

Studying in REMAGEN (Koblenz University of Applied Sciences)

Medical Engineering and Sports-Medical Engineering

The challenge: Medical Engineering and Sports-Medical Engineering

Complex technology has entered medical routine over the last years rapidly and is frequently used for applications such as patient monitoring, life support, medical imaging for clinical diagnosis and therapy, as medical robotics for assisted surgical interventions. Consequently, there is an increasing demand for engineers with a strong foundation in physics, computational sciences and electrical engineering as well as a high level expertise in medical physics, biosciences and a detailed knowledge of medical applications and procedures. Their main task is to bridge the gap between the medical world and the world of technology which means to understand the clinical needs and to turn them into technical solutions. Furthermore, new innovative applications of technical equipment and new business opportunities are to be identified.

Fields of career:

- Research and development (in industry, university and research centers)
- Manufacturing and quality control
- Marketing and Sales departments
- Teaching, training, education as well as skill development
- Physical/Engineering department in clinical centers
- Self employment
- Supervision of compliance with guidelines for the operation of medical equipment
- Software engineering
- Project leadership in technical divisions

Topics of study:

During the **basic study phase** students are introduced to the basis of physics, mathematics and chemistry as well as skills in technical subjects such as computational science, electrical and measurement engineering, electronics, technical mechanics, material science, law and economy.

During the **main study phase** this knowledge is extended by interdisciplinary lessons. An

overview of medical and sports-medical applications in general prepare the students for their practical projects in close collaboration with either industrial companies or a university research site in Germany or abroad. In this working environment students have the opportunity to identify their personal areas of interest and to come into contact with possible future employers.

In the 5th and 6th semesters the lectures are organized in modules, each of which focuses on a specific field of medical and sports-medical engineering. The theoretical knowledge is applied in extended practical exercises focussing on **imaging systems, radiation protection, processing of biosignals and medical images, medical robotics, biomechanics, sports medicine and laser medicine**. These practical courses benefit from the **Center of Expertise in Medical Imaging, Computing and Robotics** (cemicro) located at the campus and the excellent technical equipment all available in house for imaging techniques such as **magnetic resonance imaging, computed tomography, conventional X-ray systems, ultrasound, thermography, endoscopy, stereo video imaging and medical robots**, which are available for education as well as for research projects.

Admission requirements:

Necessary is an advanced technical college certificate or a general qualification for university entrance. Application for registration is possible for the summer or the winter term.

Final degree: Bachelor of Science

Duration of study:

Three semesters of basic studies and three semesters within the main study phase (including the practical term and one semester for the diploma thesis).

Contact:

Course Director: Prof. Dr. Jens Bongartz
 Secretary: Waltraud Ott
 Tel: +49 (0) 2646/932-336 (Fax: -399)
www.rheinahrcampus.de