UNIVERSIDAD DEL NORTE

Vigilada Mineducación

Ph.D. in
Industrial Engineering

Universidad del Norte, College of Engineering · snies code 54133
8 semesters · On campus · Resolution 366 of the year 2016 (7 years)

Justification

The overall purpose of the Ph.D. (Doctoral Degree) in IE is to train individuals with a high level of knowledge, intellectual and scientific accuracy, enabling them to carry out research activities that generate innovative solutions in regional, national and international problems.

In the doctoral program of IE, the student strengthens his/her skills for research, analysis and design of production systems, based on the achievement of specialized knowledge, human values, creativity and leadership.

Likewise, the student is guided so he/she may improve and make more efficient his/her research through the early guidance by advisors, who carry out a follow-up in order to train him/her and assist the fulfilment of his/her objectives.

Target Audience

The program is aimed at IE or professionals of other engineering programs with an interest in the development of research training studies in the area of IE. Also, for those professionals of other disciplines who have research experience in any topic related to the research lines of the program.

General Objective

To train individuals at the doctoral level in the area of IE, with strong research capacity, intellectual and scientific accuracy, enabling them to be intellectually autonomous and competitive at the international level in the appropriation of knowledge and creation of original scientific contributions.

Course Duration

8 academic semesters, 120 credits.

Degree Awarded

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

Attendance

Full-time.

Curriculum

Core Courses
Approve all

Credits

- Multivariate Optimization 4
- Business Process Management 4
- Advanced Programming 4
- Operations Management 4

Concentration Courses in Mathematics
Approve 12 credits

- Discrete Mathematics 4
- Numerical Analysis 4
- Mathematical Statistics 4

Emphasis Courses
Approve 20 credits

- Models of Transportation Management 4
- Scheduling 4
- Systems Dynamics 4
- Game Theory 4
- Advanced Simulation Topics 4
- Integer Programming 4
- Nonlinear Programming 4
- Knowledge Management 4

**Other courses of the same academic level offered in the College of Engineering and approved by his/her tutor*

Elective Courses
Approve 24 credits

Credits

- Complexity Theory 4
- Heuristic Optimization 4
- Stochastic Processes 4
- Data Mining 4
- Multivariate Statistical Methods 4

**Other courses of the same academic level offered in the College of Engineering and approved by his/her tutor.*

Research Component
Approve all

- Research I 2
- Research II 2
- Research III 2
- Cualification Exam 2
- Doctoral Thesis I 6
- Doctoral Thesis II 6
- International Internship 8
- Doctoral Thesis III 6
- Doctoral Thesis IV 14

**Possibility of courses offered in English.*

In addition, all the following requirements that must be met before graduation apply:

- Participation, as presenter, in two (2) international conferences with papers in his/her area of research.
- Approval of his/her dissertation proposal by his/her Doctoral Committee.
- International research internship of at least three (3) months in an institution endorsed and recognized in his/her area of research.
- Publication or acceptance of at least one scientific paper in a journal within the ISI (Web of knowledge) classification, in co-authorship with his/her tutor.
- To submit at least another scientific paper to a magazine within the ISI (Web of knowledge) classification, in co-authorship with his/her tutor.
- Approval of his/her PhD thesis (dissertation) by his/her Doctoral Committee.

Curriculum for Spring 2018; it is currently under revision. Visit our web page for updates.

More information

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

UNIVERSIDAD DEL NORTE

Vigilada Mineducación