

General information

Course title:	PRODUCTION TECHNOLOGY OF NON-ALCOHOLIC AND ALCOHOLIC BEVERAGES
ISVU course code:	266813
Course instructor:	
Course assistant:	
Study programme and specialization in	Professional undergraduate study of food technology
which the course is taught:	
ECTS credits:	4.0
Semester of the course execution:	IV.
Exam prerequisites:	Applied engineering Mechanical operations and machines in the food industry
Course objectives:	The aim of the course is to acquaint students with the basics of non-alcoholic beverage production technology with special emphasis on the economic aspects of raw material selection and production using new technologies and product distribution.

Course structure

Teaching mode	Number of contact hours per semester:	Student's requirements per teaching mode
Lectures:	30	Attendance at lectures: 80%
Exercises (auditory, linguistics):	2	Attendance at exercises: 100%
Exercises (laboratory, practical):	22	Attendance at exercises: 100%
Field work:	6	Attendance at field lectures: 100%
Other:		
TOTAL:	60	

Monitoring of students' work and knowledge evaluation during the course

		Oral	Oral			Time frame for	
OUTCOMES		examin	examin Total		Pass	the recognition of	
		ation 1	ation 2			the outcome	
Outcome 1	To distinguish fruit and vegetable products used for the production of beverages and to define the types of refreshing non- alcoholic beverages	10%		10%	5%	Two academic years	
Outcome 2	Choose and describe basic and additional raw materials for the production of different types of refreshing non- alcoholic beverages.	15%		15%	7.5%	Two academic years	
Outcome 3	Analyze the physical and chemical properties of water used in the	15%		15%	7,5%	Two academic years	



	production of soft drinks and prepare it for implementation in the product.					
Outcome 4	Explain the production processes of different types of juices and refreshing non- alcoholic drinks and highlight the specifics of these processes.		20%	20%	10%	Two academic years
Outcome 5	Choose an adequate packaging technology and type of packaging and describe ways of packaging non- alcoholic beverages.		20%	20%	10%	Two academic years
Outcome 6	Describe the machines used in the production of juices, soft drinks and strong alcoholic drinks and recognize the possibilities of grouping them into a technological line.		20%	20%	10%	Two academic years
Total % gr	ade points	40	60	100	50	
Share in E	CTS		1.5	2.5	4	

Knowledge evaluation on exams

Exam pre	requisites					
OUTCOMES		Written exam	Oral exam	Total	Pass	
Outcome 1	To distinguish fruit and vegetable products used for the production of beverages and to define the types of refreshing non-alcoholic beverages.		16%		16%	8%
Outcome 2	Choose and describe basic and additional raw materials for the production of different types of refreshing non-alcoholic beverages.		16%		16%	8%
Outcome 3	Analyze the physical and chemical properties of water used in the production of soft drinks and prepare it for implementation in the product.		16%		16%	8%
Outcome 4	Explain the product different types of jui refreshing non-alcol	on processes of ces and nolic drinks and	16%		16%	8%



	highlight the specifics of these processes.			
Outcome 5	Choose an adequate packaging technology and type of packaging and describe ways of packaging non- alcoholic beverages.	16%	16%	8%
Outcome 6	Describe the machines used in the production of juices, soft drinks and strong alcoholic drinks and recognize the possibilities of grouping them into a technological line.	20%	20%	10%
Total % of	grade points	100	100	50
Share in E	CTS	4		

Review of units per week with associated learning outcomes

Wook	Lecture course content and learning	Outco	Exercises course content and	Outco
week	outcomes:	me	learning outcomes:	me
1.	Fruit and vegetable products.	11	Legal legislation.	1
		11	Methods of performing chemical and	11
2.	Refreshing drinks - definitions		physical-chemical analyzes of fruit	
			and vegetable products.	
		12	Refractometric determination of	12
			soluble dry matter.	
3	Basic raw materials for the production		Determination of total dry matter.	
5.	of fruit and vegetable drinks.		Determination of mineral impurities.	
			Determination of ash insoluble in	
			HCI.	
	Additives: Sweeteners - natural, sugar	12	Determination of CO ₂ in water and	13
4.	substitute, artificial. Painter. Carbon		carbonated soft drinks.	
		12		1.4
-	Physical and chemical properties and	13	Determination of total surgers	14.
5.	treatment of water for concentrate		Determination of total sugars.	
	Concentrated juice the technology of	14		14
6.	obtaining concentrate	14	Determination of natural invert.	14.
		14	Determination of directly reducing	14
7.	Fruit juice and nectar production		sugars.	
	technology		Determination of the total invert	
	Production technology of fruit juices:	14	Determination of L-ascorbic acid,	14.
8.	clear cloudy mushy, carbonated.		determination of pH value.	
0	Production technology of refreshing	14	Sensory analysis of juices produced	14.
9.	non-alcoholic drinks		from fruit and vegetable concentrates	
	Pacavary of concentrates and	14	The use of machines and lines for the	14.
10	production of juices from fruit and		production of industrial juices and	
10.	vegetable concentrates		nectars and the production of fruit	
	vegetable concentrates.		syrups - Field teaching	
		15	Packaging of fruit juices, non-	15
11	Packaging of fruit juices, non-		carbonated and carbonated non-	
	carbonated and carbonated soft drinks.		alcoholic refreshing drinks - Field	
			teaching	
	Machines and lines for the production	16	The use of machines and the	16
12.	of industrial non-carbonated soft		functionality of lines for the	
	drinks.		production of industrial non-	1



			carbonated soft drinks - Field teaching	
13.	Machines and lines for the production of industrial carbonated soft drinks.	16	The use of machines and the functionality of the line for the production of industrial carbonated soft drinks - Field teaching	16
14.	Machines and lines for the production of craft juices, nectars and non- carbonated soft drinks.	16	Machines and lines for the production of craft juices and nectars - Practical exercises	16
15.	Machines and lines for the production of fruit syrups and strong alcoholic beverages	16	Water filling machines and lines - field teaching	16

References (compulsory / additional)

compulsory

- 1. Ashurst, P. Chemisty and technology of soft drinks and Fruit Juices and fruit juices, Blackwell Publishing
- 2. DOI: 10.1002/9781118634943. London, 2005.
- 3. Lovrić, T., Piližota V. Konzerviranje i prerada voća i povrća, Nakladni Zavod–Globus, ISBN: 953-167-026-9. Zagreb, 1994.
- 4. Zavadlav, S. Tehnologije bezalkoholnih pića Priručnik za vježbe, Veleučilište u Karlovcu, Karlovac, 2015.

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- 5. Lučić, R. Proizvodnja jakih alkoholnih pica, Nolit, Beograd, 1987. additional
- 1. Voća, S. Dobričević, N., Šic Žlabur, J. Priručnik za vježbe iz modula Prerada voća i povrća, Agronomski fakultet Sveučilište u Zagrebu, Zagreb, 2011.
- 2. Vračar, Lj. Priručnik za kontrolu kvaliteta svježeg i prerađenog voća, povrća i pečurki i osvježavajućih bezalkoholnih pića, Tehnološki fakultet Novi Sad, Novi Sad, 2001.