

# At a Glance

## Target Audience

This course is for students that want to achieve special knowledge of innovative technologies in Photonics.

Additionally this course addresses working people with bachelor's degree, that seek a higher occupational qualification by master's degree. These people study extra-occupationally without losing their job.

The course prepares people looking for a PhD position afterwards. Thereby students can be accepted into the photonic research center (Center for Optical Technologies) of Aalen University as well.

## Degree

Master of Science (M. Sc.)

## Prerequisites for Admission

A high quality Bachelor or Diploma degree in Physics or Engineering, e.g. in Electronics, Optoelectronics, Mechatronics or Optometry.

## In addition

Language of instruction is English. You gain practical exercises by laboratory work and seminars during two semesters. Additional soft skills studies will prepare the students for a future career in industry.

## Application and Admission

In general the course starts in winter and summer semester (June 15th for winter semester and 15th December for summer semester).

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## The University

Aalen University is one of the leading research institutions among the Universities of Applied Sciences in Baden-Württemberg. One of the key missions of Aalen University is to deliver a superior education to our students by combining the developments in industry with the latest research findings.

## Moreover

The institution builds on this tradition by expanding its research capabilities and intensifying its relationship with companies. We offer an attractive, modern environment to students. Therefore Aalen University is the first choice to those who search an industry-oriented education with international focusing.

# Contact

Dean of Students



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## Applied Photonics Master of Science (M.Sc.)

Optional Part-time study  
*(wahlweise mit integrierter Berufstätigkeit)*



[hs-aalen.de/aph](http://hs-aalen.de/aph)



Prädikat  
Familienbewusstes  
Unternehmen

# Photonics

Strictly, the term “Photonics” stands for the science of photon  
 Today the term incorporates many novel disciplines. In the essence, it is related to four application areas, where “Photonics” is used to combine applied research and development. These are:

- Laser and light material interaction
- Industrial manufacturing
- Illumination and displays
- Biophotonics in the domain of Life Science

Specifically “Photonics” not only denotes the particle properties of light, the term incorporates all practical applications of optics, and the potential to create, transport and process optical signals. Photonic techniques are used in various fields, e.g. the combination of medical problems and photonic technologies proved to exhibit a high economical potential.



# Progress of Program

## Duration of Study

First semester for lectures and project  
 Second semester for lectures  
 Third semester for Master Thesis  
 Maximum number of semesters: 6

## Time Schedule

Monday to Friday according to class schedule

## Conventional Education Program

- Lectures
- Laboratory exercises
- Project
- 5 days every week, 3 semesters duration

## Part-time Program

- 2 days lectures, laboratory, project
- 1-3 days professional life every week at one of our industry partners or at our research center (Center for Optical Technologies)
- 4 semesters duration typically (maximum 6 semesters)

## Post-graduate

Graduates of the Photonics Master course are particularly well educated for a leading position in research and development, where good theoretical knowledge of physics and optics are combined with practical experience:

- Development and application of lasers and laser systems
- Design and development of optical instruments
- Novel techniques for illumination and displays
- Design and application of medical systems for diagnosis and therapy
- Design and fabrication of micro and nanoptics
- Biomedical optical microscopy
- Laser and light material interaction

# Study Course

Semester	3	Masterthesis (Thesis + Colloquium)		
	2	Quantum Optics	Physical Optics	Mindestens 4 aus 10 Modulen - Advanced Optical Communications - Optics Technology - Optical Systems - Advanced Optical Design - Laser Photonics  - Illumination - Optical Design Strategies - Fourier Optics - Introduction to Diffractive Optics - Current Topics in Photonics 2
	1	Project / Soft Skills	Interferometry	Advanced Microscopy  Mindestens 3 aus 7 Modulen - Non-linear Optics - Applications of Photonics Detectors - Photonic Detectors and Devices - Advanced Image Processing  - Advanced Laser Technology - Current Topics in Photonics 1 - Optical Systems Workshop - Wahlpflichtmodul aus dem Masterangebot der Hochschule Aalen
		■ Mandatory module	■ Optional module	