Engineering at the Service of the Community

1. **Course number and name:** 020GSCNI1 Engineering at the service of the community

2. **Credits and contact hours:** 2 ECTS credits, 1x1:15 contact hours

3. **Name of course coordinator:** Alain Ajam

4. **Instructional materials:** PowerPoint slides; projects

5. **Specific course information**
   a. **Catalog description:**
      This course aims to explore the role of engineers in modern society, with a particular focus on innovation, renewable energies, green buildings, design, food security, recycling, and other areas relevant to our daily lives. Students will learn how engineers can leverage their technical skills, knowledge, and tools to address and solve social and environmental challenges through engineering.

   b. **Prerequisites:** None

   c. **Required/Selected Elective/Open Elective:** Required

6. **Educational objectives for the course**
   a. **Specific outcomes of instruction:**
      − Understand the engineer's role in sustainable development and enhancing the quality of life.
      − Comprehend current social and environmental issues.
      − Explore various engineering applications in areas such as innovation, green building, and waste management.
      − Promote critical thinking and problem-solving, focusing on sustainable and responsible solutions through practical examples:
         - Health Technologies: e.g., remote consultation, real-time monitoring.
         - Environmental Monitoring and IoT Solutions: e.g., creating sensor networks to track pollution levels, climate changes, and water quality.
         - Public Safety and Security: e.g., protecting individuals and organizations against cyber threats.
         - Smart Cities and IoT Solutions: e.g., optimizing traffic management, waste disposal, energy consumption, and overall urban living conditions.
         - Public Infrastructure Construction and Road Safety.
         - Waste Treatment and Recycling.

b. PI addressed by the course:

PI	3.2	4.1	4.2	5.2
Covered		x	x	
Assessed	x	x	x	x

7. **Brief list of topics to be covered**
   − Introduction to civic education and engineer's role in sustainable development (2 lectures)
   − Applications of Engineering in: Innovation, Green Building, Urban Planning and Sustainability and Public Infrastructure and Road Safety (6 lectures)
   − Applications of Engineering in: Smart Cities, Urban IoT Solutions and Artificial intelligence applications (2 lectures)
   − Projects (2 lectures)