

Photonics

STUDY INFORMATION

The goal of this programme is to prepare students for research-oriented and science-based careers in optics and optical technologies and to provide the foundation for further academic programmes within and outside of academia.

Students will gain profound knowledge of experimental and theoretical optics as well as specialised training in various subfields of optics.

KEY FACTS

Degree
Master of Science

Duration
4 Semesters

Credits/ECTS
120

Teaching language
English

Tuition fee
None

Semester contribution
€ 272,80

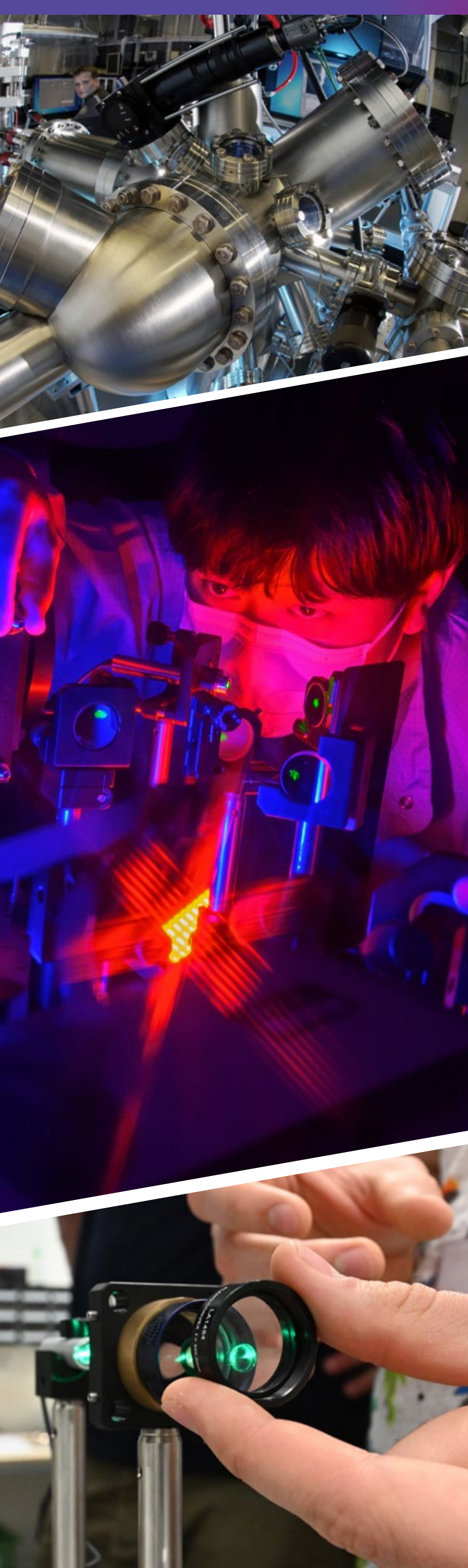
Start of studies
Winter semester

Application deadline
1 December until 31 August

Location
partially online

Part-time possible
No

Institutions
Faculty of Physics
and Astronomy;
Abbe School of Photonics



PHOTONICS

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Special features

All courses and examinations are held in English. Practical experience is integrated into each of the first three semesters. The research and practical components can be completed at either an institute of the Faculty of Physics and Astronomy, external research institutes, or research-oriented companies in the field of physics.

Career opportunities

Graduates of the M.Sc. Photonics have excellent prospects. Industry currently lacks qualified employees so that students of the programme often receive one or more job offer before completing the programme. Graduates are often sought for challenging and technically demanding positions not only in the fields of optics and photonics, but also in telecommunications and laser technology. Alternatively, graduates can pursue a scientific career, e.g. a Ph.D. at the Graduate School of Photonics.

Admission requirements

Bachelor's degree or equivalent

This master's programme requires a subject-specific bachelor's degree (minimum 6 semesters/180 ECTS credits) or an equivalent university degree.

Students commencing their studies at our School should ideally have basic or in-depth knowledge in

- Mathematics (complex numbers and functions, function theory, linear and vector algebra, ordinary and partial differential equations, vector analysis, integral theory)
- Physics (electromagnetic field theory/Maxwell's equations, solid state physics).

Language requirements

This master's programme requires the following language proficiency:

- English language proficiency at level B2 according to the Common European Framework of Reference for Languages (CEFR)

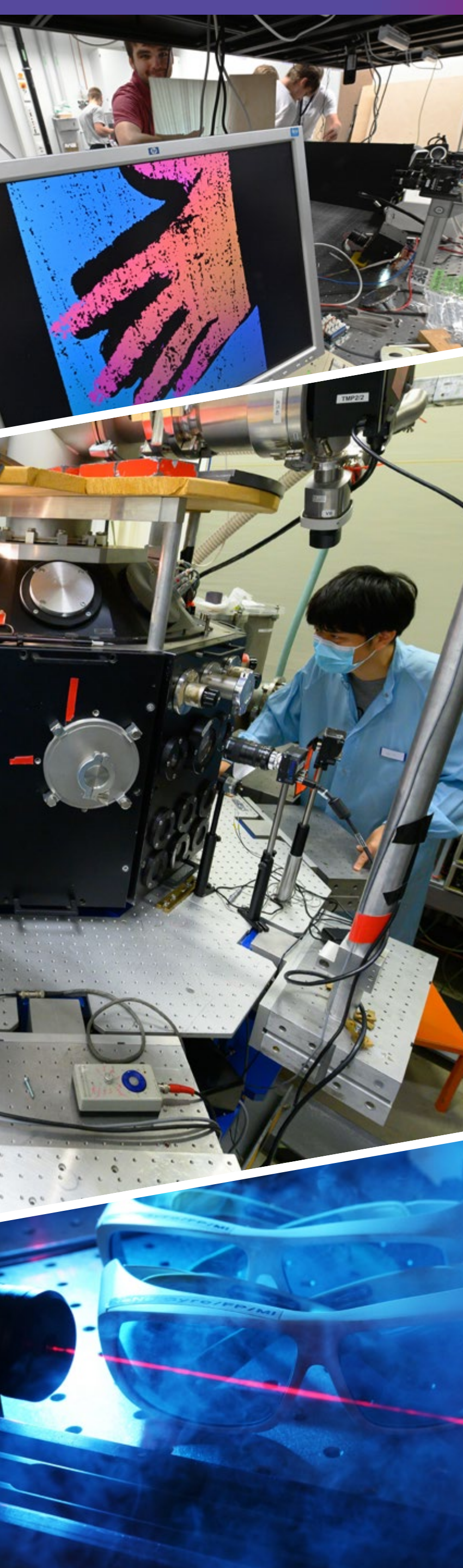
CONTACT

Study advice
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Germany

Course website
asp.uni-jena.de/photonics-
master





UNIVERSITY LOCATION

The History of the University

In 2008, Friedrich Schiller University Jena celebrated its 450th anniversary. Founded as an academic school by Prince-Elector Johann Friedrich the Magnanimous of Saxony in 1548, it was raised to the status of university by Emperor Ferdinand I in 1557 and opened as such in **1558**.

Here are some interesting facts: Gottfried Wilhelm Leibniz was a student of the scientist Erhard Weigel in Jena 1663. **Friedrich Schiller** was a professor of history at Friedrich Schiller University Jena between 1789 and 1799. At the same time **Johann Wolfgang von Goethe**, the then State Minister of Saxe-Weimar, supported Friedrich-Schiller-Universität Jena extraordinarily. He spent a lot of time in Jena.

Jena was the centre of classical German philosophy, hosting among others: Johann Gottlob Fichte (1794–1799), Friedrich-Wilhelm Joseph Schelling (from 1798), Georg Wilhelm Friedrich Hegel (1805–1807). Numerous renowned German poets, writers and dramatists studied at Friedrich Schiller University Jena (Johann Christian Günther, Friedrich Gottlob Klopstock, Matthias Claudius, Friedrich Hölderlin, Novalis, Julius Mosen, Clemens Brentano, Gerhard Hauptmann, Kurt Tucholsky).

World-famous pedagogues such as Christian Gotthilf Salzmann, Friedrich Wilhelm August Fröbel, **Peter Petersen (Jenaplan-Schule)** studied or taught in Jena. Johann Wolfgang Doeberiner (Professor of Chemistry, 1810–1849) made the first

steps to order the chemical elements by means of his »triads«. **Ernst Haeckel** (Professor of Zoology, 1834–1909) was the most distinguished representative of evolution theory in Germany and coined the term »Oecologie« (ecology).

The physicist Hans Busch (Professor of Applied Physics, 1922–1947) worked on electron optics and developed the basic principles of electron microscopy. The Jena psychiatrist and neurologist Hans Berger (Professor, 1906–1938) developed the diagnostic method of electroencephalography (EEG).

The optician and mechanic **Carl Zeiss**, the physicist **Ernst Abbe** and the glass chemist **Otto Schott** formed an impressive collaboration at the end of the 19th century, a unique example of cooperation between science and industry that has been shaping the profile of scientific research at Friedrich Schiller University Jena to this day.

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UNIVERSITY LOCATION

The City

The city of Jena is brought to life by a fascinating combination of a historic, intellectual past, a delightful countryside, and innovative international research and industry, as well as a youthful student life. This rich variety creates a unique backdrop that gives this small lively city its special charm.

Jena's academic and intellectual development

Jena has been one of the most famous places to study in Germany since the founding of its university, the »Alma Mater Jenensis«, in 1558. At the end of the eighteenth century, thanks to its close connection to the nearby royal seat at Weimar and support by the poet and minister Goethe, the city on the Saale went through its classical period, during which it developed into the most important intellectual centre in Germany.

Jena's economic development

In the second half of the nineteenth century, Jena developed into an industrial city thanks to the work of the three scientific and economic giants Carl Zeiss, Otto Schott and Ernst Abbe. Their co-operation led to the creation of the world-famous Zeiss company and the Jena »Schott und Genossen« glassworks. This effective cooperation between research institutes and economic enterprises has proved its value all the way up to the present day and justifies Jena's exceptional reputation as a high-technology location.

Jena's modern cultural scene

In addition to museums of technology, science, literature, and art history, there is also an attractive modern cultural scene in Jena. For example, the annual »Kulturarena« open-air festival attracts international stars to Jena and there are plenty of individual, top-class events among the wide range of performances at the Jena Theatre (Theaterhaus), Jena Art Society (Kunstverein), and Jena Philharmonic Orchestra.

Jena's countryside

The traditional, innovative city is built by the middle reaches of the Saale river. The Saale valley at Jena is shaped by a host of monuments to its cultural history and is connected to many great names from history as well. Along with as its many sights, the city, nestled in an almost Mediterranean landscape with limestone hills up to 400 metres high, has a variety of cycle paths and a charming area for rambling.

ABOUT JENA

Federal state
Thuringia

Altitude
143 m above sea level

Population
> 110 000

website
jena.de
