

Gastronomy And Culinary Arts (English)			
Bachelor	TR-NQF-HE: Level 6	QF-EHEA: First Cycle	EQF-LLL: Level 6

## Course Introduction and Application Information

Course Code:	UNI272		
Course Name:	Nanobiotechnology		
Semester:	Spring		
Course Credits:	<div>ECTS</div> <div>5</div>		
Language of instruction:	English		
Course Condition:			
Does the Course Require Work Experience?:	No		
Type of course:	University Elective		
Course Level:	<div>Bachelor</div> <div>TR-NQF-HE:6. Master`s Degree</div> <div>QF-EHEA:First Cycle</div> <div>EQF-LLL:6. Master`s Degree</div>		
Mode of Delivery:	E-Learning		
Course Coordinator:	Doç. Dr. PINAR ÇAKIR HATIR		
Course Lecturer(s):	Dr. Öğr. Üyesi Pinar ÇAKIR HATIR		
Course Assistants:			

## Course Objective and Content

Course Objectives:	To give students the basic concepts of nanotechnology and to provide their understanding in biotechnology applications.
Course Content:	Introduction to Nanotechnology Carbon-Based Nanomaterials Fabrication of Nanomaterials

Classification of Nanomaterials  
 Characterization of Nanomaterials  
 Polymer Nanoparticles and Hydrogels  
 Drug Delivery Systems  
 Natural Nanomaterials and Biomimicry  
 Nanobiosensors  
 Nanobiomaterials  
 Biolabeling  
 Lab-on-a-Chip  
 Microscopy  
 Medical Applications of Nanobiotechnology

## Learning Outcomes

The students who have succeeded in this course;

- 1) Understands the basic knowledge of nanobiotechnology.
- 2) Explains the use of nanomaterials in biotechnology and understands the importance of nanostructures in the design of biomaterials such as drug-carrying systems, artificial organs, and tissue scaffolds, etc.
- 3) Understands the importance of nanotechnology for biomedical applications.

## Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction to Nanotechnology	Literature search
2)	Carbon-Based Nanomaterials	Literature search
3)	Fabrication of Nanomaterials	Literature search
4)	Classification of Nanomaterials	Literature search
5)	Characterization of Nanomaterials	Literature search
6)	Polymer Nanoparticles and Hydrogels	Literature search
7)	Drug Delivery Systems	Literature search
8)	Natural Nanomaterials and Biomimicry	Literature search
9)	Nanobiosensors	Literature search
10)	Nanobiomaterials	Literature search
10)	Nanobiomaterials	Literature search
11)	Biolabeling	Literature search

12)	Lab-on-a-Chip	Literature search
13)	Microscopy	Literature search
14)	Medical Applications of Nanobiotechnology	Literature search

## Sources

Course Notes / Textbooks:	Ders kitabı bulunmamaktadır.
References:	<p>1. Hall, J. S. (2005). What's next for nanotechnology. The futurist, 39(4), 28.</p> <p>2. Gazit, Ehud, and Anna Mitraki. Plenty of room for biology at the bottom: an introduction to bionanotechnology. World Scientific, 2013.</p> <p>3. Williams, L. ve Wade Adams, Dr. (2007) Nanotechnology Demystified.</p> <p>4. Goodsell, D. S. (2004). Bionanotechnology: lessons from nature. John Wiley &amp; Sons</p> <p>5. Hatır, P. Ç. (2020). Biomedical Nanotechnology: Why "Nano"? In Biomedical and Clinical Engineering for Healthcare Advancement (pp. 30-65). IGI Global.</p>

## Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3
Program Outcomes			
1) - To have advanced theoretical and practical knowledge supported by textbooks, application tools and other resources containing current information in the field.			
2) - To be able to use advanced theoretical and practical knowledge acquired in the field. - To be able to interpret and evaluate data using advanced knowledge and skills acquired in the field, to be able to identify and analyse problems, to be able to develop solutions based on research and evidence.			
3) - To be able to carry out an advanced level study related to the field independently. - To be able to take responsibility individually and as a team member to solve complex and unforeseen problems encountered in applications related to the field. - To be able to plan and manage activities for the development of employees under his/her responsibility within the framework of a project.			
4) - To be able to evaluate the advanced knowledge and skills acquired in the field with a critical approach, - To be able to determine their learning needs and to be able to direct their learning. -To be able to develop a positive attitude towards lifelong learning.			
5) - Alanı ile ilgili konularda ilgili kişi ve kurumları bilgilendirebilme; düşüncelerini ve sorunlara ilişkin çözüm önerilerini yazılı ve sözlü olarak aktarabilme. - Alanı ile ilgili konularda düşüncelerini ve sorunlara ilişkin çözüm önerilerini nicel ve nitel verilerle destekleyerek uzman olan ve olmayan kişilerle paylaşabilme. -Toplumsal sorumluluk bilinci ile yaşadığı sosyal çevre			

<p>inçin proje ve etkinlikler düzenleyebilme ve bunları uygulayabilme. - Bir yabancı dili en az Avrupa Dil Portföyü B1 Genel Düzeyinde kullanarak alanındaki bilgileri izleyebilme ve meslektaşları ile iletişim kurabilme. - Alanının gerektirdiğı en az Avrupa Bilgisayar Kullanma Lisansı İleri Düzeyinde bilgisayar yazılımı ile birlikte bilişim ve iletişim teknolojilerini kullanabilme.</p>	1	2	3
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### Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	- To have advanced theoretical and practical knowledge supported by textbooks, application tools and other resources containing current information in the field.	3
2)	- To be able to use advanced theoretical and practical knowledge acquired in the field. - To be able to interpret and evaluate data using advanced knowledge and skills acquired in the field, to be able to identify and analyse problems, to be able to develop solutions based on research and evidence.	3
3)	- To be able to carry out an advanced level study related to the field independently. - To be able to take responsibility individually and as a team member to solve complex and unforeseen problems encountered in applications related to the field. - To be able to plan and manage activities for the development of employees under his/her responsibility within the framework of a project.	3
4)	- To be able to evaluate the advanced knowledge and skills acquired in the field with a critical approach, - To be able to determine their learning needs and to be able to direct their learning. -To be able to develop a positive attitude towards lifelong learning.	3
5)	- Alanı ile ilgili konularda ilgili kiři ve kurumları bilgilendirebilme; düşüncelerini ve sorunlara ilişkin çözüm önerilerini yazılı ve sözlü olarak aktarabilme. - Alanı ile ilgili konularda düşüncelerini ve sorunlara ilişkin çözüm önerilerini nicel ve nitel verilerle destekleyerek uzman olan ve olmayan kişilerle paylaşabilme. -Toplumsal sorumluluk bilinci ile yaşadığı sosyal çevre için proje ve etkinlikler düzenleyebilme ve bunları uygulayabilme. - Bir yabancı dili en az Avrupa Dil Portföyü B1 Genel Düzeyi'nde kullanarak alanındaki bilgileri izleyebilme ve meslektaşları ile iletişim kurabilme. - Alanının gerektirdiğı en az Avrupa Bilgisayar Kullanma Lisansı İleri Düzeyinde bilgisayar yazılımı ile birlikte bilişim ve iletişim teknolojilerini kullanabilme.	3

### Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution

Quizzes	5	% 15
Presentation	1	% 15
Midterms	1	% 30
Final Sözlü	1	% 40
<b>total</b>		<b>% 100</b>
PERCENTAGE OF SEMESTER WORK		% 100
PERCENTAGE OF FINAL WORK		%
<b>total</b>		<b>% 100</b>

### Workload and ECTS Credit Calculation

Activities	Number of Activities	Workload
Course Hours	12	24
<b>Total Workload</b>		<b>24</b>