

SYLLABUS

1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Automation and Computer Science
1.3	Department	Automation Department
1.4	Field of study	Systems Engineering
1.5	Cycle of study	Research Master's
1.6	Program of study/Qualification	Cyber Physical Systems
1.7	Form of education	Full time
1.8	Subject code	100.00

2. Data about the subject

2.1	Subject name	Technology Transfer and Innovation			
2.2	Course responsible/lecturer	Assoc. prof. Stan Ovidiu – Ovidiu.Stan@aut.utcluj.ro			
2.3	Teachers in charge of seminars	Assoc. prof. Stan Ovidiu – Ovidiu.Stan@aut.utcluj.ro			
2.4 Year of study	2	2.5 Semester	1	2.6 Assessment	E
2.7 Subject category	Formative category				DC
	Optionality				DFac

3. Estimated total time

3.1 Number of hours per week	3	of which	3.2 Course	2	3.3 Seminar	0	3.3 Laboratory	1	3.3 Project	0
3.4 Total hours in the curriculum	42	of which	3.5 Course	28	3.6 Seminar	0	3.6 Laboratory	14	3.6 Project	0
3.7 Individual study:										
(a) Manual, lecture material and notes, bibliography										20
(b) Supplementary study in the library, online and in the field										20
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										13
(d) Tutoring										2
(e) Exams and tests										3
(f) Other activities										0
3.8 Total hours of individual study (sum (3.7(a)...3.7(f)))					58					
3.9 Total hours per semester (3.4+3.8)					100					
3.10 Number of credit points					4					

4. Pre-requisites (where appropriate)

4.1	Curriculum	- Basic knowledge in project management
4.2	Competence	- Basic knowledge of PC operation

5. Requirements (where appropriate)

5.1	For the course	- Classroom with, video projector, blackboard, - Internet connection
5.2	For the applications	Laboratory attendance is mandatory.

6. Specific competences

Professional competences	
Cross competences	

7. Discipline objectives (as results from the *key competences gained*)

7.1	General objective	To equip students with a thorough understanding of innovation concepts, strategies, and best practices. The course will cover topics such as types of innovation, intellectual property, commercialization, and global innovation. Additionally, the course will aim to develop skills in areas such as innovation management, strategic thinking, problem-solving, and critical analysis that will be useful in their future careers. The course will also aim to provide students with the skills and knowledge to identify, evaluate, and develop new technologies, products, services, and business models. Ultimately, the goal of the course is to help students become effective and innovative leaders, managers and entrepreneurs in the ever-changing business and technology environments.
7.2	Specific objectives	The course aims to introduce students to the global dimensions of innovation, including internationalization and globalization. It will also provide students with the knowledge and skills necessary to develop a framework for innovation in a specific industry or sector. Additionally, the course will help students understand and appreciate the importance of innovation in the context of economic development and competitiveness. It will also help them develop skills in creativity, problem-solving, strategic thinking, and critical analysis, as well as understand the ethical and social responsibilities related to innovation.

8. Contents

8.1. Lecture (syllabus)	Number of hours	Teaching methods	Notes
01. Basic concepts and taxonomy of innovation (Innovation explained – Definition, Types and Meaning of Innovation)	2	Presentation and reading from course notes and references, questions, and answers face-to-	
02. Evolved concepts of innovation	2		
03. Innovation ecosystems and networks	2		
04. Open innovation and crowdsourcing	2		

05. Innovation measurement and performance evaluation	2	face and online, case studies.	
06. Technology Readiness Level vs Investment Readiness Level	2		
07. Use case. CIMIT - A framework for innovation in healthcare	2		
08. Complex Systems Innovation Fundamentals - Mindset, Process and Tools – part 1	2		
09. Complex Systems Innovation Fundamentals - Mindset, Process and Tools – part 2			
10. Intellectual property strategies and licensing	2		
11. Innovation policy and governance. Innovation commercialization and entrepreneurship	2		
12. Globalization of innovation and internationalization strategies	2		
01. Ethics and social responsibility in innovation. Models and Methods of 02. University Technology 03. Transfer	2		
04. Innovation and digital transformation and Industry 4.0	2		

Bibliography

1. Daniel Kim, Introduction to Systems Thinking, Pegasus Communications, <https://thesystemsthinker.com/introduction-to-systems-thinking/>
2. Daniel Kim, Systems Thinking Tools, <https://thesystemsthinker.com/systems-thinking-tools-a-users-reference-guide/>
3. Clayton M. Christensen, The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail, HighBridge Audio, ISBN-13: 978-1565114159
4. Henry Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business Review Press, ISBN-13: 978-1422102831
5. Alexander Osterwalder, Yves Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, John Wiley and Sons, ISBN-10 : 9780470876411
6. Geoffrey Moore, Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers, HarperBusiness, 2006, ISBN-10: 0060517123
7. Eric Ries, The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, Crown Publishing Group, 2011, eISBN: 978-0-307-88791-7
8. W. Chan Kim, Renée Mauborgne, Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant, Gildan Audio and Blackstone Publishing, 2021, ISBN-13 : 979-8200566570
9. Steve Blank, Bob Dorf, The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company, K&S Ranch, 2012, ISBN-13: 978-0984999309
10. Adam B. Jaffe, Josh Lerner, Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and How to Fix It, Princeton University Press, 2007, ISBN-13: 978-0691127941
11. Peter F. Drucker, Innovation and Entrepreneurship, Haper Business, 2006,
12. Carmine Gallo, The Innovation Secrets of Steve Jobs: Insanely Different Principles for Breakthrough Success, McGraw Hill, 2010, ISBN-13: 978-0071748759
13. Nigel Cross, Design Thinking: Understanding How Designers Think and Work, Berg Publushers, 2011, ISBN-13: 978-1847886361

14. Ovidiu Stan, Szilard Enyedi, Introducere in managementul proiectelor, U.T.PRESS, 2013, 978-973-662-811-5
15. Iulia Clitan, Flavia Jascau, Vlad Muresan, Ovidiu Stan, Manualul profesorului pentru proiectarea cursurilor de antreprenoriat incluziv în învățământul superior, UTPRESS, 2022, 978-606-737-591-6
16. Ovidiu Stan, Din sala de curs la o carieră de succes: o privire corespunzătoare asupra relației dintre educația furnizată de Universitatea Tehnică din Cluj Napoca și ocuparea forței de muncă, UTPRESS, 2022, 978-606-737-611-1
17. Ovidiu Stan, Vlad Burnete, Stefan Cirstea, Denisa Stet, Tendințe și evoluții emergente în universitățile tehnice, UTPRESS, 2022, 978-606-737-615-9

8.2. Seminars /Laboratory/Project	Number of hours	Teaching methods	Notes
01. Generating new product and service ideas - Founder's Dream + The Deal	2	Documentation reading, presentation and exemplification, individual exercises on the computer, problem solving within a team.	
02. Application of creative thinking techniques to facilitate cooperation in innovative business development . Systems innovation tools	2		
03. Market segmentation	2		
04. Customer value proposition	2		
05. Financials and key value drivers	2		
06. Customer discovery	2		
07. Pitch your Deck	2		

Bibliography

1. Daniel Kim, Introduction to Systems Thinking, Pegasus Communications, <https://thesystemsthinker.com/introduction-to-systems-thinking/>
2. Daniel Kim, Systems Thinking Tools, <https://thesystemsthinker.com/systems-thinking-tools-a-users-reference-guide/>
3. Clayton M. Christensen, The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail, HighBridge Audio, ISBN-13: 978-1565114159
4. Henry Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business Review Press, ISBN-13: 978-1422102831
5. Alexander Osterwalder, Yves Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, John Wiley and Sons, ISBN-10 : 9780470876411
6. Geoffrey Moore, Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers, HarperBusiness, 2006, ISBN-10: 0060517123
7. Eric Ries, The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, Crown Publishing Group, 2011, eISBN: 978-0-307-88791-7
8. W. Chan Kim, Renée Mauborgne, Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant, Gildan Audio and Blackstone Publishing, 2021, ISBN-13 : 979-8200566570
9. Steve Blank, Bob Dorf, The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company, K&S Ranch, 2012, ISBN-13: 978-0984999309
10. Adam B. Jaffe, Josh Lerner, Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and How to Fix It, Princeton University Press, 2007, ISBN-13: 978-0691127941
11. Peter F. Drucker, Innovation and Entrepreneurship, Haper Business, 2006,

12. Carmine Gallo, The Innovation Secrets of Steve Jobs: Insanely Different Principles for Breakthrough Success, McGraw Hill, 2010, ISBN-13: 978-0071748759
 13. Nigel Cross, Design Thinking: Understanding How Designers Think and Work, Berg Publishers, 2011, ISBN-13: 978-1847886361
 14. Ovidiu Stan, Szilard Enyedi, Introducere în managementul proiectelor, U.T.PRESS, 2013, 978-973-662-811-5
 15. Iulia Clitan, Flavia Jascau, Vlad Muresan, Ovidiu Stan, Manualul profesorului pentru proiectarea cursurilor de antreprenoriat incluziv în învățământul superior, UTPRESS, 2022, 978-606-737-591-6
 16. Ovidiu Stan, Din sala de curs la o carieră de succes: o privire corespunzătoare asupra relației dintre educația furnizată de Universitatea Tehnică din Cluj Napoca și ocuparea forței de muncă, UTPRESS, 2022, 978-606-737-611-1
- Ovidiu Stan, Vlad Burnete, Stefan Cirstea, Denisa Stet, Tendințe și evoluții emergente în universitățile tehnice, UTPRESS, 2022, 978-606-737-615-9

9. Bridging course contents with the expectations of the representatives of the community, professional associations, and employers in the field

The course will also help students develop skills in creativity, problem-solving, strategic thinking, and critical analysis, which are highly valued by employers and professionals in the field of System Engineering. Additionally, the course will help students understand the ethical and social responsibilities related to innovation, which aligns with the expectations of the community and professional associations. Additionally, by introducing students to the global dimensions of innovation, including internationalization and globalization, the course will help students understand the complexities and opportunities of the field in a global context.

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Method of analysis, synthesis and integration of theoretical information	Exam	30%
10.5 Seminars /Laboratory/Project	Method of analysis, synthesis and integration of theoretical information	Project	70%
10.6 Minimum standard of performance - Attend laboratory meetings and complete all assignments - Concurrent conditions for passing the exam <ul style="list-style-type: none"> - Minimum of 5 points from the exam - Minimum 5 points from project 			

