COURSE SYLLABUS						
Course Title	**Course Code**	**Semester**	**Course Hour/Week**		**Credit**	**ECTS**
Prototyping	INDD205	1	**Theory** 2	**Practice** 2	3	7
Course Type	**Compulsory Courses**	**Department Elective**	**Faculty Elective**	**University Elective**	**CoHE (YÖK) Compulsory**	**Other**
	x					
Level of Course	**Associate Degree (Short Cycle)**		**Undergraduate (First Cycle)**		**Graduate / Doctoral (Second / Third Cycle)**	
			x			

Language of Instruction	English

Course Instructor(s)	Dr. Sarvenaz PAKRAVAN	E-mail : sarvenaz.pakravan@arucad.edu.tr Office: TI-OFF07
Course Objectives	Aims to develop technological and problem solving skills in design visualization and transforming the idea of design to a 3D body using computer controlling technologies.	

	Students To Do:	**Teaching Methods**	**Evaluation Methods**
Course Learning Outcomes	Analyze and adapt to advanced project briefs by identifying client needs, target audience insights, and strategic goals.	Direct instruction technique Scenario-based assignments.	Mid-tern Project Evaluation.
	Design mock-ups and construct pre-print presentation materials that reflect high-quality production standards.	Studio sessions with hands-on mock-up crafting and material exploration.	Final and Mid-term Project Evaluation.
	Utilize a range of media—including promotional items, packaging, and social media reels—to strengthen creative pitching strategies.		Mixed-media production workshop.

Course Content	This course provides students with an opportunity to use state-of-the-art equipment to design, fabricate and test products. During the course students develop technological, problem solving and hands-on skills. In the Fab Lab computer- controlled fabrication technologies such as 3D printers, lasers, etc. will be used to transform a product idea into its tangible form.

COURSE OUTLINE/SCHEDULE			
Week	**Topic**	**Implementation (theory/practice)**	**Required Reading, Preliminary preparation**
1	Introduction to lecture Foundations: Prototyping mindset and design briefs. Topics: design thinking, brief interpretation, planning prototypes, risk assessment.	T-P	Activities: Mini sketching session, quick low-fidelity prototype exercise Deliverables: Week 1 reflection and concept brief.
2	Materials, tools, and safety in prototyping. Topics: material properties, tool compatibility, safety in workshop/lab.	T-P	Activities: Material tasting, safety orientation, tool practice. Deliverables: Materials matrix and safety checklist.
3	From concept to model: sketching to scale models. Topics: sketching, layering of ideas, translation to physical form.	T-P	Activities: Hand-drawn studies, small-scale cardboard/foam models. Deliverables: Concept sketches + 1:5 scale model (cardboard/foam).
4	Design Principles, discussion on projects. CAD basics for prototyping and drawing production. Topics: 2D drafting and 3D modeling fundamentals.	T-P	2D drafting and 3D modeling fundamentals. Activities: Create digital model of a simple interior element. Deliverables: Digital file package (model + basic drawings).
5	Digital fabrication foundations: laser cutting, 3D printing. Topics: workflow from model to fabrication, file preparation, tolerances.	T-P	Activities: Prepare files for laser cut/3D print; fabricate a small component. Deliverables: Fabrication-ready files and a produced part.
6	Prototyping for interior elements: furniture, partitions, fixtures.	T-P	Activities: Concept development for an interior element project.

	Topics: ergonomic considerations, modularity, assembly strategies.		Deliverables: Mid-brief concept and rough prototype proposal.
7	Joinery, fasteners, and finishes for interior fabrication. Topics: joinery types, hardware, adhesives, finishes.	T-P	Activities: Build a small built-in joint or fixture prototype. Deliverables: Joint/fixture prototype with finish sample.
8	Presentation and submission of concept ideas and sample model of an interior furniture. Midterm submission.	T-P	Review of projects.
9	Detailing for real-world interiors: ergonomics and accessibility. Topics: human scale, accessibility guidelines, safety details.	T-P	Activities: Redesign for accessibility, create detailed component sheet. Deliverables: Accessibility/ergonomics notes and revised prototype.
10	Documentation and fabrication planning. Topics: technical drawings, bill of materials (BOM), cost considerations	T-P	Activities: Create complete fabrication drawings and specs. Deliverables: Final fabrication package (drawings + BOM).
11	Integrated project development and user testing. Topics: user feedback, iteration, design critique.	T-P	Activities: User testing of prototypes; refine designs. Deliverables: Iteration plan and updated prototypes.
12	The scale of the experiment with composite materials and editing student work.	P	See the required books.
13	Combined with the scale and plot belong to the student study materials.	P	See the required books.
14	Combined with the scale and plot belong to the student study materials.	P	See the required books.
15	Final presentation and critique. Topics: presentation skills, storytelling, project packaging	P	Activities: Public critique with peers/industry guests. Deliverables: Final integrated project (physical prototype or scaled interior element) + comprehensive portfolio.

16	**FINAL EXAM**		

Required Course Material(s) / Reading(s)/ Text Book(s)	• Hallgrimsson, B. (2020). *Prototyping and model making for product design*. London: Laurence King Publishing. Call number: TS171.8 .H35 2020 • Menichinelli, M., & Bosque, C., & Troxler, P., & Favre, A. (2017). *Fab lab. Salenstein*. Niggli. Call number: TS155.63 .M46 2017
Recommended Course Material(s)/ Reading(s) /Other	• Louise, V. (2013). Prototype: *Design and Craft in the 21st Century*. ISBN: 9781350036031 • Scott, W. (2022). *This Is a Prototype: The Curious Craft of Exploring New Ideas*. ISBN: 978-1984858047

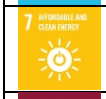
ASSESSMENT		
Learning Activities	**NUMBER**	**WEIGHT in %**
Mid-Term	1	40
Field Study		
Presentation / Seminar		
Studio Practice		
Other		
Contribution of Final Examination/Final Project/ Dissertation to the Final Grade	1	60
TOTAL	2	100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES							
No	**PROGRAMME LEARNING OUTCOMES**	Level of Contribution (1-lowest/ 5-highest)					
		1	2	3	4	5	
1	Understand knowledge of industrial design principles, design methodologies, history, aesthetics, form & function and product development processes.					x	
2	Explain the properties of materials, manufacturing technologies, and production methods used in industrial product design					x	
3	Understand ergonomics, and user-centered design concepts in product development				x		
4	Understand sustainability principles, environmental impacts, and life-cycle considerations in industrial design			x			
5	Analyze design problems, user needs, and market requirements to develop appropriate product design solutions.					x	
6	Generate creative product concepts using sketching, ideation techniques, and visual exploration methods.				x		
7	Develop product designs using digital tools, 3D modeling, and rendering software					x	
8	Develop prototypes or models to evaluate product functionality, usability, and aesthetics.				x		
9	Communicate design ideas effectively through sketches, technical drawings, models, and professional presentations.			x			
10	Work effectively in multidisciplinary teams during product design and development processes.			x			
11	Manage design projects considering production constraints, market needs, and economic feasibility.			x			
12	Demonstrate professional responsibility, ethical awareness, and commitment to sustainable design practices.			x			

ECTS / STUDENT WORKLOAD				
ACTIVITIES	**NUMBER**	**UNIT**	**HOUR**	**TOTAL (WORKLOAD)**
Course Teaching Hour (X weeks * total course hours)	15		10	150

Preliminary Preparation and self- study				
Mid-Term	1		15	15
Final Examination/ Final Project/ Dissertation	1		20	20
Other (presentation)				
TOTAL WORKLOAD				185
TOTAL WORKLOAD / 25				7,4
ECTS				7

ETHICAL RULES WITH REGARD TO THE COURSE
Plagiarism Disclaimer Detected and undetected plagiarism is a serious offense at any time and it could have devastating effects on your degree result and future professional lives. Plagiarism is easy to avoid if you make sure to identify and acknowledge your sources thoroughly and do not copy directly from visual examples, designs, or notes that have in turn been taken word for word from your sources.

	SDG 1: No Poverty	
	SDG 2: Zero Hunger	
	SDG 3: Good Health and Well-Being	x
	SDG 4: Quality Education	x
	SDG 5: Gender Equality	
	SDG 6: Clean Water and Sanitation	
	SDG 7: Affordable and Clean Energy	x
	SDG 8: Decent Work and Economic Growth	
	SDG 9: Industry, Innovation and Infrastructure	x
	SDG 10: Reduced Inequalities	x
	SDG 11: Sustainable Cities and Communities	x

	SDG 12: Responsible Consumption and Production	x
	SDG 13: Climate Action	x
	SDG 14: Life Below Water	
	SDG 15: Life on Land	
	SDG 16: Peace, Justice and Strong Institutions	x
	SDG 17: Partnership for the Goals	

ASSESSMENT DETAILS AND EVALUATION CRITERIA:	
Final grades will be determined based on the course learning activities and the assessment details for the final examination or project, as outlined below, in accordance with the University's Education and Examination Regulations. Students are required to attend at least 70% of the classes. The maximum allowable absenteeism is 30%. Midterm: 40% Final: 60%	
PREPARED BY	Asst. Prof. Dr. Emre GÜNAL, Asst. Prof. Dr. Tina DAVOODI. Asst. Prof. Dr. Emre GÜNAL, Dr. Sarvenaz PAKVARAN.
UPDATED	October 2021, February 2022, February 2023, March 2025, October 2025.
APPROVED	