

Course of: **Making communities resilient to disasters: focus on the Critical Infrastructures** – organized by Ass. Prof. F. Romagnoli

Duration: 20 hours

Seminars – organized by Assoc. Prof. F. Romagnoli

1. **Life Cycle Assessment and Resilience of Bioenergy and Bioproducts Systems: an holistic system perspective,**
2. **An introduction to geophysical methods as a tool for mitigation of natural hazards and environmental protection.**

**AGENDA**

<b>Date</b>	<b>Activity</b>	<b>Lecturer(s)</b>	<b>Subject</b>
Tuesday 4 <sup>th</sup> of October	Lecture 1 (3.5 hours) Time: 14:00 Auditorium S2	F. Romagnoli	<p><b>MODULE 0: RTU-VASSI and course presentation</b></p> <p><b>MODULE 1: Moving toward the concept of resilience: an holistic perspective</b></p> <ol style="list-style-type: none"> <li>1. Background and relevance of the topic               <ol style="list-style-type: none"> <li>a. Background</li> <li>b. General figures</li> <li>c. The vision from Sendai framework</li> </ol> </li> <li>2. The resilience thinking</li> <li>3. Defining resilience in different disciplines</li> <li>4. Resilience within the Disaster Risk Reduction (DRR) dimension               <ol style="list-style-type: none"> <li>a. Risk, Vulnerability, and Resilience</li> <li>b. Climate change, sustainability and Resilience</li> </ol> </li> <li>5. Measurement and Evaluation of Resilience: preliminary overview</li> </ol>
Tuesday 11 <sup>th</sup> of October	Lecture 2 (3.5 hours)  Time: 14:00 Auditorium SM	F. Romagnoli	<p><b>MODULE 2: Resilience of critical infrastructures</b></p> <ol style="list-style-type: none"> <li>1. Definition of critical infrastructures and their role within the overall community resilience</li> <li>2. Resilience metrics over time and respect disaster phases</li> <li>3. Building resilience of CI: overview on the concept of mitigation, preparedness, response adaption and recovery measures</li> <li>4. The vision of Bruneau: the 4R method</li> <li>5. Mathematical framework for CI resilience evaluation</li> <li>6. The complex system of interconnected CI</li> </ol> <p><b>MODULE 3: (Semi)Quantitative and Qualitative assessment methods and approach</b></p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Holistic approach               <ol style="list-style-type: none"> <li>a. PEOPLES (Bruneau)</li> <li>b. DROP (Burton)</li> <li>c. CDRI (Mayunga)</li> <li>d. MOVE (Birkmann)</li> </ol> </li> </ol> <p>RESILENS project (EU project)</p> <ol style="list-style-type: none"> <li>3. Metrical/probabilistic approach               <ol style="list-style-type: none"> <li>a. 4R method (Bruneau)</li> <li>b. Gay Alaninis method</li> <li>c. NIRA (Mayada Omer)</li> </ol> </li> </ol>

Tuesday 18 <sup>th</sup> of October	Lecture 3 (3.5 hours) Time: 14:00 Auditorium SM	F. Romagnoli	<b>MODULE 4: case studies</b> 1. Case studies from ongoing research at RTU-VASSI 2. Example from international studies: a. From Henry and Ramirez-Marquez: transport simple case b. Mayada: transport case c. Urban Ecosystem Resilience through HSP networks (eventually) d. Dojutrek Samuel Labi, transport (eventually)
Tuesday 15 <sup>th</sup> of November	Seminar (2 hours) Time: 9:00-10:45 Auditorium SM  Practical work (3+3 hours) Time: 11:00-13:15; 14:00-16:15 Auditorium SM	F. Romagnoli  F. Romagnoli A. Scarelli	<b>Seminar: An introduction to geophysical methods as a tool for mitigation of natural hazards and environmental protection</b>  <b>MODULE 5: Practical activity for community and CI resilience assessment: use of MCA/AHP theory, use of software</b> 1. MCA and AHP tools by using of softwares (Prof. A. Scarelli)
Tuesday 29 <sup>th</sup> November	Seminar (2 hours) Time 9:00-10:45 Auditorium SM  Lecture 4 (3.5 hours) Time: 14:00 Auditorium B11	F. Romagnoli  F. Romagnoli F. Toseroni	<b>Seminar: Life Cycle Assessment and Resilience of Bioenergy and Bioproducts Systems: an holistic system perspective</b> 1. The use of LCA perspective within a resilience optimization framework 2. The resilience of the Bioenergy sector 3. The resilience of a biogas/biomethane system 4. Experience from RTU-VASSI research  Resilience to Disasters: case studies