

Study programme: Food Processing				
Type and level of study: Bachelor's degree (240 ECTS) – First cycle				
Course title: Sugar and Starch technology				
Lecturer: Ass. Prof. Mirjana Radovanović, PhD				
Language of instruction: English				
ECTS credits: 6				
Prerequisite:				
Semester: winter				
Course objective Acquiring knowledge about the technological quality of plants rich in sugar and starch, procedures and devices for production sugar, starch and starch derivatives. Acquiring the skills needed to monitor the quality of sugar beet, corn and potato, intermediate products and final products of sugar and starch industry.				
Learning outcomes				
<ul style="list-style-type: none"> • Knowledge of plants rich in sugar and starch, technological procedures and devices for obtaining sugar and starch. • Understanding the influence of the quality of raw materials on the primary process parameters and on the quality of the final ones products • Understanding of application of by-products, intermediate and final products of the sugar and starch industry • Skills in the analysis of quality parameters of sugar beet, corn and potato, intermediate and final products 				
Course contents				
Theoretical lessons				
Biological and technological properties of sugar beet. Preparation of sugar beet for extraction. Extraction of juice from sugar beet. Diffuse juice cleaning. Evaporate juices. Crystallization of sugar. Drying, processing and crystal sorting. Sugar storage and packaging.				
Plant crops for the starch production, physical and chemical characteristics of starch; corn starch production (reception, cleaning, steeping, separation of grain components, washing, drying and storage of starch, by-products of wet corn processing). Producing starch from potatoes (reception, peeling potatoes, extraction starch from potatoes cells, washing, concentrating, refining and drying of starch). Producing starch from wheat (Martin's process and dough formation process). Starch hydrolysis: acid, enzymatic and acid-enzymatic. Production of starch syrups, crystalline glucose, fructose syrups and other sweeteners. Modified starches.				
Practical, laboratory work				
Physico-chemical characteristics of sucrose. Examination of the quality of sugar beet, intermediate products, by-products of the sugar industry and sugar. Obtaining starch. Physical and chemical properties of starch. Starch hydrolysis. Examination of basic quality parameters of starch hydrolysates.				
Recommended reading				
Asadi, M. (2006). Beet-sugar handbook. John Wiley & Sons.				
James N. BeMiller, Roy L. Whistler (2009): Starch: Chemistry and Technology.				
Hours of active teaching				Other classes
Lectures: 3x15=45	Practicals: 3x15=30 teaching	Other forms of Tutorials:	Individual work:	
Teaching methods Lectures are interactive and held in classrooms and laboratories using modern devices. Practical sessions involve individual student work. Individual consultations related to problems arising in theoretical and practical classes.				
Assessment (maximum points 100)				
Examination requirements	Points	Final examination	Points	
Class participation	10	oral examination	40	
Practical sessions/tests	20	written examination		
Term paper assignments/homework			
Project				
Other (tests)	30			
Grading system				
Grade	ECTS	Description		
10	91-100	Excellent		
9	81-90	Exceptionally good		
8	71-80	Very good		
7	61-70	Good		
6	51-60	Passing		
5	≤50	Failing		