Syllabus
Course description

Course title
Technical Drawing and Computer-Aided Design

Course code
42308

Scientific sector
ING-IND/15

Degree
Bachelor in Wood Engineering (L-9)

Semester
2

Year
I

Academic year
2021-2022

Credits
6

Modular
No

Total lecturing hours
24

Total lab hours

Total exercise hours
42

Attendance
Highly recommended

Prerequisites

Course page

Specific educational objectives
The course’s objective is to provide students with the required skills about representation techniques for the technical drawing and the graphical representation of systems, industrial products and part of buildings. The process is largely supported by Computer-Aided Design (CAD) systems; these include parametric and non-parametric, 2D and 3D software applications. Students will acquired basic practice for the use of different CAD systems in different industrial contexts and in relation to different scopes (modelling, production of technical drawing documentations, graphical illustration).

More in details, the treated topics follow:

- Drawing standards
  - drawing lines
  - orthographic projections and axonometric drawings
  - section drawings
  - dimensioning
  - Peculiarities of architectural drawing

- Computer-Aided Design (CAD)
  - 2D CAD systems
  - Parametric 3D CAD systems for the modelling of industrial products
  - 3D CAD systems for graphics and application thereof in the building industry
Interactions among different CAD environments

Lecturers

Yuri Borgianni, L5-03, yuri.borgianni@unibz.it
Chiara Nezzi, L5-01, chiara.nezzi@unibz.it
Laura M. Ruiz-Pastor, L5-01, lauramaria.ruizpastor@unibz.it

Scientific sector of the lecturer
ING-IND/15

Teaching language
English

Office hours
From Monday to Friday, upon email request

Teaching format
Frontal lectures, tutorials, paper-based and computer-supported exercises

Learning outcomes

Knowledge and understanding
1) fundamentals and formalized representation standards of the technical drawing
2) Functioning logic of CAD systems
3) Appropriateness of representations for different product typologies

Applying knowledge and understanding
4) applying drawing standards correctly
5) representing a technical system accurately in both paper-based and computer-aided fashions
6) choosing the correct system for technical documentation and modelling

Making judgements
7) choosing (and justifying the choice of) a specific representation methods in terms of, e.g. clarity, completeness and non-ambiguity
8) evaluating pros and cons of alternative paths to build a geometry in a 3D CAD

Communication skills
9) using the appropriate terms in the course’s discipline

Ability to learn
10) Ability to autonomously extend the knowledge acquired during the study course by reading and understanding
11) Learning advanced CAD functions autonomously also thanks to the individuation of sources that support troubleshooting
Assessment

The exam requires the elaboration of two separate CAD projects to be agreed with the lecturers and delivered one week before the official start of the session. The exam is completed with an oral test in which the CAD projects are critically discussed and the students’ comprehension and skills are further tested. The two CAD projects are aimed at the modelling and representation of a) simple industrial products; b) buildings or parts thereof.

Assessment language

English

Evaluation criteria and criteria for awarding marks

The final mark will be based on the two separate assessments of the CAD projects, and the oral exam. The assessment procedure evaluates

- the capability of representing geometries correctly (1, 3, 4, 5, 7) to be tested through the CAD projects;
- the ability to use and choose CAD systems (2, 5, 6), as well as the correctness and clarity of drawing choices (8);
- The capability of mastering the discipline and use the appropriate terminology (9) especially through the oral exam.

Items 10 and 11, not mentioned in the assessment procedure, will be monitored thanks to the provision of supplementary material and indicating useful sources.

Required readings

Handouts of the course (especially in its initial part) supplemented by extracts of selected books and Internet websites.

Supplementary readings

Some extra material will be provided (in Italian and German beyond English) in order to support students’ comprehension; however, it will not correspond to the contents of the course completely.