Universidad de Navarra

Applied technologies I (GR. DISEÑO)

Guía docente 2026-27

PRESENTACIÓN

Breve descripción:

REPRESENTATION, FABRICATION, ITERATION

This subject is focused on introducing students into the techniques and technologies at play within digital fabrication as applied to the creation of product designs within the frame of the three specialty mentions. Technique understood as the ensemble of necessary competences to firstly describe and digitally represent ideas as well as becoming familiar with, controlling and maintaining the different machinery and softwares that convert digital files into physical objects.

The final objective is to facilitate the comprehension and practice of the almost limitless possibilities offered by digital fabrication technologies as well as their characteristics, applications, virtues and limitations. Above all, the goal is to achieve that students become autonomous in the use of these tools as well as acquiring the ability to adequately choose and implement the correct tool and materials for each project depending on its specific characteristics and requirements.

REPRESENTATION

Representation refers to the competences of digital representation, within the context of design projects, this refers concretely to two and three dimensional design with parametric CAD software as the main building block but also includes 3D rendering and texture creation.

FABRICATION

Fabrication refers to the use of digital prototyping machinery such as additive manufacturing (3D printing), laser cutting (2D) and CNC milling (2.5D). Students will become familiar with the virtues and limitations of each technology as well as the materials each can work with through hands on workshop time in order to develop their individual projects.

ITERATION

Iteration refers to the art of keen observation and analysis of the results of each experiment in order to make pertinent changes to any given design. Design intent, efficiency, aesthetics, ergonomy are just some of the factors that must be keyed into any objectual solution through the use of iterations.

- **Titulación**: Grado en Diseño/ Degree in Design
- **Módulo/Materia**: Module 2. Técnica del diseño; Área 2. Fundamentos productivos del diseño.
- **ECTS**: 3 ECTS
- **Curso, semestre**: 3rd year, 1st semester (Half-Term5)
- **Carácter**: Mandatory
- **Profesorado**: Adam Jorquera. Responsible professor; María Duro. PAD.
- **Idioma**: English

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- **Aula, Horario**: Friday, 09:00 - 11:00h. Aula 6.

RESULTADOS DE APRENDIZAJE (Competencias)

BASIC

BC1 – Students should have demonstrable knowledge and understanding of an area of study that builds on the base knowledge of general secondary education, and at a level at which, although supported by advanced text books, also includes aspects that imply knowledge related to the vanguard of the field of study.

BC2 – Students should know how to apply their knowledge to their work or vocation in a professional manner and should have abilities that can be demonstrated by means of elaboration and defense of arguments, as well as problem solving within their field of study.

BC5 – Students should have developed the learning and study skills that are necessary for undertaking studies with a high degree of autonomy.

GENERAL

GC5 – Skillfully manage modern technologies geared toward creation and manufacturing processes specific to the design world.

GC6 – Ability to speak English, B2 level, with knowledge of scientific and academic terminology related to the world of art, design, and applied arts.

GC7 – Analyze products or services in relation to the technological and productive possibilities of the creative industry.

SPECIFIC

SC6 – Know the concepts and techniques utilized in applied, traditional and contemporary arts, as well as their application to design.

SC10 – Know the systems and industrial manufacture processes specialized according to the different fields of design.

SC11 – Apply technological graphic design and modeling techniques creatively.

SC16 – Understand the importance of social needs and the demand for quality of life in their application to design.

SC27 – Know the principles of innovation and creative entrepreneurship and their application to design.

PROGRAMA

WEEK 1-2

SUBJECT PRESENTATION

THIRD PERSON DESIGN - PRESENTATION

3D PRINTING INTRO

TECHNOLOGY OVERVIEW APPLICATIONS

WEEK 3-4

LASER CUTTING INTRO

TECHNOLOGY OVERVIEW APPLICATIONS

TPD - PROJECT DEFINITIONS

Initial design brief + Partner selection

RANDOM PRESENTATIONS

WEEK 5-6

3D PRINTING

FDM Workshop: Calibration, filament load. Print BENCHY or similar.

LASER CUTTINGWorkshop: Kerf calculation + Cutting of the hook and perpendicular joint.

WEEK 7-8

TPD - FINAL BRIEF PRESENTATIONS

INTRODUCTION TO 3D RENDERING

TEXTURE MAPS

WEEK 9-10

TPD - OPEN WORKSHOP

TPD - OPEN WORKSHOP

WEEK 11-12

BLENDER Workshop

CREATING MATERIALS

NODE EDITOR

TPD - OPEN WORKSHOP

WEEK 13-14

TPD - OPEN WORKSHOP

TPD - OPEN WORKSHOP

ACTIVIDADES FORMATIVAS

AF01 Attendance and participation in theoretical face-to-face classes (15 h)

AF02 Attendance and participation in practical face-to-face classes (15 h)

AF03 Seminar’s participation (3 h)

AF04 Tutor-driven exercises (individual and in groups) (20 h)

AF05 Office hours (1 h)

AF06 Personal work and study (21 h)

EVALUACIÓN

CONVOCATORIA ORDINARIA

SE01 Attendance control and level of participation* 10%

SE02 Practical exercises 60%

SE03 Oral defense of the projects 30%

SE04 Exams 0%

Final mark will be the result of the calculation made according to the table above. It is passed with a mark equal or higher to five. In accordance with what is established in Article 5 of Royal Decree 1125/2003, the results obtained are adjusted to the numerical scale from 0 to 10, with one decimal expression, to which the corresponding qualitative qualification can be added:

0,0 - 4,9 Suspenso (SS)

5,0 - 6,9 Aprobado (AP)

7,0 - 8,9 Notable (NT)

9,0 - 10 Sobresaliente (SB)

CONVOCATORIA EXTRAORDINARIA

As stated in the General Evaluation Regulations of the University of Navarra approved in May 2019, “Students who request it may be evaluated in the extraordinary call, even if they have passed the course in that course. To do this they must request to be included in the minutes at least five days before the start of the exam period of that call. The final grade of the subject will be that of the extraordinary call, even if it is lower than the one obtained previously”.

Therefore, the grade obtained in the extraordinary call will be the valid one, regardless of that obtained in the ordinary call, even the student may not pass the subject if he/she fails to attend.

HORARIOS DE ATENCIÓN

Prof. Adam Jorquera Ortega (ajorquerao@unav.es)

Professors will attend students always by appointment by email.

BIBLIOGRAFÍA

Redwood, B., Schffer, F., & Garret, B. (2017). *The 3D printing handbook: technologies, design and applications*. Ed. 3D Hubs.

Rifkin, J. (2011). *The third industrial revolutio*n. Ed. Palgrave Macmillan.

Laughlin, Z., & Howes, P. (2012). *Material Matters: New Materials in Design*. Ed. Black dog publishing.

Anderson, C. (2012). *Makers - The new industrial revolution*. Ed. RH Business Books.

Lipson, H., & Kurman, M. (2013). *Fabricated: The new world of 3D printing*. John Wiley & Sons. Localízalo en la Biblioteca

Hatch, M. (2013). *The maker movement manifesto: rules for innovation in the new world of crafters, hackers, and tinkerers*. McGraw Hill Professional. Localízalo en la Biblioteca

Aranda, S., & Feeney, D. (2018). *3D Printing Failures: How to Diagnose and Repair ALL Desktop 3D Printing Issues*. Independently published.