

COURSE DESCRIPTION FORM	
Course Code and Name	DHF3512 Nano-Antimicrobials
Course Semester	6
Catalogue Data of the Course <i>(Course Content)</i>	It deals with current developments related to nanoantimicrobials, one of the new struggle strategies against the increasing resistance problem against antimicrobials, and its types, properties, characterization, bioactivity mechanisms, cytotoxicity and its importance, advantages and disadvantages for human health, its place in the control of oral infections, prevention of biofilms, and current developments in dentistry related to nanoantimicrobials.
Course Textbooks	<ul style="list-style-type: none"> • Lecture notes and the resource books • Tibbals, Harry F. Medical Nanotechnology and Nanomedicine. Crc Press, 2017.
Supplementary Textbooks	<ul style="list-style-type: none"> • Cioffi, Nicola, and Mahendra Rai, eds. Nano-antimicrobials: progress and prospects. Springer Science & Business Media, 2012. • Fikai, Anton, and Alexandru Mihai Grumezescu, eds. Nanostructures for antimicrobial therapy. Elsevier, 2017.
Credit (ECTS)	3
Prerequisites for the Course <i>(Attendance Requirements)</i>	Students must be successful in Medical Biology and Genetics, Microbiology / Oral Microbiology lectures previously.
Course Type	Professional/Technical Elective Lesson
Language of Instruction	Turkish
Course Objectives	Creating awareness of the increasing microbial drug resistance problem in our country and in the world. Having knowledge about new nanoscale approaches developed to solve this problem and nanoantimicrobial particles and the use and place of these particles in the field of health and dentistry.
Course Learning Outcomes	<ol style="list-style-type: none"> 1. Knows the problem of microbial drug resistance and has a high awareness 2. Know nanoscale approaches to eliminate microorganisms 3. Knows the role of antimicrobial nanoparticles in the control of infections, including oral infections 4. Know which nanostructures can be used in antimicrobial therapy 5. Knows the microbicidal effect of nanoantimicrobials in the prevention of biofilms 6. Knows the properties of nanoantimicrobials 7. Describes the activity mechanisms of nanoantimicrobials 8. Knows to determine the antimicrobial properties of nanoantimicrobials and associates them with microorganisms 9. Explain the advantages and disadvantages of nanoantimicrobials 10. Knows and uses the importance of nanoantimicrobials in terms of cytotoxicity and human health.
Instruction Method <i>(Face-to-face, Distance education etc.)</i>	Oral lecturing face-face
Weekly Schedule of the Course	<ol style="list-style-type: none"> 1. Nanoscale approaches in antimicrobial technology 2. Increasing problem of microbial drug resistance 3. Antimicrobial polymeric nanostructures 4. Metal-containing nanoantimicrobials 5. Mechanisms of activity of nano-antimicrobials 6. Nano antimicrobials for prevention and eradication of infection 7. Microbicidal effect of nanoparticles against biofilms 8. The role of antimicrobial nanoparticles in the control of oral infections 9. New strategies in the prevention of microbial biofilms: Essential oils and nanoparticles

	10. The place of nanoantimicrobials in photodynamic therapy used in oral diseases 11. Cytotoxicity of nanoantimicrobials and their importance for human health 12. Advantages and disadvantages of nanoantimicrobials 13. Determination of antimicrobial properties of nanoantimicrobials 14. Current developments in dentistry related to nanoantimicrobials								
Teaching Activities <i>(The time spent for the activities listed here will determine the amount of credit required)</i>	Theoretical lecture hours per week: 14x 3 hours: 42 Internet browsing, library work: 14 weeks x 2 hour: 28 Midterm and midterm exam preparation: 1 weeks X 3 hours: 3 Final exam and preparation for the final exam: 2 Week X 8 Hours = 4								
Assessment Criteria		Number(s)	Weight (%)						
	Midterm exam	1	50						
	Assignment								
	Application								
	Project								
	Practice								
	Quiz								
	Final exam	1	50						
Total	2	100							
Workload of the Course	Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload					
	Weekly theoretical course hours	14	3	42					
	Weekly practical course hours								
	Reading activities								
	Internet search and library work	14	2	28					
	Designing and implementing materials								
	Making a report								
	Preparing and making presentations								
	Midterm and revision for midterm	1	3	3					
	Final exam and revision for final exam	2	4	8					
	Total workload			81					
	Total workload/ 25			3.24					
Course Credit (ECTS)			3						
Contribution Level between Course Outcomes and Program Outcomes	No	Program Outcomes			1	2	3	4	5
	1	PO1					x		
	2	PO2			x				
	3	PO3			x				
	4	PO4			x				
	5	PO5			x				
	6	PO6					x		
	7	PO7			x				
	8	PO8			x				
	9	PO9			x				
	10	PO10			x				
	11	PO11			x				
	12	PO12					x		
	13	PO13			x				
	14	PO14			x				

**Lecturer(s) and Contact
Information**

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