



## PH.D. in Civil Engineering

Universidad del Norte, College of Engineering · SNIES Code: 101803  
8 Semesters · Full time · Resolution No. 7180 of the year 2012 (7 years)

### Justification

The Ph.D program in Civil Engineering of the Universidad del Norte responds to the technological development needs of the country and especially of the Caribbean Region. A doctor in Civil Engineering has extensive work possibilities, both in industry and in the educational sector. The Universidad del Norte, through the research groups that support the program, has the resources and tradition to offer a quality program in this area of Engineering.

### Target Audience

Engineering professionals interested in extending their research knowledge and capabilities in the field of Civil Engineering, in its areas of Road Infrastructure, Transportation Engineering, Structural Engineering, Geotechnical Engineering, Environmental Engineering and Water Resources Engineering. Our graduates are oriented towards the search for solutions that meet the scientific, technological and environmental needs of the communities and the natural environment.

### Course Duration

8 semesters, 120 credits.

### General Objective

The Ph.D program in Civil Engineering of the Universidad del Norte aims to train professionals at the Ph.D level in the areas of knowledge that are characteristic of Civil Engineering, with a high level of knowledge, intellectual and scientific accuracy, competitive at the international level, able to carry out independent and original research that advance knowledge in its respective field of training, through proposals of innovative solutions to current and future regional, national and international, problems.

### Attendance

Full time (classes during the week, usually programmed in the afternoon hours, and Saturdays according to the area of emphasis).

### Study Level

Doctor of Philosophy (Ph.D) in Civil Engineering.

### Areas of Research

Road Infrastructure, Water Resources, Environmental Engineering, Structural Engineering, Geotechnical Engineering, and Transportation Engineering.

# Curriculum

## Core Courses

Approve all (8 credits)

- Statistical Design and Analysis ..... 4
- Computational Methods for Modeling ..... 4

## Concentration Courses in Mathematics

Approve 12 credits of the offer

- Elective in Mathematics I ..... 4
- Elective in Mathematics II ..... 4
- Elective in Mathematics III ..... 4

*\*To choose according the semester's availability*

## Research Component

Approve 48 credits of the offer

- Research I ..... 2
- Research II ..... 2
- Research III ..... 2
- Research IV ..... 2
- Qualification Requirement ..... 0

## CREDITS

- Doctoral Thesis I ..... 10
- Doctoral Thesis II ..... 14
- Doctoral Thesis III ..... 14
- Doctoral Thesis IV ..... 14
- International Research Internship ..... 8

## \*<sup>1</sup> Elective Courses

Approve 32 credits of the offer (According to each line of research availability)

- Elective I ..... 4
- Elective II ..... 4
- Elective III ..... 4
- Elective IV ..... 4
- Elective V ..... 4
- Elective VI ..... 4
- Elective VII ..... 4
- Elective VIII ..... 4

## \*<sup>1</sup> Electives associated with reseach lines

Environmental Engineering	Transportation Engineering	Geotechnics	Road Infrastructure	Hydric Resources	Structures
Chemistry and Environmental Microbiology	Transportation Modeling	Finite Element Method	Pavement Engineering	Coastal Engineering	Advanced Reinforced Concrete Design
Water Quality	Traffic Engineering	Advanced Topics in Geotechnical Engineering	Asphaltic Materials	Fluvial Hydraulics	Earthquake Engineering
Air Quality	Multimodal Transportation	Soil Dynamics	Pavement Administration	Hydrodynamics	Design of Steel Structures
Environmental Pollution	Infrastructure Projects Economics	Slope Stability Analysis	Advanced Pavement Design	River Engineering	Advanced Structural Analysis
Solid Waste	Transportation Network Modeling	Advanced Soil Mechanics	Pavement Rehabilitation	Modeling on Hydrology	Dynamics of Structures
Environmental Impact	Urban Transport	Advanced Foundations	Slope Stability Analysis	Urban Drainage	Finite Element Method

**Note: This table is only illustrative, the offer may vary every semester.**

- Qualification Requirement: To take a candidacy exam (Dissertation project).
- The curriculum presented is only illustrative. The student can choose his/her courses each semester. The maximum number of credits per semester is 14.
- The courses are opened according to the demand
- Overseas internship has a minimum duration of three (3) months. It can be done starting from the sixth semester, during intersemestral periods or academic semesters, once the qualification requirement is approved.
- Possibility of courses offered in English.

## More Information

postgradosingenieria@uninorte.edu.co  
 Telephone: (+ 57 5) 3509509 ext. 4620  
 www.uninorte.edu.co