

Course Syllabus

1. **Course number and name:** 020MC2CI3 Mechanics 2
2. **Credits and contact hours:** 2 ECTS credits, 2x1:15 course hours
3. **Instructor's or course coordinator's name:** Marwan BROUCHE
4. **Text book:** *Physique tout-en-un MP, Salamito, J'intègre-Dunod, 2014*
5. **Specific course information**
 - a. **Catalog description:** Frames of references, equation of motion, translation, fixed axis rotation, kinematic analysis using rotating frames of references, Galilean transformation, Coriolis kinetics, Non inertial reference frame, Inertial force, Conservative Forces, Dynamics, Non-inertial Forces, Copernic reference, terrestrial reference, geocentric reference, Coulomb's Law of friction.
 - b. **prerequisites or co-requisites:** 020MC1NI1 Mechanics I
 - c. **Required/Elective/Selected Elective:** Required
6. **Specific goals for the course**
 - a. **Specific outcomes of instruction:**
 - Define the basic concepts in classical mechanics.
 - Explain, calculate, and analyze central problems in mechanics as for example rotation about a fixed axis, rolling,
 - Understanding the concept of different type of frames and Study them in many cases.
 - Explain the Galilean transformation, kinematics.
 - Analyze the state of motion of a rigid body and find out how the velocities and accelerations in different points are connected.
 - Be able to contrast the Coriolis force.
 - Develop Non inertial reference frame, Dynamics.
 - Define Coulomb's Law of friction.

b. KPIs addressed by the course:

KPI	a1	a2	b1	b2	b3
Covered	x		x		
Assessed	x				
Give Feedback	x				

7. **Brief list of topics to be covered and approximate number of lectures:**
 - 1) 2 frames in a translation motions, fixed axis rotation (4 Lectures)
 - 2) Kinetics , accelerations (4 Lectures)
 - 3) Galilean transformation, kinematics (4 Lectures)
 - 4) Coriolis kinetics, Non inertial reference frame, Dynamics (6 Lectures)
 - 5) Inertial force, Copernic reference, terrestrial reference, geocentric reference (6 Lectures)
 - 6) Coulomb's Law of friction. (4 Lectures)