

# AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title Dairy Industry and Na		and Nanotec	hnology					
Course Code	ST315	ST315		el	First Cycle (Bachelor's Degree)			
ECTS Credit 4	Workload	98 (Hours)	Theory	2	Practice 0		Laboratory	0
Objectives of the Course Nanotect food and current w		gy, developm / industry. Nar arried out in t	ent of nanote notechnology his regard.	echnology, application	to have inform ns in the dairy	ation about n industry and	anostructures use to be informed at	ed in the bout the
Course Content	The definition the nano prod of nanostructu nanostructure	of nanotechnor uction and na ires in food in s in dairy indu	ology; develo notechnology dustry such a stry and exa	opment and y; the meth as nanobiyo mination of	l objectives of i ods used in ch opolymers, nar f the current str	nanotechnolo aracterization nocomposites udies on the o	ogy; the methods of nanostructure a, nanoplastics; us dairy industry.	used for es; usage sage of
Work Placement N/A								
Planned Learning Activities and Teaching		Methods	Explanation	(Presenta	tion), Discussio	on, Individual	Study	
Name of Lecturer(s)								

### **Assessment Methods and Criteria**

Method	Quantity	Percentage (%)	
Midterm Examination	1	40	
Final Examination	1	60	

#### **Recommended or Required Reading**

1	SCHWARTZ, J., CONTESCU, C., PUTYERA, C., ENCYCLOPEDIA OF NANOSCIENCE AND NANOTECHNOLOGY, MARCEL DEKKER, INC. NY, 2004.
2	EARL BOYSEN, NANCY C. MUIR, DESIREE DUDLEY, CHRISTINE PETERSON, NANOTECHNOLOGY FOR DUMMIES,

2 2ND EDITION ISBN: 978-0-470-89191-9, WILEY,2011.

Week	Weekly Detailed Course Contents				
1	Theoretical	What is nanotechnology, the development of nanotechnology			
2	Theoretical	The aim of nanotechnology.			
3	Theoretical	Instruments, tools and equipment that used in nanotechnology science.			
4	Theoretical	Synthesis of nanoparticules and nanostructures, properties and applications of them.			
5	Theoretical	The techniques that used to characterize nanostructures (scanning electron microscope (SEM), transmission electron microscopy (TEM), dynamic light scattering and X-ray diffraction)			
6	Theoretical	Nanotechnology applications in the food endustry.			
7	Theoretical	Nano-level properties of food biopolymers and methods for their identification,			
8	Theoretical	Literature review on the usage of nanotechnology in the dairy industry			
9	Theoretical	Packaging and nanomaterials			
10	Theoretical	The benefits of nanotechnology in plastic packaging			
11	Theoretical	Nanosensors and use in the food and dairy industry			
12	Theoretical	The use of nanoparticles and nanocomposite materials			
13	Theoretical	Antimicrobial nano-materials: existing and potential applications			
14	Theoretical	Evaluation of nanostructures on human health and environment.			

# **Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	2	56
Assignment	2	4	1	10
Individual Work	14	0	2	28
Midterm Examination	1	0	2	2



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Final Examination	1			0	2	2	
Total Workload (Hours)			98				
			[	[Total Workload (	Hours) / 25*] = <b>ECTS</b>	4	
*25 hour workload is accepted as 1 ECTS							

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Learning	Outcomes

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1	To understand the concept of nanotechnology and its purpose.
2	To understand the nanostructures that used in the food and dairy industry.
3	To establish the gain-loss relation between traditional and nanoenhanced packaging materials.
4	To evaluate the current work on nanotechnology applications in the dairy industry
5	Learning of the techniques that used to characterize nanostructures (scanning electron microscope (SEM), transmission electron microscopy (TEM), dynamic light scattering and X-ray diffraction)

# Programme Outcomes (Dairy Technology)

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1	Having sufficient infrastructure in basic sciences and engineering subjects and ability to use the theoretical and applied info instantly in this field.
2	Determining the modern techniques, tools and information technologies required for applications related with his field and ability to use them efficiently
3	Ability for planning, projecting, and designing, following up, analyzing and finding target-driven solutions related with his field
4	Ability to have professional ethic and awareness.
5	Ability to work, decide, express opinions orally and in written individually
6	Ability to participate team studies, taking responsibility, making leadership.
7	Ability to conceive Ataturk's principles and reforms, to communicate in Turkish and foreign language.
8	Ability to comprehend the necessity to learn for a life time, to monitor developments in science and technology and continuously renew himself.
9	Having sufficient level of information about production and quality control of milk and dairy products and also product development, increasing product quality and food security fields.
10	Ability to detect, define, solve problems related with his field and to select and apply suitable methods and modeling techniques for this purpose.
11	To be conscious about workplace applications, worker health, work security and environment subjects, to have knowledge about legal results of the engineering applications related with his subject.

# Contribution of Learning Outcomes to Programme Outcomes 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

	L1	L2	L3	L4	L5
P1					4
P2	4	4	4		5
P8	5	5	5	5	
P9		4	4		