



Attractiveness for Students - Why choosing the Master program of Applied Computer Science?

Why study International Master of Applied Science at the Schmalkalden University of Applied Science?

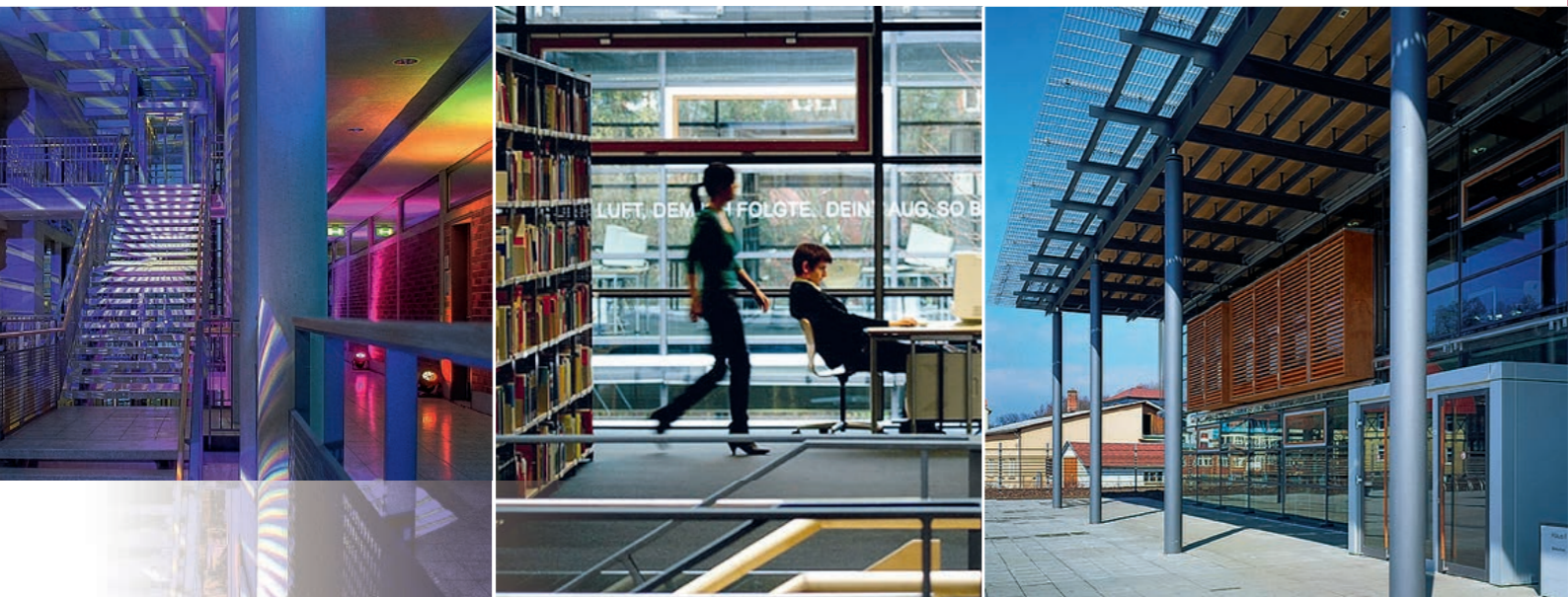
- Due to its international approach the International Master program of Applied Science at Schmalkalden University of Applied Sciences is especially attractive for students from other countries who want to acquire a master's degree in Germany and who are interested in a professional career in Germany or other European Countries. The International Master Program does not only provide all relevant courses in English but also enables the students to build up or extend their professional networks in Germany.
- This programme equips the students with a profound understanding of key concepts, methods and technologies and the organizational framework to engineer real-world software systems.

- Through its synthesis of practice-based teaching with the foundations of leading edge IT students acquire the technical and business knowledge required for modern IT in a global society.

The master program aims at helping students to develop and apply managerial and technological skills and in a practice-oriented environment. These enable the students to capitalize on their creative and cultural practices for taking an active and leading role in developing IT artifacts and contributing to research in IT.

- Many courses culminate in a hands-on project in which students develop their team skills, apply their technical knowledge and follow their specialist interests. The projects are placed in an international context with many students participating from abroad.
- During a placement in their second and final year the students gain invaluable work experience in a computing or information technology field.
- The students develop a clear sense of a wide field of subject areas in IT and how these interact with the sophisticated demand of today's society, industry, and governments as they develop throughout the 21st century.
- Lectures and exercises are held in English to allow a consistent presentation of issues in the above-mentioned fields. German students with a limited command of English will be provided with appropriate translations.
- We offer the students the opportunity to pursue a doctorate programme in collaboration with our industrial partners or as part of research efforts at the faculty.

INFORMATIK



INTERNATIONAL MASTER OF APPLIED COMPUTER SCIENCE

M A S T E R O F S C I E N C E S

International Master of Applied Computer Science



Characteristics ...

A new class of IT applications emerged gaining immense attention and substantially changed the social perception of Computer Science significantly. In the same time, new challenges arose from this class of smart systems altering methods for design, development and operation of IT systems in a fundamental way. These new challenges are deeply anchored with the main characteristics of these smart systems and applications:

- **Mobility:** Mobile systems are moving while providing or consuming services. Generally mobile users take mobile devices with them in order to utilize wireless communication services. Mobile Applications exhibit specific behaviors and are constrained in ways that were unknown in traditional IT systems. They have to be developed for economic use of scarce resources and at the same time to adapt gracefully to context changes.
- **Distribution:** Modern IT systems tend to be highly distributed. The adoption of mobile devices and wireless communication technology makes it possible to access services located globally. In consequence, the resulting complexity has to be met with adequate concepts, methods, and technologies.
- **Contextual dependence:** Due to mobility and rapidly changing environments applications have to adapt themselves to situational changes quickly. Smart applications are expected to deliver meaningful and adapted variants of their services in different type of environment (context awareness).

Central Topics of Applied Computing

• Distributed and Mobile Systems.

Central Topics include: Concepts and methods for the development of distributed and mobile systems, Software engineering, programming of mobile applications and communication technologies, Advanced concepts for the engineering of distributed systems as well as modern integration technologies and middleware platforms.

• Knowledge Engineering and Data Science.

For knowledge engineering and data science the autonomous interactions to several kinds of environments providing data is of basic importance. The courses provides build up a deep knowledge, from basic to advanced topics as well as practical abilities in data acquisition, digital signal processing with emphasis on time series processing and prediction, feature extraction methodologies and machine learning technologies.

• Software Engineering.

Central Topics include: Interdisciplinary and holistic techniques for the development of smart systems. This affects design, development, testing, and operation of these applications.

• Communication Technologies and Security.

Distributed and mobile systems are highly communication intensive. A solid knowledge of underlying communication technologies is a prerequisite for the development of these systems

and their security. The International Master Studies Applied Computer Science at Schmalkalden University of Applied Sciences provides qualifications in urgent need in all phases of the development and management of smart systems. A specific target is the qualification for scientific work in research projects as well as the preparation for a Ph.D.

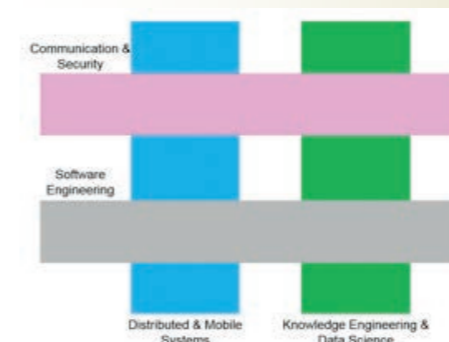


Figure 1: Focus Areas and Crosscutting Disciplines

Areas of Employment

There is a vast amount of emerging application areas for the development of smart applications. In industry but also in everyday life there are intensive efforts to foster the adoption of smart systems. An overview of these application areas would include:

- **Healthcare:** increase the efficiency and the quality of medical diagnosis and treatment
- **Logistics:** track & trace applications
- **Smart Grid:** smart meters send data related to the power consumption on the client side
- **Smart Homes:** Domestic appliances are enabled to interact with other devices and services over the internet
- **Tourism:** Location-based services can help tourists to get orientation in unknown environments
- **Industry 4.0:** machines from industrial production are further developed to cyber-physical systems, which are able to communicate with each other
- **Automotive Services:** cars communicate with other cars and use the information for making smart decisions
- **Ambient Assisted Living:** the living rooms of patients are equipped with sensor components in order to detect critical situations
- **Internet of things:** In all these application fields, mobile devices and applications communicate with each other using the Internet

It is safe to say that most of these efforts will result in the establishment of new and powerful infrastructure, which will have a deep impact on the future of society. Smart systems result in shorter control loops and can react better and faster to changing situations.

Structure of the Master Program ...

In the diagram obligatory courses are shown which have to be visited by all students. On the other hand every student is free to choose courses from different areas according to his needs and interests.

	Semester / Credit Points			
	1	2	3	4
Obligatory Courses				
Module Distributed Systems	5 CP			
Module Signals and System	5 CP			
Module IT-Security	5 CP			
Module Computer Graphics	5 CP			
Module Mobile Systems			5 CP	
Module Computational Intelligence		5 CP		
Module Agile Software Development		5 CP		
Module Service-oriented Networks		5 CP		
Module Web Applications			5 CP	
Module Seminar				5 CP
Module Project				5 CP
Elective Courses	10 CP	10 CP	15 CP	
Master's Thesis				27 CP
Master's Colloquium				3 CP
Total sum: 120 CP	30 CP	30 CP	30 CP	30 CP