

### Graduation

The internationally recognized academic degree of Master of Science (M.Sc.) will be conferred on students by the Ernst Abbe University of Applied Sciences Jena, upon successful completion of the programme.

### Entrance Requirements

The entry requirement for the Master's degree programme is a university degree with competent final degree grades in physics, science or a scientific engineering discipline whose curriculum covers the subject entry requirements (e.g. physics, physics engineering, microtechnology, precision engineering, mechanical engineering, mechatronics, electrical engineering, electronics). English proficiency is also mandatory.

The postgradual basis modules in semester one are assigned to the students depending on their Bachelor course to bring all the students with their different background to a comparable level.

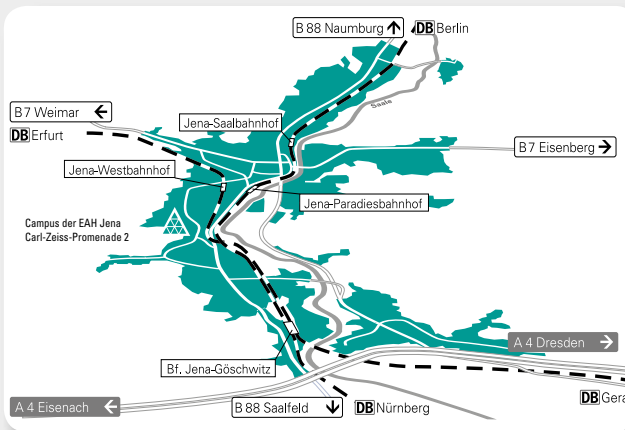
### Professional perspectives

In the actual scenario of the increasing shortage of highly qualified personnel in technical and scientific sectors, there are excellent career prospects for graduates of the Master's degree programme in scientific instrumentation both nationally and internationally.

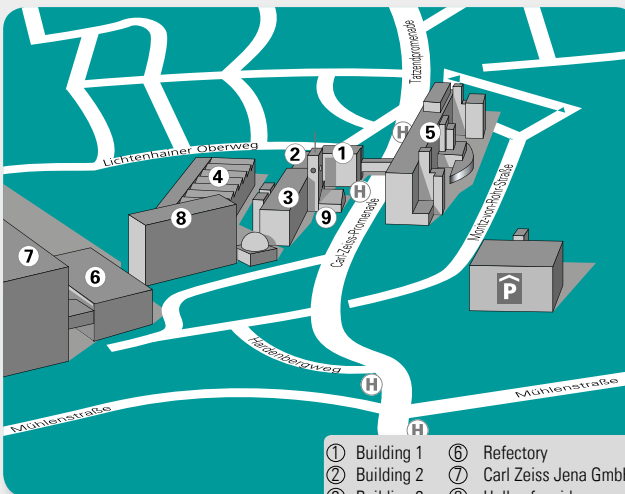
The industries and research institutes in the region of Jena provide excellent employment opportunities for graduates in the particular specializations which they have opted for. Many companies are engaged into the fields of metrology and sensors, optics, analytical techniques, micro engineering and medical engineering. The close contacts that the teaching staff possesses with the industrial firms and research institutes ensure that the training is practically oriented and is up-to-date with the course contents. Looking at the current scenario for interns and graduates of the scientific engineering courses, the demand is greater than the supply. The Master's degree in Scientific Instrumentation also qualifies its holder to pursue a PhD.

Application	<a href="http://www.scientific-instrumentation.de/application">www.scientific-instrumentation.de/application</a>
Dean's office	Tel.: +49 (0)3641 205-400, Fax: +49 (0)3641 205-401 Email: <a href="mailto:scitec@eah-jena.de">scitec@eah-jena.de</a>
Course director / Course consultant	Prof. Dr. Bernd Ploss Tel.: +49 (0)3641 205-353 Email: <a href="mailto:scientific-instrumentation@eah-jena.de">scientific-instrumentation@eah-jena.de</a>

### Road and rail links



### Campus map



All information is subject to additional modification. No legally binding claims can be inferred from this informational flyer.

Foundation for the Accreditation of Study Programmes in Germany  
**Accreditation Council**  
Successfully accredited by ACQUIN



**Ernst-Abbe-Hochschule Jena**  
University of Applied Sciences

Carl-Zeiss-Promenade 2, Postfach 10 03 14, 07703 Jena, Germany



Photos: EAH Jena, S. Reuter, I. Rodigast

# Scientific Instrumentation

## Master's Degree Course

**INNOVATION FOR QUALITY OF LIFE.**  
Health, Precision, Sustainability & Networking

**M. Sc. Scientific Instrumentation**

## Programme contents and objectives

The international Master's degree programme of Scientific Instrumentation taught in English language is designed for graduates in science and engineering disciplines and provides advanced qualification for employment in the research and development branches of various fields. Building on the competence acquired during the Bachelor's degree programme, the course of study enables students to independently design and develop scientific instruments and manage development and research projects.

Scientific instruments are highly specialized devices for measuring physical or chemical quantities, carrying out special processes or creating defined test conditions. These instruments are used in fields that include research in physics and sciences, advanced technology, biomedical engineering, and aeronautics.

Jena's reputation as a centre of technology specializing in optics and scientific instrument manufacturing dates back over a hundred years. Industrial firms and research institutes are engaged in the fields of applied physics, technologies in the field of physics, optics, high-precision mechanics, metrology, sensors, microengineering and nanotechnology, as well as biomedical engineering. The development of hightech processes, of innovative measuring techniques and instruments is crucial for this sector to remain globally competitive.

## Employment opportunities

The Master's degree in Scientific Instrumentation qualifies its holders for the employment in industry, research institutes and engineering firms. Holders of the Master's degree mediate between pure science and engineering disciplines and consequently apply scientific knowledge to find appropriate, effective solutions to engineering problems.



	Module 1	Module 2	Module 3	Module 4	Module 5
<b>1st Semester</b>	Postgradual Basis Module		Physical Materials Diagnostics	Scientific Writing and Presentation	Non-technical Module 1 / German
<b>2nd Semester</b>	Elective Module			Soft Skills	Non-technical Module 2 / German
<b>3rd Semester</b>	Research Internship				
<b>4th Semester</b>	Master Thesis				Colloquium

Postgradual Basis Modules:	for graduates in e.g. Precision Engineering	Solid State Physics	Microsystems Engineering	Electronic Hardware Systems
	for graduates in e.g. Physics Engineering	Design of Precision Devices	Introduction to FEM	Electronic Hardware Systems
	for graduates in e.g. Electrical Engineering	Design of Precision Devices	Introduction to FEM	Solid State Physics

Recommended Elective Modules in 2nd semester	Materials for Sensors and Electronics	Micro- and Nanotechnology	Optical Instruments	Gas sensing and Aerosol Measurement
	FEM and Simulation	Advanced 3D-Design	Precision Instrumentation	Scientific Computing

Typical examples of employment opportunities in industry and research institutes can be found in the research and development of new instrumentation, in monitoring high-tech processes, as well as in solving metrological problems and problems relating to the technical aspects of instruments arising in interdisciplinary research projects, such as biomedical engineering, geotechnics, environmental engineering and the aerospace industries.

## Programme overview

The programme has been designed to equip students with both the technical and interdisciplinary qualifications necessary for the successful pursuit of their future careers.

Apart from contents of the course in physics and engineering science, this also includes the so-called key qualifications. In the first semester in addition to the compulsory modules a selection of postgradual basis modules in the fields of applied physics or precision engineering is offered to bring students from different disciplines up to the same level. In the second semester, students select four fields of specialization from a choice of eight (see above).

The language of instruction is English. In a research internship in semester three the students are introduced into scientific research work. Students are supposed to write their Master's thesis in the fourth semester. The thesis will focus on specific aspects of fundamental research or development in the field of technology and is written at our University of Applied Sciences, at a foreign partner university, at a research institute or in the R&D department of an industrial firm.

A thesis is written under the joint scientific supervision of the relevant institution and the University of Applied Sciences Jena.

The Master's programme is presented in modular form. Under the European Credit Transfer and Accumulation System (ECTS), students receive a fixed number of credits for every successfully completed teaching module. This system facilitates the recognition of students' coursework, should they change universities in their home country or abroad.