GHENT UNIVERSITY

# Course Specifications

From the academic year 2017-2018 up to and including the

## Design Tools I (E610018)

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

Credits 3.0 Study time 90 h Contact hrs 36.0 h

Course offerings in academic year 2018-2019

A (semester 1) Dutch

Lecturers in academic year 2018-2019

| | | |
|---|---|---|
| Parmentier, Davy | TW18 | staff member |
| Rysman, Olivier | TW18 | lecturer-in-charge |

| Offered in the following programmes in 2018-2019 | crdts | offering |
|---|---|---|
| Bachelor of Science in Bioindustrial Sciences | 3 | A |
| Bachelor of Science in Chemical Engineering Technology | 3 | A |
| Bachelor of Science in Environmental Engineering Technology | 3 | A |

Teaching languages

Dutch

Keywords

Technical drawing, CAD, reading of drawings, standardization, projection, machine-parts

Position of the course

**Goals for Design Tools**
Main goals:
- reading of drawings
- Be able to model simple mechanical parts in 3D and annotate the 2D drawings
The technical product information regarding form, function, dimensions and production of a part and assembly of parts will be put onto technical drawings. The student will learn to draw by hand, build a 3D CAD model and derive and finish a 2D drawing from that model.

**Goals for machine parts**
The goal of this partim is to give the student an overview of the most common standard construction methods en machine parts used in designing installations, machines and constructions.
The student should be able to:
- use the correct terminology.
- choose the most appropriate construction method or machine part in order to solve a mechanical problem.
- determine and calculate the correct dimensions for the chosen part
- produce a correct technical drawing of these parts

This course in on an introductary level: the calculation methods will be kept simple and don't take dynamic phenomenons ( vibrations, tolerances, wear,...) into account.

Contents

**DESIGN TOOLS**
**Technical drawing standards and reading of drawings**
**Technical drawing systems**
Paper formats
Linetypes
Orthographic Views
Sections and hatching
Reduction of view and sections

Reading complex assembly drawings
**Functional dimensioning**
Choise of dimension and annotations
**Orthographic projection**
Exercises on spatial awareness
**Technical hand sketching**
**CAD**
3D CAD methodology
3D model creation, 2D sketch, features
Deriving 2D drawings from 3D models

**MACHINE PARTS**
**Part 1: Preliminary concepts of mechanical construction**
Chapter I: Preliminary concepts of mechanical construction
**Part 2: Connection techniques**
Chapter II: Connection techniques
Chapter III: Screw connections
Chapter IV: Weld joints
Chapter V: Soldering and glue connections
Chapter VI: Riveted joints
**Part 3: Transmissions and transmission elements**
Chapter VII: Transmissions
Chapter VIII: slide bearings
Chapter IX: roller bearings
Chapter X: Addendum

Initial competences

geen

Final competences

1 Is able to read and compose technical drawings by using technical hand drawing and CAD software

2 Is able to identify the most common construction parts of machinery
3 Is able to add technical dimensions to a design and design a product for production.
4 Is able to manage his/her ideas/shapes/data.

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: practical PC room classes

Learning materials and price

- Course notes ontwerptools 1 deel Machineonderdelen, delivered by course notes service

Compulsory books:
- TABELLENBOEK VOOR METAALTECHNIEK Auteur:W. De Clippeleer ISBN-nr: 9789030102366
- Vaktekenen en tekeninglezen Leerboek 1 Auteur:L.A. De Bruyn, J. Nuyes, L. Van de Wiele Editie:2008 ISBN-nr:9789030154853

Software (free):
- Siemens NX CAD software (Verplicht) Uitgever:Siemens PLM

Personal laptop is obligatory

References

- NX for designers: S. Tickoo / Schererville : Cadcim Technologies, 2010
- Producttekenen en -documenteren van 3D naar 2D: A. Breedveld, Academic Service, 2004

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, skills test

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

Written examination, skills test

Examination methods in case of permanent evaluation

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

- written examen machine parts (30% of total). Possibility to completely retake in 2nd exam period.
- written examen design tools (20% of total). Possibility to completely retake in 2nd exam period.
- CAD exam: PC exam outside of the regular exam period (30% of total). Possibility to completely retake in 2nd exam period.
- Permanent evaluation: submitted projects (20% of total): submitted CAD workpieces and final test technical drawing. **Cannot** be retaken in 2nd exam period.

Calculation of the examination mark

**Machine parts:** 1SP (30% of total) - 30% theory
**Design Tools:** 2SP (70% of total) - 20% permanent/20% theory/30% CAD
In order to succeed for the course, one has to reach a score of at least 8/20 for both 'Design tools' and 'Machine parts'. In the case of failing for these prerequisites and the grand total of the course is higher then 10/20 the student will receive a 9/20 quotation.