UNIVERSITY OF GOTHENBURG

PHYSICS

FYD050 Computer Aided Design for 3D printers, 7.5 higher education credits

CAD för 3D-skrivare, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2016-06-02 to be valid from 2016-07-01, autumn semester of 2016.

Field of education: Science 100%
Department: Physics

Position in the educational system

Main field of studies	*Specialization*
Physics with Specialization in Computer-Aided Physical Measurement Technology	G1N, First Cycle, has only upper-secondary level entry requirements

Entry requirements

General entrance requirements for university studies and the Swedish upper secondary courses Physics B, Chemistry A, Mathematics D or Physics 2, Chemistry 1, Mathematics 3c or equivalent.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

How one get started with the Inventor program.

How to work with Inventor, be able to choose a dimension to work in, make a 2D sketch, work in the third dimension.

Have understanding of the tree structure as well as how one works with parameters to enter measures in the drawing, to use automatic and manual constraints.

Know how to change name and size of the parameters.

Understanding of the degrees of freedom of the sketch.

Understanding of and account for how to work with parameters, to reuse these and express other measures as function of these, to have as flexible/universal design as possible. Shortcuts as F7, F8 and F9 as well as "shift + click the wheel"

Experience to use assembly functions

The symmetries and reflection in different levels of different types.

Skills and abilities
To use functions in Inventor as Loft, Sweep and Workplanes Split, Equation curve, Project geometry, Constrain, Extend, Trim, Stretch, Offset, Scale, Spline, Slot, Construction &centre line, Points, Image, Bridge curve, Type, Emboss, Rib, Split, Coil, Stitch, Sculpt, Thicken/offset, Patch, Trim, Delete face, Grill, Boss, Conditional pass, Snap fit, Lip, Quadball, Torus.

Different file format and how one goes from a file in Inventor to file format for printout, test of output files, use of 3D printer to print objects.

For the 3D printout, understanding the structures of the manufacturing process Adaptation to available materials. The concepts infill and raft. Possibilities with postprocessing.

Judgement and approach
Ability to choose 3D printout as manufacturing process when it is appropriate.

To place the object in such a way that the printout becomes possible.

Course content
The course treats use of CAD program Inventor and practical printout on 3D printers.

The course consists of lectures and laboratory sessions.

Form of teaching
The course has lectures as well as laboratory sessions at computer and at 3D printers.

Language of instruction: Swedish

Assessment
The examination consists of a number of presented 3DCAD models in Inventor and completed accepted 3D printout.

To pass the course, the examination parts should be presented before the date that is specified in course essay.
If a student, who has failed the same examined moment twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades
The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
For grade Pass, it is required that all course assignments on 3D CAD models in Inventor have been presented and completed 3D printing has been presented and approved.

For grade Pass with distinction, additional 3D CAD models in Inventor should be presented before the expressed deadline.

Course evaluation

At the end of the course, a course questionnaire is opened on the GUL web page of the course. The result of the questionnaire is published on the course homepage and a summary of the course evaluation and any changes in the set-up of the course will be communicated the students who start the course next time it be given. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

The software can be downloaded free from Internet.