Industrial Chemistry

1. **Course number and name:** 020CHICS2 Industrial Chemistry

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

3. **Names of instructors:** Dominique Salameh

4. **Instructional materials:**
   - Chimie Industrielle, R Perrin et J-P SCHARFF, Masson, Paris
   - Aide Mémoire Génie Chimique, Emilian Koller, Dunod
   - Chimie Industrielle, Dunod, France
   - International Standard ISO 14040 ; 14044
   - Salameh, D., Maamari, O., Mrad, M., 2014. Manuel de la gestion des déchets d'activités de soins. Edition arcenciel. ISBN 7-2780-0-9953-978
   - Incineration technologies : Springer editions, Alfon Buekens, 2012

5. **Specific course information**
   a. **Catalog description:**
   Introduction to industrial engineering, through a comparative study of processes in inorganic chemistry and organic chemistry: This course allows students to analyze a process diagram and, conversely, to design a block diagram based on the description of the process. This course teaches students the design of the first flow sheet of a process based on its description, the choice of technology (reactor, separations), the positioning of recycling, purges, the production chain, the industry economy interaction etc. The course ultimately provides some elements on the safety aspects and the environmental impact of the processes.

   b. **Prerequisites:** None

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

6. **Specific goals for the course**

   a. **Specific outcomes of instruction:**
   At the end of this course, students will be able to:
   - delimit the fields of industrial chemistry.
   - differentiate the major areas of basic, fine and parachemical industrial chemistry.
   - describe some main production chains in each of the areas of industrial chemistry.
   - apply the principles of chemical thermodynamics and chemical kinetics to industrial processes.
   - explain the economic and political interaction with the world of industrial chemistry.
   - interpret basic industrial diagrams and their usefulness in chemical fields.
   - differentiate the terms process, sizing, process in each of the underlying components of the chemical industry.

b. PIs addressed by the course:

PI	2.1	2.2	2.3
Covered	x	x	x
Assessed	x	x	x

7. Brief list of topics to be covered

Chapter I - The delimitation of the fields of industrial chemistry
Chapter II- The Industrial Economy
Chapter III - Industrial logistics, the infrastructure of an industry
Chapter IV - Unit processes in industrial inorganic chemistry: basic, synthetic and parachemical
Chapter V - Unit processes in industrial organic chemistry: basic, synthetic and parachemical
Chapter VI - Methodologies for studying a process
Chapter VII - Life cycle analysis and the application of Lean management
Chapter VIII - Calculation of machining capacities in the chemical industry