



RTU Course "Innovative Product Development and Entrepreneurship"

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General data

Code	SDD701
Course title	Innovative Product Development and Entrepreneurship
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Elīna Gaile-Sarkane
Academic staff	Vita Brakovska Anita Geriņa-Ancāne Jūlija Gušča Elīna Miķelsone Valentīna Strautmane Modris Ozoliņš
Volume of the course: parts and credits points	1 part, 4.0 Credit Points, 6.0 ECTS credits
Language of instruction	LV, EN
Annotation	The study course creates an in-depth understanding of start-up and business development processes from a business idea to a finished product. Within the framework of the study course, the task of the module is to develop students' competencies in the development of new products and technology transfer, to develop entrepreneurial skills and to apply the acquired knowledge about the development of new products in practice. At the same time, the development of general creative and planning skills, as well as the ability to present individual ideas will be developed. The study work is focused on the acquisition of knowledge by doing ("hands on approach") and the development of integrated - theoretical and practical knowledge.
Goals and objectives of the course in terms of competences and skills	The aim of the study course is to provide in-depth knowledge of new product development, technology transfer, entrepreneurship, as well as innovation and commercialization of their results, to develop the ability to use the acquired knowledge, skills and methods in practice and professional development, starting a business and creating companies, as well as leading a team, to develop the ability to present individual ideas. The tasks of the study course are to develop students' skills: - to identify consumer (customer) needs and embody them into product features; - to use creative methods and be able to use them in a specific situation; - to know the production process and be able to analyse process maps / product drawings; - to develop a product specification for economic calculations; - be able to distinguish, relate and explain various economic and technical indicators and indicators; - to plan and organize the investment attraction process, to be able to compile an investment plan; - to find, select, evaluate, structure information and explain it to others.
Structure and tasks of independent studies	Independent literature studies and practical problem solving, preparing for discussions, individual project development and presentation preparation.
Recommended literature	Obligātā/Obligatory: Karl T. Ulrich, Steven D. Eppinger. "Product Design and Development", 6-th ed., Mc Graw Hill, 2012, ISBN: 978-0-07-802906-6. Papildu/Additional: Lindstedt P., Burenus J. The Value Model: How to Master Product Development and Create Products with Unrivalled Customer Value, Nimba, 2003, 634 p. Trott P. Innovation management and new product development. Financial Times/Prentice Hall, 2012, 620 p. Caune J. Stratēģiskā vadīšana, R.: Lidojošā zivs 2009., 236 lpp. Inovācijas (tulkojums no angļu valodas) Rīga, Lietišķās informācijas dienests, 2009 - 112. lpp. Ābeltiņa A. Inovācija - XXI gadsimta fenomens- R.: Izdevniecība "Turība", 2008 - 151 lpp. Dimza V. Inovācijas pasaulē, Eiropā, Latvijā - R.: Latvijas Zinātņu akadēmijas Ekonomikas institūts, 2003, 205 lpp. Faruk A. Khan New product technology, accumulation, and growth. Washington, D. C.: World Bank, 2006.- 42 pp. Bröckel U., Meier W., Wagner G. Product design and engineering: best practices. Weinheim: Wiley-VCH, 2007. Papildu literatūra atbilstoši studējošajiem nepieciešamo zināšanu un prasmju attīstībai.
Course prerequisites	Recommended basic knowledge in business and economics as well as in industry technologies.

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Introduction. Innovation and technology transfer. Commercial foundations. Belbin test.	3	2	1	4
The project proposal presentation. Project selection. Project Group. Team role in the company and new product development.	2	2	1	3
Project management. Fundamentals of business.	2	2	1	3
Identification of needs.	10	10	5	15

Determination of a product functions/features. Categories of functions. Functional thinking.	3	3	2	4
Needs - function matrix, QFD matrix. Initial product specification (in product functions based specification).	3	3	2	4
The development of concept. Creative thinking.	4	4	2	6
Creative thinking techniques. Integration of needs/functions a product.	4	4	2	6
Concept sketches. Concept presentations.	4	4	2	6
Concept evaluation (screening, scoring).	2	1	1	2
Concept development tunnel. TRIZ method, its application of a creation of concept.	3	3	1	5
Strategic development of a product and its economic justification.	2	4	1	5
Technologies of the industry. Product architecture. Product functions.	6	6	3	9
Technologies of the industry.	4	4	2	6
Identification of control factors, noise factors and performance metrics (P-diagram).	2	2	1	3
Design as an added value of the product.	3	3	2	4
Robust design. Product architecture.	3	3	1	5
Principles of prototyping, basics of prototyping. Testing of products.	4	4	2	6
Patents and intellectual property. Claims, pursue applications.	2	2	1	3
Product development economics, specification for financial calculations. Costs, cost analysis and planning.	2	2	1	3
Fundamentals of a company strategic planning. Strategic planning of a product development.	2	2	1	3
Product marketing, sales channels. Product marketing in international markets. Export strategies. International legal environment.	2	2	1	3
Investments and attraction of funds for a company/product development.	2	2	1	3
Negotiations, dialogues, social dialog, development of presentation skills.	2	2	1	3
Contract book, presentations.	4	4	2	6
Total:	80	80	40	120

Learning outcomes and assessment

Learning outcomes	Assessment methods
Is able to identify consumer (customer) needs and to turn them into a product functions.	Tests, individual and group projects, presentations. Criteria: is able to assess, analyse, discuss and find suitable solutions. is able to synthesize new ideas.
Is familiar with different aspects of innovation and meaning of it, creativity techniques and their role, is able to assess usefulness of the appropriate method in a given situation.	Tests, individual and group projects, presentations. Criteria: is able to distinguish between open and closed innovation, choose the appropriate business models.
Is familiar with a new product development and technology transfer processes.	Tests, individual and group projects, presentations. Criteria: is able to integrate and combine different solutions for a new product development.
Is familiar with the production process and is able to analyse the process charts / product drawings and according to develop product specification for economic calculations.	Tests, individual and group projects, presentations. Criteria: is familiar with the basics of calculations and is able to carry out the economic evaluation of the product.
Is able to distinguish, extend and explain various economic and technical indicators and choose of them the most appropriate for solving the particular situation.	Individual and group projects, final test (exam), presentation. Criteria: is able to develop product prototypes.
Understands the process of attraction of investments; can justify necessary investments for the product development.	Individual and group projects, final test (exam), presentation. Criteria: is able to work out proposals for potential investors. Is able to draw up a business and investment plan and to present it to investors.
Is able to find, select, evaluate and structure information, and explain it to others.	Tasks (individual or/and group work), discussion, presentations. Criteria: is able to convincingly outline his/her views, present the group's results in a public and argue an opinion.

Evaluation criteria of study results

Criterion	%
Group or individual project	30
Group or individual tasks (in-class activities)	20
Prototype and contract book presentation (exam)	10
Tests	40
Total:	100

Study subject structure

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	4.0	2.0	2.0	0.0		*	