Materials Technology

Calendar: 1st Year 2nd Semester

Contact Hours: : 45h00 T/P + 7h30 EL/OT

Syllabus:
Construction products directive. Portland Cement. Additions: pozzolans, blast furnace slag, Silica fume, fly ash and other Pozzolanic materials. Special cements. Concrete: study of the composition and its formulation by the method of reference curves. Properties of fresh and hardened concrete. Characterization of concrete in the laboratory. Special concretes: autocompactável, reinforced with fibers, light, colorful, with recycled aggregates, polymeric and designed. Bitumen and bituminous Emulsions: bituminous; Types of Bituminous Pavements; Manufature, transport and application of bituminous mixtures; Quality control. Regulations. Aluminum and steel: steels for steel structures, reinforced concrete and prestressing. Properties. Treatments. Welding. Main structural aluminium alloys. Polymeric materials: classification of polymers. Formation and production of polymers. Properties. Composites: processing. Layer constitutive laws.

Intended learning outcomes of the curricular unit:
Transmitting knowledge related with the construction products directive. Provide scientific and technical expertise in the field of construction materials, including concrete, steel and aluminum, polymers, composite materials and new building materials, through the analysis of raw materials, processing techniques, properties and their evaluation, standardization and application in force. To provide students knowledge and skills related to trial activity/laboratory.
Specific skills: Enunciate, interpret and solve engineering problems to interpret and use manuals and other technical documents, in your native language and other Training so that they can practice their profession of engineer with analytical capacity, critical spirit and innovative direction.
General skills: Use the technical and scientific literature data Collects, analyses, characterizes and produces information organize and plan work knows how to work in a team.

Demonstration of the syllabus coherence with the curricular unit's intended learning outcomes:
Since it is objetive syllabus is to provide scientific and technical expertise in the field of building materials, the syllabus of UC include the study of concrete, steel and aluminum, polymers, composite materials and new building materials. So that the student can make the judicious selection of the type of material to be applied in each specific situation is presented raw materials and processing, characteristics and properties. Further, the study of each material is accompanied by an analysis of existing standards to characterize properties of the same, with particular emphasis on laboratory activity in support of the scientific and technical development within the framework of research and development projects.

Teaching methodologies (including evaluation):
The classes are taught in theoretical-practical regime. On the theoretical component exposes the foundations necessary for comprehension of the material using the projection of slides, complemented by lectures given by companies of various specialties, as well as by several individuals, contact with samples and catalogues. In the practical component used for laboratory work. It is intended that the student acquires knowledge of the subjects listed in the program of the UC

through its involvement in research and development projects where the student is forced to use the technical and scientific literature data; to organize and plan work (individual and/or team); to take decisions as appropriate and contextualized as well, the evaluation of UC is composed of a project, work in group, with technical and scientific research and laboratory practice component, with a weight of 60% and a written test (individual) with a weight of 40%.