**Module title**
Principles of Image Processing

**Abbreviation**
11-EBV-152-m01

**Module coordinator**
Managing Director of the Institute of Applied Physics

**Module offered by**
Faculty of Physics and Astronomy

**ECTS**
3

**Method of grading**
numerical grade

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
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**Contents**
Introduction to image processing. Pictures as two-dimensional signals; digitalisation. Two-dimensional Fourier transform. Histogram equalisation (e.g. image brightening) and pixel connectivity (e.g. noise reduction). Automatic image recognition: Segmentation, classification. Technological image generation. Applications (e.g. motion tracking). Three-dimensional images.

**Intended learning outcomes**
The students have specific and advanced knowledge in the field of image processing. They know the principles and theory of signal processing for images and have corresponding knowledge of image generation. They are able to independently work with literature, they understand the characteristics of image processing with commercial software and are able to process images for the analysis of experiments with imaging measuring methods.

**Courses**
(type, number of weekly contact hours, language — if other than German)

V (2)
Module taught in: German or English

**Method of assessment**
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or presentation/talk (approx. 30 minutes).

If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.

Assessment offered: Once a year, winter semester

Language of assessment: German and/or English

**Allocation of places**
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**Additional information**
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**Referred to in LPO I**
(examination regulations for teaching-degree programmes)

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**Module appears in**
Bachelor' degree (1 major) Physics (2015)
Bachelor' degree (1 major) Nanostructure Technology (2015)