



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Biotechnology in Dairy Industry							
Course Code		ST412		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	102 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to give information about on biotechnology, nucleic acids, genetic recombination, gene transfer methods, recombinant DNA technology, recombinant foods and microorganisms, bioreactors, industrial microorganisms, their growth kinetics, fermentation and immobilization methods.							
Course Content		Molecular Microbiology, DNA replication, Protein synthesis, genetic modification of microorganisms used in food industry							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

Recommended or Required Reading

1	Biyokimya Mühendisliği (Biyoteknoloji), Prof. Dr. Burhan Pekin, Ege Üniversitesi Kimya Fakültesi Yayınları, İzmir, 1983.
2	Food Biotechnology, Cambridge Press, Cambridge. -Brown, C. M., Campbell, I., Priest, F. G., 1987
3	Introduction to Biotechnology, Blackwell, Oxford. Moleküler Biyoloji. Nobel Yayınları, Ankara, 2007. Nicholl, D. S. T.
4	An introduction to genetic engineering. Cambridge University Press, Cambridge, 1996.

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition, history and application area of biotechnology
2	Theoretical	Chemical properties, functions and biosynthesis of nucleic acids
3	Theoretical	Genetic recombination and gene transfer methods
4	Theoretical	Recombinant DNA technology, molecular clones and vectors
5	Theoretical	Replication of DNA in vitro conditions
6	Theoretical	Biotechnological foods produced by recombinant DNA technology and their safety
7	Theoretical	Basic principles, operation, types and control of bioreactors
8	Intermediate Exam	Mid-term exam
9	Theoretical	Fermentation methods (batch, half continues and continues),
10	Theoretical	Microbial growth parameters, kinetics of microbial growth in batch and continuous culture
11	Theoretical	Immobilization techniques and biocatalysts
12	Theoretical	İmmobilizasyon teknikleri ve biyokatalistler
13	Theoretical	Application of biotechnology in food industry (production of bread yeast, single cell protein
14	Theoretical	Application of biotechnology in food industry (production of bread yeast, single cell protein
15	Theoretical	Genetically modified microorganisms and food stuff
16	Final Exam	Mid-term exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70
Individual Work	14	0	2	28
Midterm Examination	1	0	2	2



Final Examination	1	0	2	2
Total Workload (Hours)				102
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Knowing of fundamentals of biotechnology
2	Understanding the importance of Molecular Biology on food production
3	Understanding of biotechnology in agricultural production
4	Understanding of genetically modified microorganisms and their importance
5	Definition of microorganisms which are used in food technology

Programme Outcomes (Agricultural Biotechnology)

1	To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology
2	To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications
3	To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems
4	To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools.
5	To have the ability to analyze collected data and interpret the results.
6	To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely
7	To have the awareness of professional liabilities and ethics
8	To be able to follow current national and international problems

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	3	4	4	3	4
P2	4	3	5	4	3
P3	3	4	4	5	4
P4	4	3	3	3	3
P5	4	4	4	4	4
P6	3	4	3	4	3
P7	3	5	4	3	4
P8	4	3	4	3	5

