

Module Title and Purpose	<p>Module Title, Code</p> <p>MATERIALS TESTING METHODOLOGY 30-MTM-800</p> <p>Obligatory professional</p> <hr/> <p>Aims/Goals of the Module</p> <p>This course aims to provide more detailed information to civil engineering students in terms of experimentation, controlling all the elements that are essential for building constructions. In the field of construction engineering it is very important to know the laws and regulations at national, European and international level, the basic characteristics and in this regard devices that can run these tests to know important properties of materials such as cement , concrete, rebar, wood, etc. This course also has a duty to outline various tests and timed to be carried out in order to determine resistance and other characteristics most specifically related to concrete structures.</p>
Module Delivery	<p>Contents</p> <p>The importance of experimental research; basics of probability, statistics and analysis of experimental data; the basics of metrology and measurement of overall measurement devices; sustainability norms for materials; cement mixing; Steel and its testing; ordinary steel for concrete reinforcement; concrete prestressing steels; fatigue of materials; Other integral components of concrete; devices for measurement of length and displacement; devices for measuring speed and acceleration and, equipment for measuring deformations and forces; various models of experimentation - the laws of comparisons; dynamic experimentation; evidence not detrimental/destructive; sonic frequency vibrations and combined evidence; partially damaging evidence/destructive concrete, pull-out, pull-off, windsdor evidence; destructive tests/pest: the extraction of samples in structures; tests on masonry; testing of welds; reactive fluids; magnetic powder, ultrasound and x-rays; the static control structures; tests of the static loading control structures; deformations of structures depending on the time of loading; Various laboratory tests on wood-based materials.</p> <hr/> <p>Literature</p> <p>[1] The testing of materials of construction</p> <p>[2] Ultrasonic Testing of Materials by Krautkramer</p> <p>[3] Malhotra, V. M.; Carino, N. J.: Handbook on Nondestructive testing of Concrete, Second Edition, CRC Press, 2004.</p>

	<p>[4] Non-Destructive Test and Evaluation of Materials, Second Edition, McGraw-Hill Education, 2011 McGraw Hill Education (India) Private Limited</p> <p>[5] FIB bulletin no. 22, Monitoring and Safety Evaluation of Existing Concrete Structures, State-of-art report, 2003.</p> <p>Teaching and Learning Methods: Lectures, exercises, consultations and graphic works</p> <p>Total Contact Hours: 28+28+3=59 Hours</p> <p>Range of other Learning Methods:</p> <p>Total Study Hours: 66 Hours</p> <p>Total contact and study hours: 125 Hours</p>
Module Assessment	<p>Module Learning Outcomes :</p> <p>Student is able for designing and executing tests on various materials.</p> <p>Assessment Methods:</p> <p>Participation in exercises and lectures articipation, Mid-term test, Project, Written Exam and Oral Exam</p> <p>Number, type and method of evaluation :</p> <p>Participation 8%, Project 30% , Mid-term test 2 20% , Written Exam 36% , Oral Exam 26%, Total 100%</p>
Module Management	<p>Credit Points and Duration</p> <p>4 ECTS, One semester, (III)</p> <p>Contact Person</p>
Compiled by:	V. Krelani
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