

Admissions

THE Master is open to students with a Licence or equivalent (BSc) in Informatics, Applied Mathematics or related courses. Students with at least 4 years higher education may be able to apply to enter directly into the second year of ORO. For many cases, specific rules may apply, allowing a motivated student to join the program.

The application procedure is available on the ORO web site and should be sent **before the 1st April** (first deadline for foreign applicants; mid of June otherwise). Lectures start the first week of September.



The **Lombarderie Campus** on which the courses are localized is situated close to the center of Nantes yet in a green area next to the Erdre river.

The campus is easily accessible (10 minutes away from town center) by tramway (line 2, station Michelet-Sciences) or by bicycle (many cycleways).

A special dedicated room is available for the students of the program. This room is equipped with 12 modern computers, software, a video projector and a library.

Finally, it should be noted that the program has an active **network of alumni**.

Contacts

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MSc in Computer Science International Postgraduate Program

Optimization in Operations Research

The science of better



UNIVERSITÉ DE NANTES



ÉCOLE DES MINES DE NANTES



UNIVERSITÉ
DE LILLE

Objectives

THE study includes **professional and research trainings**. The goal is to form high quality specialists of computer science in the domain of **operations research** and, in particular, in algorithmics and optimization, as well as in their **applications** in bioinformatics, robotics, production and logistic systems.

The program's ambition is to give the necessary knowledge to students in order to specify, design, realize and integrate **software solutions in the field of optimization** that meet the specific needs and challenges of our society in a broad range of sectors such as health, transport, sustainable development, communication, energy etc.

The future graduates will be able to apply for a **PhD Thesis** or a **position in computer science** engineering, logistics, resource scheduling, and in the longer term to become an adviser of decision support solutions.

<http://oro.univ-nantes.fr>

Program

THE program includes 4 semesters where the first three of them represent general courses (yellow color), specialized (orange color) and facultative (green color) trainings.

MSc (1st year) Semester 1 and 2	Machine Learning
	User Interface Design
	Multicore Programming
	Principles of Constraint Programming
	Introduction to Research
	Scientific English
	Entrepreneurship
	Presentation and Communication Skills
	Integer Programming
	Graphs and Networks
Decision Engineering	
Non Linear Optimization	
Data Structures and Algorithms	
Computability and complexity	
Metaheuristics	
OR Special Topic I	
Conferences	
Summer Internship	
MSc (2nd year) Sem. 3	Global Optimization
	Black-box Optimization
	Discrete Constraint Programming
	Large Scale Optimization
	Multi-Objective Optimization
	Multi-Objective MetaHeuristics
	Transportation and Logistics
	Planning and Scheduling
	Bioinformatics
	OR Special Topic II and Conferences
Sem. 4	Internship
	Applied Research

Organisation

- 750h of courses per student with an equivalent personal work volume, completed by (minimum) 5 month internship.
- 120 ECTS over 2 years (30 per semester).
- A pedagogical approach based on lectures, seminars, practical trainings and gradual informatics projects realized in groups.
- An academic staff of 20 persons and various collaborators.
- A possibility to continue as a Ph.D. Student after a research internship leading to the *Master Thesis*.

ORC International MSc
Computer Science Operations Research

International program

THE program has obtained the international label of the Université de Nantes. Namely, each student joining the 1st year of the program spends one semester abroad, either 2nd semester in a partner institution (e.g. Erasmus), or 4th semester within an internship framework (agreements with partners in Europe, Asia, America, Africa). The candidates may apply to offered grants for supporting the mobility.

The training proposes the possibility of the double diploma with the Université Libre de Bruxelles which co-organizes the study.

All the courses of the 2nd and 3rd semester are given in English.

Research Laboratories

THE program is organised with two research laboratories affiliated to the CNRS : the Laboratory of Informatics of Nantes-Atlantic and the Institute of Research in Communications and Cybernetics of Nantes.

