Faculty of Mathematics and Technology:
M.Sc. in Applied Physics

HOCHSCHULE KOBLENZ
UNIVERSITY OF APPLIED SCIENCES
RheinAhrCampus

Applied Physics

Five Questions!
Interested in getting images from the inside of the human body?
Curious about the biomechanics of the Neanderthal man?
Want to know how to cut bone with a laser?
Keen on working with an ultra-fast laser for next-generation computer chips?
Then, why not enrol for our Master's Program in Applied Physics?

One Answer!

Our two-year Master's Program in Applied Physics at the RheinAhrCampus in Remagen has been successfully accredited by the AQAS agency in September 2004. The course of study is application-oriented and places a focus on medical imaging, laser medicine and laser technology. The goal of the course is to educate experts in these application fields with a good theoretical background.

Curricular Information

This master program teaches the state-of-the-art methods of applied physics. The theoretical concepts of modern physics, advanced methods of experimental physics and selected tools of numerical mathematics constitute the basic framework of the program. These courses are compulsory for each student and make up one fourth of the complete program in terms of work load. Half of the program consists of elective courses, i.e. the students get the chance to choose six out of twelve courses that are offered, thus defining their own R&D focus.

In the elective part of our Master program, strong emphasis is put on project work that is carried out in co-operation with industrial partners and research centres. The remaining fourth of the program is spent on preparing the Master's Thesis. This final document should describe the solution for a current problem stemming from the field of applied physics and prove that the students are capable of working on their own responsibility.

First semester	Second semester	Third semester	
Theoretical Mechanics	Theoretical Electro-dynamics	Quantum Mechanics	Master Thesis
Computational Methods I	Computational Methods II	-	
Adv. Experimental Physics I	Adv. Experimental Physics II	Adv. Experimental Physics III	
Elective Course I	Elective Course III	Elective Course V	
Elective Course II	Elective Course IV	Elective Course VI	

Here is a list of twelve courses that are offered on a regular basis:

- Modelling, Simulation & Validation
- Scientific Visualisation
- Ultrasonic Imaging
- Computed Tomography
- Nuclear Magnetic Resonance Imaging
- Fourier and Short Wavelength Optics
- Nonlinear Optics
- Laser-Matter Interaction
- Physics of Laser
- Laser Analytics
- Modern Optics
- Laser Medicine

Requirements

- To get accepted to our Master program, applicants should have completed their diploma or bachelor's degree in a related field (such as natural sciences, engineering, applied mathematics) with an above-average academic performance. The final decision about acceptance is made by the official examination board of our university.
- For those candidates not having any experience in medical imaging or laser technology, special courses will be offered to bridge the knowledge gap. Each student is assigned a mentor who provides advice in order to optimise the personalised course of studies.

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Employment Prospects

Medical and laser technology belong to the key domains for the next decades. Both technological fields are strongly represented in research and industry. In Germany, these sectors of industry are characterised by a robust mixture of large-scale and small and medium-sized enterprises (e.g. Siemens, Dräger, ACCEL, Laserline, NanoLayers, ...).

RheinAhrCampus has developed strong relationships to these companies in order to perform joint projects or to communicate vacancies for students. In the past years many external diploma theses ended up in attractive contracts of employment. Thus, our alumni are to be found at Volkswagen, Philips, Siemens and a lot of other companies with a good reputation.

In the future, we see even better opportunities for our Master program students. For instance, according to economic experts, the world market for optical technology will grow from €80 billion to €800 billion, this is a factor of ten! German manufacturers share a significant part of this growing market. For medical technology one can make similar observations due to the inversion of the age pyramid. These developments will cause a huge demand for highly qualified experts. Especially in very innovative areas such as laser and medical technology, the employees play a key role for the economic success of a company. Our Master program is optimally tailored to fulfil all the great demands the future market will make on the employees:

- High practical competence
- Good theoretical knowledge
- Intellectual flexibility
- Very good English skills.

Our students are educated to become project or group leaders in research and development or in the management of industrial companies. Certainly, the Master degree also enables our students to apply for PhD programs.

Location

Remagen is a beautiful town with 20000 inhabitants situated in the romantic Rhine valley south of Bonn (the former capital of Germany). Remagen is famous for its old bridge which played a crucial role and was finally destroyed in the Second World War. Nowadays, many tourists from abroad visit this interesting historical site. Though Remagen offers quite of lot of distraction, our students sometimes prefer the cultural life of the nearby cities. It takes no more than 15 minutes by train to go to Bonn and approximately half an hour to visit Cologne. Student ID holders are entitled to using regional trains between Coblence, Bonn and Cologne (plus inner-city buses, trams, subways, ...) free of charge.

Our university has existed since 1998 and currently hosts more than 2,600 students. Our laboratories are very well equipped with modern technology (e.g. several CT scanners, MRI scanners, EUV technology, extremely fast lasers...). Our library contains about 40000 media and more than 200 scientific periodicals. The most attractive cubicles are to be found here offering a wonderful view on the river Rhine.

Since 2004 one hundred dormitory places are available within walking distance from our university. Living there, you will reach your lecture room by passing the beach volley facility that is another nice feature of our campus, especially in summertime. By the way, the open air bath is only 50m away. From time to time we will have to remind you not to forget your studies with all these attractive leisure facilities in the immediate vicinity of our university.

Degree awarded:

Master of Science (M.Sc.)

Contact and more detailed information:

http://www.rheinahrcampus.de/studiengang/map/mastero.html

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