General Information:

Name of Course: # CONSTRUCTION MATERIALS 1

Course Code: PM-KKONB046 CA
Semester: 2nd
Number of Credits: 3
Allotment of Hours per Week: 2 Lectures /Week
Evaluation: Signature (with grade)
Prerequisites: **None**

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Introduction, General Course Description:

This course provides students with a useful knowledge concerning specific properties of construction materials such as chemical, physical and mechanical properties. Procedure of concrete mix design and testing are demonstrated. Case studies on specific application and testing materials are presented.
Topics of the course cover also environmental effects on construction materials and durability issues.
Special emphasis is given to material degradation due to corrosion, solutions for protections and recycling of materials.

Learning Objectives:

Students will gain from this course:
- Knowledge of specific material properties for most common and advanced building materials,
- Practical knowledge of concrete mix design,
- Understanding of the chemical background of degradation processes of materials such as corrosion,
- Overview on factors affecting durability of construction materials and structures,
- Knowledge on the recycling process of construction materials.

Methodology:

- **Lectures**: will give an introduction to the properties, manufacturing and practical use of construction materials.
- **Practical class**: Students will be assigned tasks to complete. These tasks may expand on the experimental work and may have “research components” where students need to gather information required to complete a task and present its conclusions.
- **Exams:** Accumulated knowledge is tested in two exams: a midterm and a final exam. Both feature multiple-choice, true-false or short essay questions.

Schedule:

Week	Topic of lecture
Week 1	Course description. Orientation.
Week 2	Specific properties of construction materials.
Week 3	Concrete mix design 1 (properties of concrete ingredients)
Week 4	Concrete mix design 2 & 1st assignment: concrete mix design problem

Week 5	Concrete mix design 3 (properties of hardened concrete)
Week 6	Composite materials 1 (reinforced concrete)
Week 7	Composite materials 2. (fibre reinforced plastics)
Week 8	**Midterm exam. Submit of 1st assignment.**
Week 9	*Break – no class*
Week 10	Degradation and durability of construction materials 1 (environmental effects). 2nd assignment: Short essay. Preparation for presentation.
Week 11	Degradation and durability of construction materials 2 (Corrosion. Protection against corrosion).
Week 12	Recycling of construction materials. Presentations of 2nd assignments.
Week 13	Construction products. Presentations of 2nd assignments.
Week 14	**Final exam**
Week 15	**Second exam** (only if required). **Presentations of 2nd assignments.**

Attendance:

Attending is required all classes, and will impact the grade (max. 10%). Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

Grading:

10% - Attendance
40% - Assignments
25% - Midterm Exam
25% - Final Exam

Grade:	5	4	3	2	1
Evaluation in percents:	89%-100%	77%-88%	66%-76%	55%-65%	0-54%

Students with Special Needs:

Students with a disability and needs to request special accommodations, please, notify the Deans Office. Proper documentation of disability will be required. All attempts to provide an equal learning environment for all will be made.

Readings and Reference Materials:

Peter Domone, John Illston: “Construction Materials: Their Nature and Behaviour”, Fourth Edition, 2010 by CRC Press, ISBN 9780415465151.