Composite Materials

1. **Course number and name:** 020MACCS5 Composite Materials

2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours

3. **Name of instructor:** Melissa Said

4. **Instructional Materials:**
   - Engineering Mechanics of Composite Materials, I. M. Daniel, O. Ishai, 2006
   - Composite Materials Science and Engineering Third Edition, K. K. Chawla, 2012

5. **Specific course information**
   a. **Catalog description:**
   This course explores the fundamental principles of composite materials, covering their classification, manufacturing, characterization, micromechanics, and macromechanics. Nonconventional composites are also discussed.

   b. **Prerequisites:** 020CITNI4 Inorganic Chemitry and laboratory; 020CHPCS1 Chemistry of polymers

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

6. **Educational objectives for the course**
   a. **Specific outcomes of instruction:**
      - Gain comprehensive understanding of composite materials and their classifications.
      - Understand basic manufacturing processes and characterization methods of composite materials.
      - Explore micromechanics principles in composite materials.
      - Analyze the elastic behavior of composite plies and laminates.
      - Gain knowledge of nonconventional composites.

   b. **PIs addressed by the course:**

PI	1.1	1.2	1.3
Covered	x	x	x
Assessed	x	x	x

7. **Brief list of topics to be covered**
   - Introduction to composite materials
   - Manufacturing and characterization
   - Micromechanics
   - Elastic behavior of a ply (macromechanics part 1)
   - Elastic behavior of a laminate (macromechanics part 2)
   - Nonconventional composites