UNIVERSITÀ DI PAVIA

## Anno Accademico 2020/2021

# HYDRAULIC INFRASTRUCTURES

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| **Anno immatricolazione** | 2019/2020 |
| **Anno offerta** | 2020/2021 |
| **Normativa** | DM270 |
| **SSD** | ICAR/02 (COSTRUZIONI IDRAULICHE E MARITTIME E IDROLOGIA) |
| **Dipartimento** | DIPARTIMENTO DI INGEGNERIA CIVILE E ARCHITETTURA |
| **Corso di studio** | CIVIL ENGINEERING FOR MITIGATION OF RISK FROM NATURAL HAZARDS |
| **Curriculum** | Hydrogeological risk assessment and mitigation |
| **Anno di corso** | 2° |
| **Periodo didattico** | Primo Semestre (21/09/2020 - 14/10/2020) |
| **Crediti** | 6 |
| **Ore** | 51 ore di attività frontale |
| **Lingua insegnamento** | English |
| **Tipo esame** | ORALE |
| **Docente** | CREACO ENRICO FORTUNATO (titolare) - 6 CFU |
| **Prerequisiti** | Having passed the exam of Hydraulics |
| **Obiettivi formativi** | The main objective of the course is to introduce students to the basic theories and methods of urban water systems, that is water supply and sewer systems in the framework of Agenda 2030 - Objectives 6 and 7. The course will be made up of three parts. The first will provide the students with the main notions related to the design and analysis of water distribution systems. The second will be dedicated to the design and analysis of sewer systems. In the third part, the risk and vulnerability in Urban Water Systems will be dealt with. |
| **Programma e contenuti** | Demand-driven and pressure-driven modelling of water distribution networks<br>Optimal design of water distribution networks with no reliability constraints |

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| | Multi-objective design of water distribution networks<br>Optimal management of water distribution networks (mechanical and hydraulic failures, segment identification, service-pressure and leakage management, real time control, district metered areas)<br>Modelling of water quality, water distribution network protection from contaminations<br>The software EPANET<br>Modelling of urban drainage systems<br>The control of water volumes and of water quality in urban drainage systems<br>Best management practices for the optimal management of urban drainage systems (detention and retention systems, infiltration systems, vegetated systems, real time control)<br>The software EPASWMM |
| **Metodi didattici** | Lectures and exercises taught by the lecturer in the classroom |
| **Testi di riferimento** | Butler, and J. Davies (2011). Urban Drainage. Spon Press, 625 pp.<br>W. Mays (2011). Water Resources Engineering. John Wiley & Sons, 890 pp.<br>T.M. Walski, D. Chase, D. Savic, W. Grayman, S. Beckwith, and E. Koelle (2003). Advanced water distribution modelling and management. Haestad, Waterbury, CT, 702 pp.<br>Material of the module available for download at http://www-4.unipv.it/ecreaco/Hydraulic%20Infrastructures.html |
| **Modalità verifica apprendimento** | Oral examination based on solutions proposed by the student to Lecturer's assignments |
| **Altre informazioni** | |
| **Obiettivi Agenda 2030 per lo sviluppo sostenibile** | $lbl_legenda_sviluppo_sostenibile |