

An MSc program in computational economics with a focus on computational intelligence.

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An MSc Program in Computational Economics with a Focus on Computational Intelligence

Computational Economics (CE) is the field that explores the interaction of economics and computational systems. It is a multi-disciplinary field, relying on the input from various fields such as economics, computer science, and applied mathematics. The field is growing steadily, as evidenced by specific societies, journals and workgroups. IEEE Computational Intelligence Society's Computational Finance and Economics Technical Committee also focuses on this field. Gradually, we see that many university departments offer individual modules or courses related to the field of CE. This article summarizes an MSc program in computational economics as offered by the Erasmus School of Economics at Erasmus University Rotterdam in the Netherlands. There are a few programs in CE, but the one at Erasmus University distinguishes itself by its unique focus on computational intelligence (CI) and soft computing.

The Master program Computational Economics is one of the two programs offered within MSc Informatics & Economics. The aim of the program is to train students in analyzing complex economic problems from the finance, marketing, and logistics domains using modeling tools based on CI. Using these tools, it is possible to relax mathematical assumptions about the economic phenomena, bringing theoretical modeling closer to the practice. By applying techniques from computer science, it is possible to perform detailed simulations, to visualize data and to bring

intelligence into decision support by using reasoning, searching and learning methods. The Program is open to students with a background in a quantitative domain, such as econometrics, computer science, mathematics or engineering.

The 12-month Program starts in September and is organized in three phases.

All courses are taught in English. The student chooses a differentiation (finance, marketing or logistics) at the start of the program. During the first phase, the course Computational Intelligence gives a solid foundation on the three pillars of CI: neural networks, fuzzy systems, and evolutionary computation. It is complemented by Data Mining and Knowledge Discovery, which focuses on machine learning and computational statistics. In addition to these two core courses, the students follow two additional courses in their field of differentiation. These courses are taught by lecturers from the Econometric Institute that was founded by the Nobel Laureate Jan Tinbergen 50 years ago. In the second phase of the program, the students follow a specialization course in their differentiation and an integration course organized around practical problems in the economic domain. Further, the students work in teams for a seminar project, which is related closely to the research of the faculty and prepares the

students to write their master thesis in the third phase of the program.

The Computational Economics

Program has a strong orientation toward research. The seminar projects are often inspired by the research of the faculty regarding computational intelligence methods and their application in finance, marketing or

logistics. Master theses regularly lead to scientific publications, and a relatively large proportion of graduates continue in a Ph.D. program.

There is considerable demand for the program's graduates with their computational skills. During the master thesis phase, companies regularly offer internships to the students. After graduation, possible career opportunities include international positions as a supply chain analyst, customer relationship manager, financial risk analyst, and business intelligence consultant.

In conclusion, we can say that the MSc Program in Computational Economics of the Erasmus University serves to meet the increasing demand from the society for experts with computational skills and experience in a quantitative domain such as finance, marketing, or logistics. Through its strong research orientation, it also contributes to the development of CI and CE fields. Please visit www.informaticsandecomonomics.com for more information about the program.

