

## Course Syllabus

1. **Course number and name:** 020INMCI2 Magnetic induction
2. **Credits and contact hours:** 2 ECTS credits, 1x1:15 course hours
3. **Instructor's or course coordinator's name:** Rémi Z. DAOU
4. **Text book:** *Physique tout-en-un MPSI, Salamito, J'intègre-Dunod, 2013*
5. **Specific course information**
  - a. **catalog description:** This course is new for students since they only had a descriptive approach to the magnetic field at high school. It is concerned with everyday applications: compass, electric motor, alternator, transformer, speaker, induction plate, radio frequency identification .... Magnetic flux is introduced and magnetic dipole of a current circuit is generalized to magnet.
  - b. **prerequisites or co-requisites:** None
  - c. **Required/Elective/Selected Elective:** Required
6. **Specific goals for the course**
  - a. **Specific outcomes of instruction:**
    - Master the notions of vector field and its flux
    - Evaluate the actions of a magnetic field upon a circuit or a magnet
    - Use the notion of magnetic moment
    - Recognize or evaluate order of magnitudes
    - Master orientation rules for obtaining mechanical and electrical equations
    - Carry out an energy balance
    - Implement experiments illustrating induction phenomena
  - b. **KPIs addressed by the course:**

<b>KPI</b>	a1	a2	b1	b2	b3
<b>Covered</b>	x		x		
<b>Assessed</b>	x				
<b>Give Feedback</b>	x				

7. **Brief list of topics to be covered and approximate number of lectures:**
  1. Magnetic Field (2 lectures)
  2. Mechanical action of a magnetic field (3 lectures)
  3. Laws of induction (3 lectures)
  4. Effect of a variable magnetic field on a fixed circuit (3 lectures)
  5. Effect of a constant magnetic field on a moving circuit (3 lectures)