

Nursing (English)			
Bachelor	TR-NQF-HE: Level 6	QF-EHEA: First Cycle	EQF-LLL: Level 6

Course Introduction and Application Information

Course Code:	UNI320						
Course Name:	Health & Microbiome						
Semester:	Spring						
Course Credits:	<table border="1"> <tr> <td>ECTS</td> </tr> <tr> <td>5</td> </tr> </table>			ECTS	5		
ECTS							
5							
Language of instruction:	English						
Course Condition:							
Does the Course Require Work Experience?:	No						
Type of course:	University Elective						
Course Level:	<table border="1"> <tr> <td>Bachelor</td> <td>TR-NQF-HE:6. Master`s Degree</td> <td>QF- EHEA:First Cycle</td> <td>EQF-LLL:6. Master`s Degree</td> </tr> </table>			Bachelor	TR-NQF-HE:6. Master`s Degree	QF- EHEA:First Cycle	EQF-LLL:6. Master`s Degree
Bachelor	TR-NQF-HE:6. Master`s Degree	QF- EHEA:First Cycle	EQF-LLL:6. Master`s Degree				
Mode of Delivery:	E-Learning						
Course Coordinator:	Dr. Öğr. Üy. DENİZ SERTEL						
Course Lecturer(s):	İbrahim Çağatay Acuner, Pınar Yurdakul Mesutoğlu, Deniz Sertel Şelale, Ayhan Mehmetoğlu						
Course Assistants:							

Course Objective and Content

Course Objectives:	<p>The aim of this course is to convey information on;</p> <ul style="list-style-type: none"> - fundamentals of human microbiota & microbiome - formation and development of microbiota - factors that affect the composition of microbiota - effects of microbiota on human health
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	<ul style="list-style-type: none"> - association of microbiota with diseases - pharmaceutical modulation of microbiota
Course Content:	This course includes theoretical lectures regarding human microbiota and its effects on human health and association with diseases.

Learning Outcomes

The students who have succeeded in this course;

- 1) Should be able to define microbiota, microbiome and metagenome concepts.
- 2) Should be able to describe human microbiota and explain how its formed.
- 3) Should be able to explain the factors that affect the composition of microbiota.
- 4) Should be able to define the effects of microbiota on human health.
- 5) Should be able to explain the association of microbiota with diseases.
- 6) Should be able to discuss the use of pharmaceutical preparations that modulate microbiota in promotion of health.

Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction to microbiota, microbiome and metagenome concepts	Review of the course materials
2)	Transmission and development of microbiota	Review of the course materials
3)	Nutritional modulation of the gut microbiome	Review of the course materials
4)	Microbiota perturbations: Dysbiosis and Disease	Review of the course materials
5)	Microbiota & Obesity; Type-2 Diabetes and Cancer	Review of the course materials
6)	Gut microbiome and host immunity	Review of the course materials
7)	Microbiota & Gut-Brain / Gut-Lung Axis	Review of the course materials
8)	Mid term exam	Review of the course materials
9)	Consumption of antibiotics and microbiota	Review of the course materials

10)	Fecal transplantation	Review of the course materials
11)	Nutritional modulation of the gut microbiome for metabolic health and healthy longevity	Review of the course materials
12)	Prebiotics, probiotics and next generation pharmaceutical modulation of the gut microbiome	Review of the course materials
13)	One health approach, and microbiota	Review of the course materials
14)	Multi omics approach and future trends	Review of the course materials
15)	Final Exam	Review of the course materials

Sources

Course Notes / Textbooks:	Tungland B. Human Microbiota in Health and Disease. Academic Press;2018. ISBN 9780128146491
References:	<ul style="list-style-type: none"> • Cryan JF, Dinan TG. Mind-altering microorganisms: the impact of the gut microbiota on brain and behaviour. <i>Nat Rev Neurosci</i>. 2012 Oct;13(10):701-12. doi: 10.1038/nrn3346. Epub 2012 Sep 12. PMID: 22968153. • Sonnenburg JL, Bäckhed F. Diet-microbiota interactions as moderators of human metabolism. <i>Nature</i>. 2016 Jul 7;535(7610):56-64. doi: 10.1038/nature18846. PMID: 27383980; PMCID: PMC5991619. • Carabotti M, Scirocco A, Maselli MA, Severi C. The gut-brain axis: interactions between enteric microbiota, central and enteric nervous systems. <i>Ann Gastroenterol</i>. 2015 Apr-Jun;28(2):203-209. PMID: 25830558; PMCID: PMC4367209. • Kim S, Covington A, Pamer EG. The intestinal microbiota: Antibiotics, colonization resistance, and enteric pathogens. <i>Immunol Rev</i>. 2017 Sep;279(1):90-105. doi: 10.1111/imr.12563. PMID: 28856737; PMCID: PMC6026851. • Sonnenburg JL, Sonnenburg ED. Vulnerability of the industrialized microbiota. <i>Science</i>. 2019 Oct 25;366(6464):eaaw9255. doi: 10.1126/science.aaw9255. PMID: 31649168. • Mikroorganizmalar ve insan vücudu ile olan etkileşimleri Microorganisms and their interaction with human body. Rıdvan Çetin et al. DOI: 10.5455/pmb.1-1422383762 • Tang ZZ, Chen G, Hong Q, Huang S, Smith HM, Shah RD, Scholz M, Ferguson JF. Multi-Omic Analysis of the Microbiome and Metabolome in Healthy Subjects Reveals Microbiome-Dependent Relationships Between Diet and Metabolites. <i>Front Genet</i>. 2019 May 17;10:454. doi: 10.3389/fgene.2019.00454. PMID: 31164901; PMCID: PMC6534069.

- İntestinal mikrobiyota ve obezite ilişkisi, The relationship between intestinal microbiota and obesity. Tuba tekin et al. Derleme 2018; 27: 95-99.
- Ichim TE, Patel AN, Shafer KA. Experimental support for the effects of a probiotic/digestive enzyme supplement on serum cholesterol concentrations and the intestinal microbiome. J Transl Med. 2016 Jun 22;14(1):184. doi: 10.1186/s12967-016-0945-2. PMID: 27333764; PMCID: PMC4918082.
- Kuugbee ED, Shang X, Gamallat Y, Bamba D, Awadasseid A, Suliman MA, Zang S, Ma Y, Chiwala G, Xin Y, Shang D. Structural Change in Microbiota by a Probiotic Cocktail Enhances the Gut Barrier and Reduces Cancer via TLR2 Signaling in a Rat Model of Colon Cancer. Dig Dis Sci. 2016 Oct;61(10):2908-2920. doi: 10.1007/s10620-016-4238-7. Epub 2016 Jul 6. PMID: 27384052.
- Salvucci E. The human-microbiome superorganism and its modulation to restore health. Int J Food Sci Nutr. 2019 Nov;70(7):781-795. doi: 10.1080/09637486.2019.1580682. Epub 2019 Mar 7. PMID: 30843443.

Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3	4	5	6
Program Outcomes						
1) Possesses the necessary knowledge and skills to fulfill nursing roles and functions.						
2) Fulfills the health care needs of individuals, families, and society by utilizing professional roles through a holistic and evidence-based approach, in accordance with the nursing process, ethical principles, patient safety, and quality standards.						
3) Uses care and informatics technologies in nursing practice, research, education, and management.						
4) Establishes effective communication and collaboration with individuals, families, society, colleagues, other healthcare team members, and organizations for the development and delivery of healthcare services.						
5) Accesses international nursing literature through the use of a foreign language.						
6) Adheres to the relevant legislation in professional nursing practices.						
7) Applies lifelong learning, problem-solving, and critical thinking skills in personal and professional life.						
8) Determines protection and nursing care priorities in situations that impact public health on a large scale, such as natural disasters and pandemics, and						

demonstrates responsiveness in crisis management.	1	2	3	4	5	6
Course Learning Outcomes						
9) Contributes to the development, implementation, evaluation, and continuous improvement of health policies and organizational quality systems.						
10) Takes an active role in research, projects, and activities with a sense of social responsibility.						

Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	Possesses the necessary knowledge and skills to fulfill nursing roles and functions.	
2)	Fulfills the health care needs of individuals, families, and society by utilizing professional roles through a holistic and evidence-based approach, in accordance with the nursing process, ethical principles, patient safety, and quality standards.	
3)	Uses care and informatics technologies in nursing practice, research, education, and management.	
4)	Establishes effective communication and collaboration with individuals, families, society, colleagues, other healthcare team members, and organizations for the development and delivery of healthcare services.	
5)	Accesses international nursing literature through the use of a foreign language.	
6)	Adheres to the relevant legislation in professional nursing practices.	
7)	Applies lifelong learning, problem-solving, and critical thinking skills in personal and professional life.	
8)	Determines protection and nursing care priorities in situations that impact public health on a large scale, such as natural disasters and pandemics, and demonstrates responsiveness in crisis management.	
9)	Contributes to the development, implementation, evaluation, and continuous improvement of health policies and organizational quality systems.	
10)	Takes an active role in research, projects, and activities with a sense of social responsibility.	

Assessment & Grading

Değerlendirme Yöntemleri ve Kriterleri	Number of Activities	Level of Contribution
Homework Assignments	1	% 20
Midterms	1	% 20
Final	1	% 60
total		% 100

Workload and ECTS Credit Calculation

Activities	Number of Activities	Workload
Course Hours	14	28
Study Hours Out of Class	13	37
Presentations / Seminar	3	3
Homework Assignments	7	19
Midterms	3	11
Final	4	16
Total Workload		114