



COURSE ID SHEET

Course No. 5265 NTUA

Semester: 6 Core Elective X Specialization

TITLE **Products Design**

AIM The familiarization of the students with the cognitive background and methodology in addressing the basic questions: "what product must be manufactured" and "how to be manufactured" to present the optimal technical and economic characteristics and to meet the modern environmental requirements and specifications.

CONTENT

- Chemical product classification: commodities, molecular, structured, and devices.
- Stages of Product Design: Needs, Ideas, Selection (of idea to pursue), Design – Needs: identification of consumer or societal needs, transformation into measurable quality attributes of product.
- Factorial design of experiments
- Relation of Quality and Product Design
- Selection of idea to be pursued, consumer surveys, expert panels, design team evaluation, preliminary design, Intellectual Property considerations.
- Design: tools for Product and Process Design, scale-up, economics, environmental health and safety assessments, sustainability criteria.
- Design of biomaterials and packaging
- Design and Circular Economy – Design of green products – Case studies

HOURS PER SEMESTER	LECTURES	13	EXERCISES	13	LABORATORY	13	HOME-WORK	51	TOTAL HOURS: 90
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STUDENT PERFORMANCE/EVALUATION

- Students are expected to be involved interactively. They will process individual or group design studies assigned to them. The results of the assignments will be presented written and orally. Students should be present at the tutorials where their active participation is crucial for the fulfillment of course objectives.
- Due to the nature of the course, there is no conventional written final examination. Instead, the students will work half-yearly, individually or collectively, with oral presentations and oral examinations. Also, they should previously submit the written text. The final grade will be the weighted grade of written assignments and oral examinations related with these assignments.