## 1. Course number and name

RB-S1-19-W23-88, Building Materials II

## 2. Credits and contact hours*

3 ECTS, lectures: 15 hours**, classes: 5 hours**, laboratory classes: 10 hours**

## 3. Instructor's or course coordinator's name

Jan Pizoń, MSc, PhD

## 4. Text book, title, author, and year

- Taylor G. D.: Construction materials. Longman Scientific & Technical, 1991.
- Illston J. M.: Construction materials, their nature and behaviour. E & FN Spon. 1994.
- Lyson A.: Materials for Architects and Builders. Elsevier Butterworth-Heinemann, Oxford 2004
- Duggal S. K.: Building Materials. New Age International Publishers, New Dehli 2008. Neville A. M.: Properties of concrete. Pearson, 2013.
- Neville A. M.: Concrete technology. Pearson, 2010.

a. other supplemental materials

- Standards: EN 196-1:2016-07, EN 196-3:2016-12, EN 13279-1:2009, EN 13279-2:2014-02, EN 12620+A1:2010, EN 932-3:1999/A1:2004, EN 933-1:2012, EN 1097-2:2010, EN 1097-3:2000, EN 1097-6: 2002/A1:2006, EN 998-1:2016, EN 998-2:2016, EN 1015-3:1999, EN 1015-4:1999, EN 1015-6:1999, EN 1015-10:1999, EN 1015-11:1999, EN 206:2013+A1:2016, EN 12350-1:2019, EN 12350-2:2019, EN 12350-6:2019, EN 12390-1:2012, EN 12390-2:2019, EN 12390-3:2019, EN 12390-7:2019.

## 5. Specific course information

a. brief description of the content of the course (catalog description)

Lectures:

(1) Introduction to concrete technology, (2) Binders, (3) Cements, (4) Mortars, (5) Aggeegates, (6) Concrete (a) basics, (b) durability, (c) admixtures and additives, (d) special cocnretes, (e) mix design.

Classes:

Introduction to laboratory classes, presentation of experiments and tests to be carried out.

Laboratory classes:

4 laboratory classes to perform on the following topics: binders, aggregates, mortars, concrete.

b. prerequisites or co-requisites

Building materials III course.

c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program

Required.

## 6. Specific goals for the course

a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic

The student can:

- describe selected mathematical, physical, chemical definitions, principles, rules and methods that are used in building materials technology
- describe selected principles of industrial production of building materials and wares and their role in building object
- describe selected basic problems of modern civilization in range of building materials, development perspectives of building materials industry and influence of construction on the environment and vice versa
- give classifications of building materials – binders, pastes, mortars, aggregates, concrete
- prepare plan and conduct simple laboratory tests for determining mechanical and physical characteristics of building materials and their durability

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

K1A_W01, K1A_W08, K1A_W10, K1A_U06

## 7. Brief list of topics to be covered

1. Binders: properties, classification, production, mechanism of setting and hardening.
2. Cement – manufacture, properties, classification, applications
3. Gypusm – manufacture, properties, classification, applications
4. Lime – manufacture, properties, classification, applications
5. Aggregates: properties, classification, production, applications
6. Mortars (masonry, plastering): properties, classification, applications
7. Concrete: properties, classification, constituents production, applications
8. Design of concrete mix
9. Special concretes: lightweight concrete, SCC, HPC, fibreconcrete.

*- Consultations were not included in the contact hours

**-per semester