water transport cycle
- 5.2. Sources that provide water
- 5.3. Estimation of served populations

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Chapter 6: Water management and sustainable development

- 6.1. Steps to save water
- 6.2. Diversification of water sources
- 6.3. Management of the watershed
- 6.4. Climate change and adapting water resources
- 6.5. The relationship between water management and sustainable development

Chapter 7: Water protection

- 5.1. General introduction
- 5.2. Water depollution
- 5.3. Risks of water pollution
- 5.4. Fight against water pollution
- 5.5. Water protection and sustainable development