



Study program: **Industrial Design**

The topic for the written exam
- *Product Design and Development* -

1. Product development
 - 1.1. Stages of product development
 - 1.2. Conceptual analysis of a product
 - 1.3. Embodiment solutions for assemblings and guiding elements in rotational movement
 - 1.4. Modelling and simulation of mechanical systems
 - 1.4.1. Virtual prototyping process: stages, scheme
 - 1.4.2. Simulation of mechanical systems: types of analysis, flowchart
2. Colour, shape, aesthetics and ergonomics, form-giving in design
 - 2.1. The visual perception: Balance as a design principle; types of visual balance.
 - 2.2. The subtraction of the colours
 - 2.3. Relations between the colour and shape
 - 2.4. Models used in industry and product design – types and purposes
 - 2.5. Ergonomics. Anthropometry and the active space design.
 - 2.6. The direct and indirect methods for the study of the shape, using drawings and design models

References

1. Alexandru, C., Pozna, C. Dinamica sistemelor mecanice pe baza prototipării virtuale, cu aplicare la mecanismele suspensiei vehiculelor. Ed. Universităţii Transilvania din Braşov, 2003.
2. Alexandru, C. Virtual prototyping platform for designing mechanical and mechatronic system. Product Design, IntechOpen, 2020, p. 4(1-21), DOI 10.5772/intechopen.92801
3. Bârsan, L., Duicu, S. Estetică industrială, Ed. Universităţii Transilvania din Braşov, 2003.
4. Bârsan, A., Bârsan, L.. Fundamentals of Product Design. Editura Universităţii Transilvania, Braşov, 2004.
5. Daghi, I., Podborschi, V., Comsit, M., Doctoreanu, I. Coloristica generală, Ed. Universităţii Transilvania din Braşov, 2006.
6. Diaconescu, D., Neagoe, M., Jaliu, C., Săulescu, R. Products' Conceptual Design. Transilvania University Publishing House, 2010, ISBN 978-973-598-230-0.
7. Şişman, V. Tehnici de machetare şi modelaj . Ed. Universităţii Transilvania, 2008.

8. Şişman, V. Îndrumar de proiectare în designul de produs. Ed. Universităţii Transilvania, 2012.
9. Velicu, R. Machine Elements. Notes, 2025 (Threaded Assemblings, Key and Spline Joints)
10. Velicu, R. Embodiment design, 2025.

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