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| 6.0 credits | 30.0 h + 30.0 h | 2q |
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| Teacher(s) : | Fisette Paul ; Sobieski Piotr (coordinator) ; |
| Language : | Français |
| Place of the course | Louvain-la-Neuve |
| Main themes : | The course is divided in two parts. The first one (2ECTS) continues the introduction of the fundamentals of electromagnetism; the second one (4ECTS) deals with the mechanics of rigid bodies. Both parts extend the skills acquired previously by the students during course FSAB1201 Physics 1. The first part introduces basic laws of electromagnetism, and their applications in vacuum and matter as well (Biot-Savart & μ_0 ; Ampere laws; magnetic induction, simple magnetic circuits). Induction phenomena due to variable magnetic fields (Lenz-Faraday laws, inductance) are then treated. The second part starts with elements of 3D vector geometry needed to represent the instantaneous configurations of one or several interconnected rigid bodies. Next it derives the equations describing the dynamics of a single rigid body (Newton-Euler equations), and then it deals with the tools necessary to modelize rigid bodies dynamics (by means of generalized coordinates). Finally, it briefly presents some elements of rigid bodies static's (cutting method, iso- and hyper-static configurations,). |
| Aims : | <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i> |
| Content : | Summary: content and methods Part 1. Magnetostatics - induction - electromagnetic field - Magnetostatics in vacuum - Magnetostatics in matter - Electromagnetic induction phenomena Part 2. Mechanics of rigid bodies - Vectorial geometry and kinematics in 3D - Dynamic characterization of a rigid body (mass center, inertia, ω) - Dynamics of a system of interconnected rigid bodies - Static of a system of rigid bodies Methods: Problem-based learning, exercises, lectures, practical classes |
| Cycle and year of study : | > Bachelor in Engineering > Bachelor in Engineering : Architecture |
| Faculty or entity in charge: | BTCI |