

## Industrial Design and Visualisation Methods (E630062)

Course size (nominal values; actual values may depend on programme)

Credits 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	lecture	48.0 h
		seminar	12.0 h
		seminar: practical PC room classes	12.0 h

Lecturers in academic year 2018-2019

Christiaens, Yannick	TW18	staff member
Rysman, Olivier	TW18	lecturer-in-charge

Offered in the following programmes in 2018-2019

	crdts	offering
<a href="#">Bachelor of Science in Industrial Design Engineering Technology</a>	6	A
<a href="#">Preparatory Course Master of Science in Industrial Design Engineering Technology</a>	6	A

Teaching languages

Dutch

Keywords

Styling, history of industrial design, Photography, Computer Graphics

Position of the course

In this course de students learn to style products within the context of industrially produced products.

Contents

### History Of Industrial Design

- history of industrial design: from the reasons of the industrial revolution to the third industrial revolution
- Understanding the reasons for the styling and designs of products in their social and economical context

### Application of Industrial Design

- Application of form language in industrially made products
- Recognizing and applying the form elements in industrially produced products (line, form, direction, measurements, texture, colour, space)
- Modularity, modularity of form and technology
- Value analysis and functionality
- Practical theory of colour: recognizing and applying colour combinations
- Visual Brand DNA

### Visualisation methods

*Theoretical part:*

- Elements of interactive Computer Graphics
- Color models RGB/CMYK/HLS
- 2D computer graphics / Clipping
- 3D computer graphics
- 3D graphics pipe line
- Methods for visual realism: 'object space' methods, 'image space' methods (scan-line) , light and shadow
- Shading model (flat, Gouraud, Phong,...)
- Texture mapping, environment mapping

- render engines: raycasting, raytracing, indirect illumination (radiosity, final gather, ambient occlusion, caustics,...)
- CG animations

#### *Exercise Part:*

##### Computer Graphics:

- Visual realism by applying: light and shadow, reflections,...
- Assigning material properties, texture mapping, bump mapping, ray tracing, global illumination
- in-context rendering and virtual Depth of field(DOF)
- Camera animations

##### Photography:

- Types of cameras / lenses
- operation: shutter, diaphragm, sensitivity (ISO)
- Depth of field
- Field-trip
- Illumination, photography with back-light
- White balance and usage of histogram
- Studio-photography, working with infinity, flash lights,...

#### Initial competences

basic sketching techniques

#### Final competences

- 1 Students know how to translate ergonomic and technical design briefs into a producible appropriate styling within the context of the designed product.
- 2 Students can communicate these aspects (including texture, color,...) in an appropriate manner and understand the underlying technology and terminology of the visualisation techniques.

#### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

#### Conditions for exam contract

This course unit cannot be taken via an exam contract

#### Teaching methods

Lecture, seminar, seminar: practical PC room classes

#### Learning materials and price

- own notes and presentations
- Course notes 'visualisationstechniques' (€9,9)
- Personal laptop with dedicated graphics card is obligatory

#### References

- Universal principles of design, William Lidwell, Kritina Holden, Jill Butler
- Muses in Design: Inspiration Techniques for Product Formgiving - Jan Corremans, Maaïke Mulder-Nijkamp - 2016 | ISBN 9789058755520
- The Form of Design: Deciphering the language of mass produced objects - Josiah Kahane - ISBN-13: 978-0300055535
- Digitale fotografie producten : techniek en praktijk van het maken van professionele productfoto's. L. Polder - Pearson 2010
- Fundamentals of modern photography: T. Ang, Octopus 2009
- Rendering with mental ray and 3ds Max.: T. Boardman, Elsevier 2010
- Mastering mental ray : rendering techniques for 3D and CAD professionals. J. O'Connor, Wiley 2010
- Vormgeven-ordening en betekenisgeving: Wim Muller, Uitgeverij Lemma BV 2006, ISBN 90-5189-705-7
- An introduction to evolutionary product development: Arthur O. Eger, Eleven international publishing, ISBN 9789462360587

#### Course content-related study coaching

#### Evaluation methods

end-of-term evaluation and continuous assessment

#### Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, portfolio, assignment

Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, portfolio, assignment

Examination methods in case of permanent evaluation

Written examination with open questions, portfolio, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Extra information on the examination methods

periodic evaluation and non-periodic evaluation

Calculation of the examination mark

35% Industrial Design

25% History of industrial design

35% Visualisation techniques

5% presence/interaction/cooperation during the classes and company visits