

Course Program

Definition of Hydraulic Transients.

Theoretical Fundamentals.

Basic Governing Equations: Conservation of Mass and Conservation of Momentum.

Wave velocity.

Numerical Solution of the governing Differential Equations: Method of Characteristics.

Definition of Inertia Polar Moment.

Causes of Hydraulic Transients in Pipelines.

Concept of underpressure and overpressure.

Concept of Cavitation and Water Column separation.

Hydraulic Transient Relief Devices: Surge Tank, One-Way, Pressure Vessel, Air Valve, Bidirectional Tube.

Use of the computer program UFC2 and EPANET: Interface between AutoCAD and EPANET for Water Distribution Networks and Pipelines with pumps and gravity.

Use the computer program UFC5: Selection of Pumps in Pipelines and sewage pressured Pipes.

Use of the computer program UFC7: Computer Simulation of Hydraulic Transients in Water and sewage Pipelines. Simulation of Hydraulic Transient Relief Devices.

For more information about the UFC System please access: <http://www.lahc.ufc.br/>

Requirements

- Each participant must bring to the course a laptop (Windows) in which the UFC System should be previously installed. The installation files will be sent previously.
- The UFC System requires, for its installation, a computer with only version of AutoCAD installed, **2021 or above (2022, 2023 ou 2024)** and **in English**. It works also with AutoCAD Civil 3D and the student free version of AutoCAD available at the AutoDESK site.