

Qualification goals

Master of Digital Health

**Faculty European Campus Rottal-Inn
of the Deggendorf Institute of Technology**

Crated by:

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Gender neutrality

The use of double forms or other marking of female, male and diverse gender is largely avoided in order to maintain legibility and clarity. All titles for the various groups of members of the university refer equally to members of all genders of the groups concerned.

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1 Objectives of the programme

The innovative, interdisciplinary and international Master programme in Digital Health (MDH) offers excellent and motivated graduates of biomedical and computer science disciplines from around the world an exclusive opportunity to acquire in-depth knowledge, professional skills and competencies in the fields of Digital Health, including electronic health records and digital healthcare information systems, telemedicine, mobile health, digital therapeutics, remote patient monitoring and other innovative digital health applications, data analytics and artificial intelligence, and digitally-enabled personalized medicine.

The aim of the programme goes beyond the basic objective of “employability” toward professional proficiency and career success. The focus is on hands-on, solution-oriented and implementation-oriented competencies in an international context, which are gained through concrete, practice-based projects and real-life case studies. After acquiring fundamental knowledge and skills in Medicine/Healthcare and Computer science, the students will develop competencies in the areas of Health Care, Digital Health, and Research and Methodology, as well as Soft Skills. Within each module, synthesis and synchronisation will be achieved through translating knowledge into concrete case studies (deduction and induction). Finally, through Specialization Modules students will develop in-depth practical skills in two of the four areas: Digital Health Project and Programme Management, Digital Health Product and Startup Development, Digital Health Data Analytics and AI, and Digital Health Software Engineering.

2 Learning outcome of the programme

This programme imparts solid theoretical knowledge, practical skills and methodological expertise in the field of Digital Health – with an emphasis on management and research components – and prepares the graduates to take over leadership positions and drive the digital transformation of healthcare in Germany and worldwide.

The areas of competence that students of the Master of Digital Health learn, can be described as follows.

Fundamentals Module: Digital Health is an interdisciplinary domain that requires fundamental knowledge in both medicine / healthcare, as well as computer / information / data science. Understanding of Digital Health practices is impossible without sound knowledge of health conditions, diagnoses and treatments. Meanwhile, IT skills and competences are a prerequisite for designing real-world Digital Health solutions.

Module Group Healthcare: Today, healthcare is practiced in increasingly digitally networked context. Healthcare systems consist of macro, meso and micro levels of legal requirements and regulations of self-government, organizations and regional provision. The knowledge of the major global health issues, as well as solid understanding of healthcare management and economics, as well as the legal and ethical foundations of healthcare at the national and international level, form the basis of designing and applying these digital processes.

Module Group Digital Health: Digital Health is an umbrella term for a wide range of Information and Communication Technologies (ICT) in healthcare, where data and information on patient care is digitally processed and exchanged via secure data connections. These digital technologies are based on internationally agreed communication standards and classification systems, and include, among others, information systems and multiple other applications with different interfaces. Challenges remain with regard to the data protection. These challenges require a solid assessment of competence based on legal requirements.

Module Group Research & Methodology: Evidence-based medicine offers empirically verifiable treatments that are offered worldwide and are described in the guidelines of medical societies. Evidence-based decisions based on contemporary health research and statistics, are necessary skills for every Digital Health specialist. Digital Health generates large data volumes that can only be processed using modern data analytics and AI techniques, which form the basis for the personalized (or precision) medicine – the main future paradigm of care.

Module Group Soft Skills: Healthcare and Digital Health exist in an interdisciplinary, multi-professional context, in which multilingual services play an important role. Understanding the differences in acceptance and compliance with digital healthcare services in different countries is important, and so is the ability to work in multicultural and interdisciplinary teams.

Specialization Modules: Digital Health graduates can practice in various roles in local, regional, national and global healthcare ecosystems, including: design and implementation of Digital Health systems, projects and programs; Digital Health business development and startup management; application of Healthcare Data Analytics and Artificial Intelligence techniques; developing and engineering Digital Health software and information systems.

3 Study objectives and qualification goals

Students will have acquired the following knowledge, skills and competences by the end of the study programme:

Professional Knowledge / Competences:

- Fundamental knowledge in Medical Science and Computer Science for students with a technical or biomedical background, to prepare them for acquiring knowledge and skills in the interdisciplinary field of Digital Health;
- In-depth knowledge of International and Global Healthcare Management – approaches and methods for designing and providing various healthcare services, knowledge of global health challenges, as well as of the structure, functions and financing of national and international healthcare systems;
- In-depth, application-relevant knowledge and expertise in the field of Digital Health – approaches and methods of digitalisation in healthcare with an emphasis on telematics, telemedicine, and digital healthcare applications;
- In-depth knowledge in Medical and Health Informatics – approaches and methods of information representation and management in medicine and healthcare with an emphasis on health standards, interoperability, data integration and data aggregation, artificial intelligence/machine learning in healthcare;
- Application-relevant knowledge and expertise in Healthcare Information and Communication Technologies – including database management, network administration, and medical software development / software

engineering;

- In-depth knowledge of contemporary Healthcare Research and Data Analysis – approaches and methods for designing, implementing and interpreting health research, including modern statistical and analytical methods.

Methodological Expertise:

- Carrying out and presenting a comprehensive, critical analysis and assessment of the healthcare system of a particular country, with particular attention to shortcomings and areas of suboptimal performance, identification of possible approaches and solutions for Digital Health in order to improve results;
- Carrying out and presenting a comprehensive, critical analysis of a specific healthcare issue or problem and identifying possible Digital Health solutions;
- Implementation of relevant informatics and IT methods and tasks to solve specific medical and health-related issues;
- Design and implementation of a Digital Health Information System, formulation of technical and operational requirements, identification of required resources, definition of architecture and other technical specifications, building or acquisition of the required capacity;
- Design and implementation of a digital health product (application, service, project, or programme) for a specific healthcare facility, system or company;
- Working with existing Digital Health standards, classifications, terminologies and various sets of codes;
- Carrying out and presenting a comprehensive, critical analysis and assessment of a Digital Health ecosystem or landscape in a country, with particular attention to shortcomings and areas of suboptimal performance, identification of possible approaches and solutions for improving the functioning of the system;
- Conduct and presentation of benchmarking reports or market research in the field of Digital Health;
- Analysis and assessment of business relationships and development of

business-oriented and entrepreneurial approaches in the field of Digital Health;

- Critical analysis of academic research results and presenting them in the form of academic reports or academic publications, while respecting high standards of intellectual property rights protection;
- Design, conduct, publishing and presentation of a professional academic research project in the field of Digital Health, Medical and Health Informatics, International and Global Healthcare Management.

Personal and Social Competencies:

Graduates acquire the following competencies:

- Graduates can implement theoretically acquired knowledge in a practical and application-oriented manner using simple and complex methods;
- Graduates can express themselves fluently orally and in writing and conduct negotiations;
- Supporting, designing and conducting various educational activities (both at the degree and certificate levels) in the areas of digital healthcare services, telemedicine, medical and health informatics, international and global health management;
- Research, interpretation and application of academic or technical texts to everyday situations in institutions or companies;
- Knowing the different stakeholders in the field of digitalisation in healthcare, as well as consideration of goals in the corporate strategy;
- Entrepreneurial thinking and action, formulation of business strategies, developing business models and building companies;
- Organising a team and demonstrating leadership qualities in interdisciplinary cooperation;
- Reflection on actions and adapting to ethical, ecological, social and economic circumstances;
- Critical assessment of one's own strengths and weaknesses and their impact on others; ability to contribute to conflict resolution and handle

criticism constructively;

- Recognising the need for lifelong learning and acquisition of relevant skills;
- Independent formulation of academic tasks for theoretical and experimental research; in addition, particularly qualified students acquire theoretical foundations that enable them to pursue a doctorate or work in academic fields.

4 Learning outcomes of modules/module objectives/matrix of objectives

Individual modules, their detailed objectives and competencies to be acquired by graduates are described in the module handbooks for the Master programme. The following table shows the relationship between individual modules and objectives.

Matrix of objectives of the modules in the Master programme of Digital Health												
Module	Objectives											
	Knowledge				Skills				Competences			
	Health Care	Digital Health	Research & Methodology	Softskills	Health Care	Digital Health	Research & Methodology	Softskills	Health Care	Digital Health	Research & Methodology	Softskills
Semester 1												
Fundamentals of Medicine and Computer Science	x	x			x	x			x	x		
International and Global Health	xx				xx				xx			
Digital Health Fundamentals		xx				xx				xx		
Digital Health Terminology		xx				xx				xx		
Digital Health Coding		xx				xx				xx		
Contemporary Health Research			xx				xx				xx	
Semester 2												
Digital Health Information Systems		xx				xx			xx	xx		
Digital Health Application		xx				xx				xx		
Health Economy and Management	xx				xx				xx			
Digital Health Data Protection		xx				xx				xx		
Specialization Modules *):												
FWP-1: Digital Health and Management		xx				xx				xx		
FWP-2: Digital Health Data Analytics & Artificial Intelligence		xx				xx				xx		
FWP-3: Digital Health Entrepreneurship		xx				xx				xx		
FWP-4: Digital Health Programming		xx				xx				xx		
Semester 3												
Intercultural and Scientific Communication & Management				xx				xx				xx

Legende: xx starker Bezug; x mittlerer Bezug

*) 2 Subject-specific elective modules (FWP) must be chosen from FWP-1, FWP-2, FWP-3, FWP-4.