Curriculum - Academic Year 2018-19
Characteristics of the Course Units

Name	*Processes modelisation*
ECTS credits	*4*
Year / Semester	*III /1°*
Specific learning outcomes	*Having successfully completed this module, student will be able to demonstrate knowledge and understanding of:* *- Demonstrate knowledge and understanding of the basic ideas underlying modelisation techniques.* *- Constructing a set of mathematical functions describing the phenomenon. By modifying the initial variables, one can thus predict the modifications of the physical system.* *- Constructing a physical system that reproduces more or less a phenomenon that one wishes to study. Observation of the behavior of the model makes it possible to draw lessons on the phenomenon of interest.* *- Participate in class discussions with colleagues and with teachers*
Contents	*1. Definition, objective.* *2. Modeled and simulation; the stages of modeling:* ** Definition of the system,* ** the assumptions of the model,* ** mathematical consistencies of model* ** Mathematical resolution of the model* ** Evaluation of the model* *3. Formulation of the model in order to Simulation* *-The fundamental laws of modeling in process engineering:* *-Principle of conservation of the material: Physical and Chemical process; processes (discontinuous and continuous process)* *-Bilans in unit operations; Energy equations*
Teaching and learning methods	*Face to face, 72 hours*
Teaching techniques	*Lectures, 24 hours* *Practical classes, 48 hours*
Assessment methods	*Written and practical.* *Consulting with lecturer during office hours.* *Consulting with teaching assistant during office hours.* *Private sessions for redelivering the lecture contents.*
Assessment criteria	*In the mid-term test students should demonstrate their ability to:* • *Develop mathematical models for a range of practical problems.* • *Appreciate the power of using the mathematical approach problems relevant to engineering* *Finally, students' ability to participate in class discussions with teachers and colleagues will be assessed in practical classes.*
Assessment metrics	*Attribution of a final grade*
Criteria of attribution of the final grade	*The final grade will be determined according to the following rules:* *Midterm Evaluation: (30%)* *Final exam: (40%)* *practical classes assessments: (30%)*

Preparatory course units	*N.A.*
Didactic material	*Computational Flow Modeling for Chemical Reactor Engineering; RANADE, V. V. (2001). Principles of Chemical Engineering Processes_ Material and Energy Balances Ghasem, Nayef_ Henda, Redhouane-CRC Press_Taylor & Francis Group (2014) Modeling_of_Chemical_Kinetics_and_Reactor_Design; A. Kayode Coker; (2001).*