

<b>Study programme:</b> Food Technology			
<b>Type and level of study:</b> Bachelor's degree (240 ECTS) – First cycle			
<b>Course title:</b> Technology of chocolate and cocoa products			Code: TI23
<b>Lecturer:</b> Associate Prof. Marko Petković, Ph. D.			
<b>Language of instruction:</b> English			
<b>ECTS credits:</b> 7			
<b>Prerequisite:</b> /			
<b>Semester:</b> autumn			
<b>Course objective</b> Developing the scientific knowledge of raw materials such as fats, cocoa beans, sugar, emulsifiers, flavors essential for the production of chocolate and cocoa products. Understanding the technological, physicochemical, and biochemical processes involved in production, including thermal treatment, homogenization, crushing, crystallization, shaping, packaging, storage. ApplyING the acquired technological expertise to these processes, ensuring comprehensive mastery of chocolate manufacturing principles. Supporting effective process control and optimization within industrial chocolate and cocoa product production settings.			
<b>Learning outcomes</b> Creating the comprehensive scientific understanding of the chocolate and cocoa product manufacturing process. Training emphasizes proficiency in various methods for controlling technological stages throughout production, as well as in the quality assessment of finished products. Maintaining consistent product standards, optimizing process parameters, and implementing effective quality control systems within industrial chocolate production environments.			
<b>Course contents</b> <i>Theoretical instruction</i> The study focuses on cocoa beans as the fundamental raw material for chocolate and cocoa product manufacturing. It explores the physical and chemical properties of cocoa butter and specialty fats, along with the role of additives in confectionery products. Attention is given to the preparation of chocolate mass and the development of its rheological properties. The curriculum includes processes such as shaping, crystallization, stabilization, packaging, and storage of chocolate and cocoa products. Additionally, the production of cocoa creams and chocolate-like products is examined, integrating theoretical and practical aspects of chocolate technology. <i>Practical instruction</i> The course encompasses comprehensive analysis and assessment of the quality of raw materials used in the production of chocolate and cocoa products, as well as evaluation of the finished products. It includes sensory evaluation techniques to gauge flavor, texture, and overall acceptability. Practical training involves chocolate production using laboratory ball mills, complemented by industrial exercises that simulate real-world manufacturing conditions. This integrated approach develops proficiency in quality control methodologies across all stages of chocolate production, ensuring consistency, safety, and compliance with industry standards.			
<b>Literature</b> 1. Gavrilović, M. (2000): Tehnologija konditorskih proizvoda. Tehnološki fakultet, Novi Sad. 2. Pajin, B. (2009): Praktikum iz tehnologije konditorskih proizvoda. Tehnološki fakultet, Novi Sad. 3. Pajin, B. (2014): Tehnologija čokolade i kakao proizvoda. Tehnološki fakultet, Novi Sad.4. Beckett, S., Mark, S., Ziegler, 4. G. R. (2017): Beckett's Industrial Chocolate Manufacture and Use, 5th Edition, Wiley-Blackwell, ISBN: 978-1-118-78014-5. 5. Petković, M. (2021). Tehnologija čokolade i kakao proizvoda (praktikum). Agronomski Fakultet, Čačak.			
<b>Hours of active teaching:</b> 3+0+2		<b>Theoretical:</b> 3×15=45	<b>Practical:</b> 2×15=30
<b>Teaching methods</b> • Interactive teaching, using video presentations. • Individual consultations related to problems arising in theoretical and practical classes, and laboratory exercises.			
<b>Assessment (maximum points 100)</b>			
<b>Examination requirements</b>	points	<b>Final exam</b>	points
Class participation	5	Written exam	
Practical participation sessions/tests	5	Oral exam	45
Class tests	30		
Practical tests	15		
Other			

<b>Grading system</b>		
<b>Grade</b>	<b>ECTS</b>	<b>Description</b>
10	91-100	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing