



UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL
PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA CIVIL:
CONSTRUÇÃO E INFRAESTRUTURA

ID:	PCI0017
Title:	TECHNOLOGY AND MIXTURE-PROPORTIONING OF CONVENTIONAL AND SPECIAL CONCRETES
Number of credits / workload	3 (45 hours)
Level:	<input checked="" type="checkbox"/> Master <input checked="" type="checkbox"/> PhD

Course description:

Constituent materials and internal structure of concrete. Relationships between structure and properties of the hardened paste. Technology and mix-proportioning of conventional concretes. High strength / high performance concrete technology and mix-proportioning. Technology and mix-proportioning of self-compacting concretes. Other special concretes.

Topics:

Introduction to the course. Choice of seminar themes and schedule of practical classes.

Properties of fresh concrete.

Properties of hardened concrete.

Constituent materials: cement, fine aggregate, coarse aggregate, chemical and mineral admixtures.

Internal structure of concrete.

Fundamentals of concrete mix design.

Mixture-proportioning methods for conventional concretes.



Mixture-proportioning conventional concrete in laboratory.
High performance / high strength concrete.
Mixture-proportioning methods for high-strength concretes.
Mixture-proportioning high strength concrete in laboratory.
Self-compacting concrete.
Mixture-proportioning methods for self-compacting concretes.
Mixture-proportioning self-compacting concrete in laboratory.
Technological control of concrete.
Special concretes: fiber concrete (GRC), self-cleaning concrete, self-healing concrete.
Presentation of seminars.
Final course evaluation.

Objectives:

This course aims to present the basic concepts and advanced topics related to the behavior of conventional and special concretes, as well as providing the necessary elements for design different types of concrete, developing experimental works.

Work method (main activities):

The course is developed through lectures, demonstration classes of concrete mix design in the laboratory and practical activities developed by the students in the laboratory, and the presentation by the students of the work they developed.

Grading:

The assessment is made by an individual exam at the end of the course about the contents covered in class and by experimental work developed by the students in a group, including a presentation to colleagues and lectures.

The number of experimental assignments, the number of students in each group and the weight of the test and assignments in the final grade is defined at each edition of the course, depending on the conditions of available infrastructure and the number of students enrolled.

References:

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