

## Specialisation

# Digitization and Data Analytics



*Digitization and the abundance of data transform the world. Firms reinvent their business models, global trade shifts into the internet, and governments find new ways to interact with citizens. How can machine learning and econometrics make data more useful? How can firms and governments find individualized solutions? How does digital trade change competition? The data driven future requires new skills. MEcon students are in the lead.*

Successfully analyzing large data sets and finding personalized solutions requires extensive programming skills and new statistical methodology. The new design of the compulsory econometrics courses merge the basics of machine learning with classical econometrics to provide students with the necessary tools of advanced data analytics. A rich menu of electives builds on these foundations and offers unique opportunities to specialize in digitization and data analytics. Among the many prestigious Master programs worldwide, MEcon is indeed unique in offering an *integrated* design of econometrics, machine learning and programming with applications in economics and management.

Here is an example how MEcon students could develop their data competence and digital skills by selecting 7 elective courses. To signal credible competence in methods as well as applications, **Big Data Statistics with R & Python** and **Industrial Organization and Digitization** and are essential. Experts need to know more about storing, handling and processing data. The student thus adds the elective **Data Handling III: Databases**. In addition, she chooses **Introduction to Web Mining for Social Scientists** to collect data generated by digital footprints. To invest in her skills to detect and analyse data patterns, she opts for the specialized course in **Machine Learning**. She is keen to apply her skills to problems in management and government. She realizes that digitization and big data affect all areas of economics from industrial economics (platforms, internet trade) to labour (new skill demands), international (outsourcing and firm organization), public (taxation of internet trade, E-government), financial (fin techs, crowd funding), and monetary economics (block chains and digital currencies). The specialization areas of MEcon offer many opportunities for applications. She attends **Economics of Central Banking**, which covers recent developments in block chain

technology and digital currencies. To better prepare for a private sector career with managerial responsibility, she also attends the course **Economics of Strategy**.

In the **contextual studies**, she searches for programming courses completing her investments in data skills, and adds some leadership courses. In addition, she looks for management courses to learn how firms redesign their strategies and business models to succeed in the digital world.

The **Master thesis** is the single most important show-piece of a student's research and problem solving expertise and centrally defines her area of specialization. She plans to use real time data and apply machine-learning methods to explain and forecast consumer behaviour on internet based trading platforms.

**Jobs:** Jobs requiring extensive digital and data skills are on offer in all areas of the economy including private sector firms, consulting firms, financial industry, government institutions, research institutes and academics. The skilled analysis of large data sets and the digital transformation offer hot research topics for a PhD study as well. Given her data skills and deep training in the microeconomics of digital business, she finally opts for a promising position in a large company where she is responsible for bridging the gap between technical experts and management.

## Formal Requirements

In order to graduate as a Master in Economics with a declared specialisation on the diploma supplement in **Digitization and Data Analytics**, students need to gain at least 16 ECTS from the following courses and write their Master's thesis in the area of **Digitization and Data Analytics**.

<i>7,260,1.00 Industrial Organization and Digitalization</i>	<i>4 ECTS</i>	<i>autumn</i>
<i>8,272,1.00 Big Data Statistics for R and Python</i>	<i>4 ECTS</i>	<i>spring</i>
<i>7,330,1.00 Data Handling III: Databases</i>	<i>4 ECTS</i>	<i>autumn</i>
<i>7,305,1.00 Statistics</i>	<i>4 ECTS</i>	<i>autumn</i>
<i>8,330,1.00 Machine Learning</i>	<i>4 ECTS</i>	<i>Spring</i>
<i>9,338,1.00 Introduction to Web Mining for Social Scientists</i>	<i>4 ECTS</i>	<i>spring</i>

## Contact

For questions regarding your study plan and the specialisations, please contact the Executive Director of the Master's in Economics: [mecon@unisq.ch](mailto:mecon@unisq.ch) or +41 (0)71 224 29 26.