



STRUCTURAL MEASURES FOR FLOOD RISK MITIGATION

Enrollment year	2020/2021
Academic year	2021/2022
Regulations	DM270
Academic discipline	ICAR/01 (HYDRAULICS)
Department	DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE
Course	CIVIL ENGINEERING FOR MITIGATION OF RISK FROM NATURAL HAZARDS
Curriculum	Hydrogeological risk assessment and mitigation
Year of study	2°
Period	(20/09/2021 - 13/10/2021)
ECTS	6
Lesson hours	51 lesson hours
Language	English
Activity type	WRITTEN AND ORAL TEST
Teacher	GHILARDI PAOLO (titolare) - 3 ECTS FENOCCHI ANDREA - 3 ECTS
Prerequisites	Basic knowledge of hydraulics or fluid mechanics is required. A knowledge of the main concepts of sediment transport mechanics, slope stability, hydrological processes and groundwater flow is warmly suggested.
Learning outcomes	<p>This course describes, analyses and compares the main practical solutions for flood risk mitigation, e.g., levees, detention basins, floodways, tools for river bank protection and for control of local scour, devices for river training, and special design techniques to be applied to buildings in flood prone areas.</p> <p>Design techniques and selection criteria of risk mitigation measures are discussed throughout this course.</p>
Course contents	1. Geomorphic assessment of natural streams - field investigation,

	<p>channel stability assessment, computational design methods.</p> <p>2. River protection - Stream bank erosion, river training and stabilization, flow control structures.</p> <p>3. Bank protection and stabilization - General principles, Riprap design and placement, bioengineering countermeasures and erosion control.</p> <p>4. Scour protection at bridges and other structures - design of scour control devices for bridge piers, bridge abutments and other structures.</p> <p>5. Levees - physical processes and tools for levee assessment and design.</p> <p>6. Structural measures for reducing flood risk to buildings.</p>
Teaching methods	lectures with slides and multimedia. Numerical exercises with discussions on typical case studies, also using numerical tools.
Reccomended or required readings	Course notes will be provided during the course.
Assessment methods	Written test on case studies, followed by oral discussion.
Further information	
Sustainable development goals - Agenda 2030	\$lbl legenda sviluppo sostenibile