COURSE OUTLINE

1. Data about the study programme

1.1 Higher education institution	Transilvania University of Brașov
1.2 Faculty	Food and tourism
1.3 Department	Food and Tourism Engineering and Management
1.4 Field of study[1)	Engineering and management
1.5 Study level[2)	Master
1.6 Study programme/ Qualification	Engineering and management in luxury hospitality (in English)

2. Data about the course

2.1 Name of course				Innovative Technologies and Process Management in Bakery and Pastry for Luxury Hospitality						
2.2 Course convenor				Prof. dr. eng. Gaceu Liviu						
2.3 Seminar/ laboratory/ project convenor				Prof. dr. eng. Gaceu Liviu						
2.4 Study year	1	2.5 Semester	2	2.6 Evaluation type	E	2.7 Course status	Content[3)	SC		
							Attendance type[4)	CPC		

3. Total estimated time (hours of teaching activities per semester)

3.1 Number of hours per week	4	out of which: 3.2 lecture	2	3.3 seminar/ laboratory/ project	2
3.4 Total number of hours in the curriculum	56	out of which: 3.5 lecture	28	3.6 seminar/ laboratory/ project	28

Time allocation	
	hours
Study of textbooks, course support, bibliography and notes	20
Additional documentation in libraries, specialized electronic platforms, and field research	20
Preparation of seminars/ laboratories/ projects, homework, papers, portfolios, and essays	20
Tutorial	5
Examinations	4
Other activities..................................	

3.7 Total number of hours of student activity	69
3.8 Total number per semester	125
3.9 Number of credits[5)	5

4. Prerequisites (if applicable)

4.1 curriculum-related	• Engineering and management in tourism
4.2 competences-related	• General methods in food production

5. Conditions (if applicable)

5.1 for course development	• Video projector, internet connection
5.2 for seminar/ laboratory/ project development	• Technological line for bakery and pastry production

6. Specific competences and learning outcomes

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<tr>
<td rowspan="2">Professional competences</td>
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Cp.3 Analyze production processes in order to make improvements. Perform analysis to reduce production losses and overall manufacturing costs.

L.O. 3.1 Graduates will be able to evaluate production workflows in luxury hospitality, such as artisan food preparation or beverage manufacturing, to identify inefficiencies and propose data-driven process enhancements.

L.O. 3.3 Graduates will acquire the necessary competencies to design and optimize flexible luxury spaces, such as modular hotel rooms or event spaces, which can be reconfigured to meet specific customer needs and expectations.

Cp.4 Develop processes and techniques for food production or food preservation. They engage in the design, development, construction and operation of industrial processes and techniques for food production.

L.O. 4.1 Graduates will be able to develop and implement innovative processes and techniques for high-end food production, ensuring efficiency, consistency, and adherence to luxury standards.

L.O. 4.3 Graduates will acquire the skills to engineer precision systems for crafting premium bakery, pastry, dairy and meat products, balancing tradition with cutting-edge technology to meet luxury market demands.

L.O. 4.4 Graduates will be capable of designing and managing food production systems that incorporate sustainable, local sourcing and minimize food waste while maintaining the highest quality for luxury guests.

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<td rowspan="2">Transversal competences</td>
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Ct.4 Manage quality related aspects

L.O. 4.1 Graduates will demonstrate the ability to design and implement comprehensive quality assurance frameworks tailored to the high standards expected in luxury hotels, restaurants, and cafes.

L.O. 4.4 Graduates will develop expertise in analyzing guest feedback and operational data to implement ongoing improvements in service excellence and personalized experiences in luxury properties.

L.O. 4.5 Graduates will demonstrate the ability to integrate sustainable practices into quality management processes, ensuring that eco-friendly initiatives enhance, rather than compromise, the high standards of luxury hospitality.

Ct.5 Ensure customer orientation.

L.O. 5.1 Graduates will demonstrate the ability to design and implement guest-focused services and experiences, ensuring that every touchpoint exceeds the expectations of high-end clientele.

L.O. 5.3 Graduates will be able to lead teams in adopting a customer-first mindset, ensuring that staff consistently deliver world-class service in luxury hotels, restaurants, and cafes.

L.O. 5.5 Graduates will develop the capacity to design luxury hospitality infrastructure that seamlessly integrates ergonomics and sustainability, ensuring guest comfort while meeting eco-friendly standards.

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7. Course objectives (resulting from the specific competences to be acquired)

7.1 General course objective	• To develop theoretical and practical skills required for designing, implementing, and managing integrated intelligent systems tailored to the luxury hospitality industry, with a strong focus on sustainability and technological innovation.
7.2 Specific objectives	• Understanding the fundamental principles of intelligent systems and the technologies used in the luxury hospitality industry. • Applying sustainable technological solutions, including resource optimization and minimizing environmental impact. • Developing integration skills for smart systems, such as automation, the Internet of Things (IoT), and artificial intelligence, to enhance customer experiences. • Analyzing global trends in sustainable luxury hospitality, with a focus on innovation and personalization. • Creating practical projects that involve implementing integrated technological solutions aligned with international standards and market needs. • Building management competencies for intelligent systems, including performance

	monitoring and adapting to the dynamic requirements of the industry.

8. Content

8.1 Course	Teaching methods	Number of hours	Remarks
Innovative technologies in bakery and pastry. Introduction to advanced manufacturing processes: controlled fermentation, infrared baking, and enzyme usage.	Interactive course presentation	4	Use of multimedia tools, educational films
Premium ingredients and their impact on products. Properties and use of specialty flours, high-quality fats, and natural additives	Interactive course presentation	4	Use of multimedia tools, educational films
Process management in bakery and pastry production. Planning, monitoring, and optimizing production. Analysis of process flow and its balancing.	Interactive course presentation	4	Use of multimedia tools, educational films
Sustainable solutions in bakery and pastry. Technologies for reducing food waste. Optimization of energy and water consumption in production processes.	Interactive course presentation	4	Use of multimedia tools, educational films
Technological innovations for luxury hospitality. Process automation, IoT integration in pastry equipment, and 3D printing of products.	Interactive course presentation	4	Use of multimedia tools, educational films
Trends in the luxury bakery and pastry industry. Product personalization, signature deserts, and the use of digital technology in product design.	Interactive course presentation	4	Use of multimedia tools, educational films
Food safety and quality standards. HACCP systems, ingredient traceability, and quality criteria in the luxury hospitality industry.	Interactive course presentation	4	Use of multimedia tools, educational films

Bibliography
1. Ponte, J. G., Hoseney, R. C., Bread and Breadmaking Technology, Chapman & Hall, 1995
2. Cauvain, S. P., Young, L. S., Technology of Breadmaking, Springer, 2007
3. Eliasson, A.-C., Larsson, K., Cereals in Breadmaking: A Molecular Colloidal Approach, CRC Press, 1993
4. Manley, D., Technology of Biscuits, Crackers and Cookies, Elsevier, 2011

5. Belitz, H.-D., Grosch, W., Schieberle, P., Food Chemistry, Springer, 2009
6. Cauvain, S. P., Young, L. S., Baking Problems Solved, Woodhead Publishing, 2001
7. Auty, M. A. E., Brijs, K., Food Microstructures: From Microscopy to Industrial Applications, Royal Society of Chemistry, 2020
8. Fellows, P. J., Food Processing Technology: Principles and Practice, Woodhead Publishing, 2016
9. Gisslen, W., Professional Baking, Wiley, 2012
10. Marinova, K., Marinov, B., Innovative Technologies in Bakery Production, Nova Science Publishers, 2020
11. Gaceu, L., Tehnologii de procesare și utilaje în industria panificației. Editura Universității Transilvania din Brașov, 2006.
12. Gaceu, L., Utilaje și tehnologii în industria panificației. Îndrumar de laborator. Editura Lux Libris, 2014

8.2 Seminar/ laboratory/ project	Teaching-learning methods	Number of hours	Remarks
Creating a pastry product with innovative ingredients. Using specialty flours (e.g., almond flour, quinoa, etc.) or plant-based proteins. Evaluating the impact on texture, taste, and nutritional value.	Specialized applications in the laboratory	4	
Utilizing by-products from the food industry in bakery production. Integrating flour from grape skins or other by-products into bread recipes. Analyzing the rheological properties of the dough and the characteristics of the final product.	Specialized applications in the laboratory	4	
Designing and creating a product through 3D printing. Developing a customized design for luxury dough products. Testing various recipes for compatibility with 3D printing.	Specialized applications in the laboratory	4	
Testing the effect of functional ingredients on pastry products. Adding ingredients such as chia seeds, spirulina, or matcha powder to recipes. Evaluating changes in color, flavor, and structure.	Specialized applications in the laboratory	4	
Optimizing recipes through sensory analysis. Organizing a tasting panel to analyze pastry and bakery products. Applying sensory analysis methods (preference tests, hedonic scaling).	Specialized applications in the laboratory	4	
Reducing waste through technological innovation. Creating pastry products using surplus dough or ingredients nearing their expiration date. Monitoring the impact on costs and the quality of final products..	Specialized applications in the laboratory	4	
Developing a personalized luxury dessert by integrating advanced technologies. Using digital technologies to simulate processes and optimize design. Creating a unique product that reflects current trends in luxury hospitality	Specialized applications in the laboratory	4	

Bibliography
1. Ponte, J. G., Hoseney, R. C., Bread and Breadmaking Technology, Chapman & Hall, 1995
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3. Eliasson, A.-C., Larsson, K., Cereals in Breadmaking: A Molecular Colloidal Approach, CRC Press, 1993
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8. Gaceu, L., Tehnologii de procesare și utilaje în industria panificației. Editura Universității Transilvania din

Brașov, 2006.

9. Gaceu, L., Utilaje și tehnologii în industria panificației. Îndrumar de laborator. Editura Lux Libris, 2014
10. Oprea, Oana Bianca, Sannan, Sigurd, Tolstorebrov, Ignat, Claussen, Ingrid Camilla, Gaceu, Liviu. Effects of Fish Protein Hydrolysate on the Nutritional, Rheological, Sensorial, and Textural Characteristics of Bread. Foods, 2024.
11. Oprea, Oana Bianca, Popa, Mona Elena, Apostol, Livia, Gaceu, Liviu. Research on the Potential Use of Grape Seed Flour in the Bakery Industry. Foods, 2022.
12. Oprea, Oana Bianca, Tolstorebrov, Ignat, Claussen, Ingrid Camilla, Sannan, Sigurd, Apostol, Livia, Moșoiu, Claudia, Gaceu, Liviu. Potential for Saccharina latissima Flour as a Functional Ingredient in the Baking Sector. Foods, 2023. https://www.mdpi.com/2304-8158/12/24/4498

9. Correlation of course content with the demands of the labour market (epistemic communities, professional associations, potential employers in the field of study)

The alignment of the course content is achieved through consultation with experts from academic communities, professional associations, and employers, integration of market requirements, international standards, and emerging technologies, as well as periodic updates to the curriculum based on feedback and industry trends.

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of the final grade
10.4 Course	The use of assimilated knowledge to explain and understand the taught concepts	Written and oral exam	70%
10.5 Seminar/ laboratory/ project	The use of skills developed during the semester to solve assigned problems and design individual projects	Specific applications in the laboratory	30%
10.6 Minimal performance standard			
Course: Addressing each topic to a minimum grade of 5. Laboratory: Correct practical resolution of at least 2/3 of the assigned problems.			

This course outline was certified in the Department Board meeting on *12./09./2024* and approved in the Faculty Board meeting on *12./09/2024*

1) Field of study – select one of the following options: Bachelor / Master / Doctorat (to4 be filled in according to the forceful classification list for study programmes);

2) Study level – choose from among: Bachelor / Master / Doctorat;

³⁾ Course status (content) – for the Bachelor level, select one of the following options: **FC** (fundamental course) / **DC** (course in the study domain)/ **SC** (speciality course)/ **CC** (complementary course); for the Master level, select one of the following options: **PC** (proficiency course)/ SC (synthesis course)/ **AC** (advanced course);

⁴⁾ Course status (attendance type) – select one of the following options: **CPC** (compulsory course)/ **EC** (elective course)/ **NCPC** (non-compulsory course);

⁵⁾ One credit is the equivalent of 25 study hours (teaching activities and individual study).