



Fotos: Thilo Schmilgen, TH Köln

Information about the degree program

Digital Sciences Master of Science

The project-based program is offered cooperatively by the Faculty of Computer Science and Engineering (Gummersbach) and the Faculty of Information Science and Communication Studies (Cologne)

**Technology
Arts Sciences
TH Köln**

At a Glance

Program	Digital Sciences
Degree	Master of Science (M. Sc.)
Type of program	Full-time program
Program intake	Summer and winter semester
Program duration	3 or 4 semesters
Credits	90 or 120 ECTS credits
Language of instruction	Business Information Systems: English Data and Information Science: English IT Management: German and English Software Architecture: English
Campus	Gummersbach Campus and Cologne Südstadt Campus
Specializations	Business Information Systems; Data and Information Science; IT Management; Software Architecture
Restricted admission	Yes
Accreditation	Internal accreditation based on institutional accreditation standards, until Sep 30, 2027

The international Master's program in Digital Sciences offers four different specializations

- Business Information Systems
- Data and Information Science
- IT Management
- Software Architecture

You can choose from more than 60 modules to align your studies to individual interests and specific career profiles. The project-based program is offered cooperatively by the Faculty of Computer Science and Engineering (Gummersbach) and the Faculty of Information Science and Communication Studies (Cologne). It has an admission restriction.

In the **Business Information Systems** specialization, you will learn to align information technology with business requirements and establish capabilities at the interface between both. An in-depth basic understanding of business operations is taught to identify the fundamental requirements for IT and position IT as a driver for the business.

In times of rapid digitization, an agile IT landscape is needed which is able to align IT with business goals and to meet all quality requirements. Therefore, the digital support of intra- and inter-company value-adding processes as well as administrative and decision-making tasks are analyzed with the focus on strategy, innovation, and management. The specialization is oriented towards the profile of managers and consultants who combine in-depth knowledge of business models with a high level of technical expertise. As a graduate, you will be able to proactively implement corporate goals in design fields by evaluating technologies, standard application software, individual solutions, and services, guiding development and implementation projects in an interdisciplinary manner. IT architecture is seen as an innovative factor. In doing so, you pursue a holistic approach that covers not only economic needs but also individual requirements and social aspects. Developing technology responsibly has to take into account the psychological effects of digitalization on human beings.

Typical graduate profiles are application manager, ERP consultant, BI consultant, business analyst, process manager, and many more.

The specialization **Data and Information Science (DIS)** focuses on developing new information from data and putting it into practical knowledge. Information is the basis for science, business, and political decisions and processes. Therefore, the lack of information and the use of incorrect information can have serious consequences. As a DIS graduate, you will work in organizations that depend heavily on generating information out of masses of raw data. Sources include web data such as digital information platforms, online retailers, social networks, online media, etc. Making the generated information accessible and putting it into practical knowledge is another cornerstone of this field of study. You will learn about methods and procedures of information analysis, information preparation, information retrieval, and information system technologies to improve the availability of information and satisfy information needs. Due to the high proportion of research-centered modules, research-focused companies and research infrastructures, like scientific libraries or Leibniz institutes, are potential employers. This research focus enables you to start a career in business, as well as in applied research.

Typical graduate profiles are business intelligence data scientists, LIS data analysts, and web data scientists.

The specialization **IT Management** (German language required) emphasizes strategic IT management. Beyond skills in operational IT management, we will deal with the sustainable setup, operation, and further development of IT and operational IT management. We consider setting up, operating, and further developing IT for efficiency and security on the one hand and having to meet requirements and support for digital transformation in focus on the other hand. The ability to explore new IT deployment scenarios and technologies and to assume management and budgetary responsibility are also included.

In the focus of this field of study, we have fundamentals, architectures, infrastructure, processes and models, resources and controlling, and last but not least, communication. Finally, we try to gain the ability to foster the development of the IT

strategy for the digital transformation of organizations and their business processes, set essential design impulses in the company, and be able to represent these at the management level and in teams. We have to face feasibility, acceptance, marketability, and value contribution and minimize the risks associated with the use of IT as indispensable resource. You, as a graduate, will frequently take the role of IT Manager.

In the specialization **Software Architecture**, you focus on large and complex IT systems. You see IT as a socio-technical system and pay particular attention to how humans create and use software systems. Software is becoming increasingly important in our society to develop innovative products and services. You will learn how to design systems that are robust, easy to maintain and modify, and optimally adapted to their context of use. The focus is on understanding software and subject matter domains, using interdisciplinary methods for system design, and taking social, technological, and economic conditions into account.

Before technical system solutions can be designed and implemented, you need to capture functional requirements and user needs in a structured manner. Based on that, you learn how to specify a suitable software architecture and lead your development teams to implement the system. In that process, you specifically focus on robust, well maintainable code.

Typical graduate profiles are solution or business architects, lead developers, user interaction experts, project managers, R&D lead, and many more.

Contact

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