INDUSTRIAL FRUIT JUICE PRODUCTION TECHNOLOGY

1	Course Title:	INDUSTRIAL FRUIT JUICE PRODUCTION TECHNOLOGY
2	Course Code:	GMB5013
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	2
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. CANAN ECE TAMER
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Bursa Uludağ Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü 16059 Görükle/Bursa Tel: 0224 2941501 Fax: 0224 2941402 e-mail : etamer@uludag.edu.tr
17	Website:	
18	Objective of the Course:	The aim of the course is to give information about processing conventional and novel fruit juice processing technologies.
19	Contribution of the Course to Professional Development:	To have awareness and knowledge about the latest developments in technology related to fruit juice production.
20	Learning Outcomes:	

	1	The students will be able to know the physicochemical and functional properties of properties of fruits used for fruit juice production
	2	The students will be able to learn novel fruit juice and fruit juice concentrate processing technologies
	3	The students will be able to learn the properties of enzymes and fining agents used for fruit juice production
	4	The students will be able to know the equipments used in fruit juice production
	5	The students will be able to learn the functional novel fruit juice and beverages production technologies
	6	The students will be able to learn the improvement of the filling and packaging systems of fruit juices
	7	The students will be able to know the problems and solutions offered for fruit juice industry
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	Composition and the properties of the fruits	Depectinization
2	Pre-processing steps of fruit juice production	Analysis of starch degradation
3	Press types and pressing methods	Analysis of protein stabilization
4	Enzymatic treatments, clarification, fining agents	Analysis of clarifiying
5	Classical filtration, ultrafiltration, reverse osmosis	Analysis of Phenolic compounds
6	Evaporation and evaporators	Analysis of anthocyanin
7	Aroma spinning, deaeration, homogenization	Determination biological cloudiness
8	Pasteurization	Determination chemical cloudiness
9	Pulsed electric field	Determination of pectic compounds
10	Electroplasmolysis	Analysis of antioxidant activity
11	Filling systems	Analysis of citrus oil
12	Packaging of fruit juice and aseptic packaging	Analysis of gelation
13	Flow diagrams of processing of some functional fruit juices, tropic fruit juices and diet beverages	Analysis of Naringenin
14	Students assignment presentation	Field Trip

22	Textbooks, References and/or Other Materials:	Kılıç, O., Başoğlu, F., Çopur, Ö.U. 1997. Meyve ve Sebze İşleme Teknolojisi -1. U.Ü.Ziraat Fak. Ders Notları No: 73. Bursa,192 s. Kılıç, O., Başoğlu, F., Çopur, Ö.U. 1997. Meyve ve Sebze İşleme Teknolojisi -2. U.Ü.Ziraat Fak. Ders Notları No: 74. Bursa, 273 s. Cemeroğlu, B.,Yemenicioğlu, A., Özkan, M. 2001. Meyve ve Sebzelerin Bileşimi ve Soğukta Depolanmaları. Gıda Teknolojisi Derneği Yayınları No: 24. Ankara, 328 s. Luh, B.S. and Woodroof, J.G. 1975. Commercial Fruit processing. Avi Publishing Co. Westport Connecticut. 710 s. Luh, B.S. and Woodroof, J.G. 1975. Commercial Vegetable Processing. Avi Publishing Co. Westport Connecticut. 698 s. Cemeroğlu, B. 2011. Meyve ve Sebze İşleme Teknolojisi – 1. Nobel Yayıncılık. Ankara, 707 s.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	1	50.00
Final Exam	1	50.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00

Contribution of Final Exam to Success Grade	50.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	For evaluation, a final exam is held together with homework and relative evaluation is applied.

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	1.00	14.00
Homeworks	1	40.00	40.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	1	40.00	40.00
Final Exams	1	30.00	30.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	4	3	3	5	3	4	3	1	4	0	0	0	0	0	0
ÖK2	5	4	3	2	5	3	4	3	1	4	0	0	0	0	0	0
ÖK3	4	4	4	3	5	2	4	4	1	3	0	0	0	0	0	0
ÖK4	5	4	3	3	5	3	4	3	1	4	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High