

ABDULLAH GÜL UNIVERSITY
FACULTY OF LIFE AND NATURAL SCIENCES
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS
COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Molecular Biology	MBG208	Spring	1 + 4	5	7

Prerequisite Courses: None

Type	Compulsory
Language	English
Coordinator	
Instructor	Assistant Prof. Dr. Şerife Ayaz Güner
Adjunct	None
Aim	The aim of this course is to introduce the major processes in the central dogma of molecular biology and help students to develop the knowledge and practical skills to pursue further studies in the molecular biology.
Learning Outcomes	Students will, 1. Describe the processes in the central dogma. 2. Learn broad range of experimental techniques used in molecular biology and how they were used to improve our understanding of molecular biology. 3. Read and interpret scientific papers that utilize molecular biology technologies 4. Design and conduct basic molecular biology experiments 5. Learn how to interpret the results obtained in the conducted experiments, and report the results.
Course Content	The course includes chromosome and nucleosome structures, mechanisms of DNA replication and repair, transcription, mechanisms of transcription regulation, description of the translation process in prokaryotes and eukaryotes. Laboratory course is dedicated to develop students' skills of experimental learning, the students will design and conduct and report basic molecular biology experiments.

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Introduction to the course and central dogma	Related part in suggested books, scientific articles
2	Techniques of molecular biology	Related part in suggested books, scientific articles
3	DNA replication	Related part in suggested books, scientific articles
4	Replication errors and DNA damage	Related part in suggested books, scientific articles
5	Midterm	
6	Spring Break	Spring Break
7	DNA repair mechanisms	Related part in suggested books, scientific articles
8	Recombination and transposition	Related part in suggested books, scientific articles
9	Transcription	Related part in suggested books, scientific articles
10	RNA splicing	Related part in suggested books, scientific articles
11	Translation	Related part in suggested books, scientific articles
12	Second midterm	
13	Translation	Related part in suggested books, scientific articles
14	Post-translational modifications	Related part in suggested books, scientific articles

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15	Final Exam Week	Final Exam
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SOURCES		
Lecture Notes	Lecture slides, multimedia	
Other Sources	Molecular Biology of the Gene, Watson, Baker, Bell, Gann, Levine, Losick, (2013) Pearson Scientific research and review articles	

COURSE MATERIALS SHARING		
Documents	Lecture notes and slides	
Exams	2 Midterm and 1 Final Exam	

EVALUATION SYSTEM		
SEMESTER STUDY	NUMBER	CONTRIBUTION
Midterm 1	1	15
Midterm 2	1	15
Presentations and participation	10	10
Lab Reports	10	30
SUB-TOTAL		70
Contribution of Semester Study		70
Contribution of Final Exam	1	30
TOTAL		100

Course Category		
Sciences and Mathematics		100%
Engineering		0%
Social Sciences		0%

RELATIONSHIPS BETWEEN LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS						
No Program Qualifications		Contribution Level				
		1	2	3	4	5
1	Describe the processes in the central dogma.					X
2	Learn broad range of experimental techniques used in molecular biology and how they were used to improve our understanding of molecular biology.					X
3	Read and interpret scientific papers that utilize molecular biology technologies				X	
4	Design and conduct basic molecular biology experiments				X	
5	Learn how to interpret the results obtained in the conducted experiments, and report the results.					X

*Increasing from 1 to 5.

ECTS / WORK LOAD TABLE			
Activities	Number	Duration (Hours)	Total Work Load
Course Length (Includes exam weeks: 16x total course hours)	15	3	45
Laboratory	15	4	60
Out-of-class Study Time (Pre-study, practice)	15	4	60
Laboratory Reports	10	4	40
Assignments	10	2	20
Midterm I	1	15	15
Midterm II	1	15	15
Final Exam	1	0	25
Total Work Load			240

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Total Work Load / 30

280/30

Course ECTS Credit

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FACULTY OF LIFE AND NATURAL SCIENCES
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS
COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Science and Ethics	MBG 210	Spring	2 + 0	2	4

Prerequisite Courses: None

Type	Compulsory
Language	English
Coordinator	
Instructor	Assoc. Prof. Altan Ercan
Adjunct	None
Aim	The aim of this course is to introduce students the fundamentals of science and ethics and to discuss the importance of ethics for science research, drug development and their effect on society.
Learning Outcomes	Students will, 1. Describe the basic concepts of science and ethics 2. Understand the importance of ethics in scientific research. 3. Recognize the importance of ethics in drug development. 4. Value the importance of ethics for human studies. 5. Value the importance of ethics for animal studies. 6. Understand the importance of ethics for scientific publication.
Course Content	The course focuses on the introduction to the ethics of science and research, the rules and contents of the ethics of science and research, the aim and the importance of making ethical decisions regarding the scientific research and studying ethical issues concerning human based research. In addition to that, ethics for the usage of stem cells, genetically modified organism, cloning, ethics for drug development and the scientific publications will be covered throughout the course

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Introduction to the origin of Science and Ethics (/ morality)	Related part in suggested books, scientific articles
2	Historical relation between science and ethics	Related part in suggested books, scientific articles
3	Ethical Theory and Applications	Related part in suggested books, scientific articles
4	Science as a Profession	Related part in suggested books, scientific articles
5	Midterm	
6	Spring Break	Spring Break
7	Standards of Ethical Conduct in Science	Related part in suggested books, scientific articles
8	Objectivity in Research	Related part in suggested books, scientific articles
9	Ethical Issues in Scientific Publication	Related part in suggested books, scientific articles
10	Ethical Issues in the Laboratory	Related part in suggested books, scientific articles
11	The Scientist in Society	Related part in suggested books, scientific articles
12	Stem Cells: Science & Ethics	Related part in suggested books, scientific articles
13	Ethical Aspects of Livestock Genetic Engineering	Related part in suggested books, scientific articles
14	Economic impact of ethical on scientific research	Related part in suggested books, scientific articles
15	Final Exam Week	Final Exam

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ECTS / WORK LOAD TABLE

Activities	Number	Duration (Hours)	Total work Load
Course Length (includes exam weeks) (6x total course hours)	15	2	30
Out-of-class Study Time (Pre-study, practice)	15	2	30
Assignments	1	30	30
Midterm I	1	15	15
Final Exam	1	20	20
Total Work Load			115
Total Work Load / 30			115/30
Course ECTS Credit			4

Important note: The content and order may change according to student interest in the classroom.

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FACULTY OF LIFE AND NATURAL SCIENCES
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS
COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Biomolecules	MBG408	Spring	3 +0	3	5

Prerequisite Courses: None

Type	Elective
Language	English
Coordinator	
Instructor	Asst. Prof. Dr. Şenile Ayaz Güner
Adjunct	None
Aim	The aim of this course is to teach students about biomolecules having unique properties that determine how they contribute to the structure and function of cells, and how they participate in the processes necessary to maintain life.
Learning Outcomes	Students will, 1. Learn the structures of the most important types of biomolecules 2. Understand the relation between structure and function 3. Learn methods for the determination of biomolecules 4. Learn the protein folding 5. Learn how to utilize protein structure databases
Course Content	Basic macromolecular structure; DNA, RNA, protein, lipids and carbohydrates. Methods for the determination of macromolecules structure. Protein folding and protein structure databases. Structure analysis and classification of proteins. Relation between structure and function.

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Introduction to Biomolecules and Proteins	Related part in suggested books, scientific articles
2	Primary & Secondary Structure	Related part in suggested books, scientific articles
3	Motifs & Supersecondary Structure	Related part in suggested books, scientific articles
4	Tertiary Structure & Fold Types	Related part in suggested books, scientific articles
5	Midterm	
6	Spring Break	Spring Break
7	Mechanisms of Protein Folding	Related part in suggested books, scientific articles
8	Protein structure databases	Related part in suggested books, scientific articles
9	Structure & Properties of Nucleic Acids	Related part in suggested books, scientific articles
10	Nucleic Acid Folds	Related part in suggested books, scientific articles
11	Nucleic Acid - Protein Interactions	Related part in suggested books, scientific articles
12	Second midterm	
13	Membranes & Membrane Proteins	Related part in suggested books, scientific articles
14	Carbohydrates & Glycoproteins	Related part in suggested books, scientific articles
15	Final Exam Week	Final Exam

SOURCES

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Lecture Notes	Lecture slides, multimedia
Other Sources	Petisko G. and Ringe D. (2008) Protein Structure and Function, Oxford University Press

COURSE MATERIALS SHARING

Documents	Lecture notes and slides
Exams	2 Midterm and 1 Final Exam

EVALUATION SYSTEM

SEMESTER STUDY	NUMBER	CONTRIBUTION
Midterm 1	1	15
Midterm 2	1	15
Assignments	6	30
Participation		10
SUB-TOTAL		70
Contribution of Semester Study		70
Contribution of Final Exam	1	30
TOTAL		100

Course Category

Sciences and Mathematics	100%
Engineering	0%
Social Sciences	0%

RELATIONSHIPS BETWEEN LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

No Program Qualifications	Contribution Level				
	1	2	3	4	5
1 Learning the structures of the most important types of biomolecules					X
2 Understanding the relation between structure and function					X
3 Learning methods for the determination of biomolecules				X	
4 Learning the concept of protein folding				X	
5 Learning how to utilize protein structure databases					X

*Increasing from 1 to 5.

ECTS / WORK LOAD TABLE

Activities	Number	Duration (Hours)	Total Work Load
Course Length (includes exam weeks) (16x total course hours)	15	3	45
Out-of-class Study Time (Pre-study, practice)	15	3	45
Assignments	6	2	12
Midterm I	1	14	14
Midterm II	1	14	14
Final Exam	1	20	20
Total Work Load			150
Total Work Load / 30			150/30
Course ECTS Credit			5

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DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS
COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Microbiology	MBG306	Spring	3 + 4	5	7

Prerequisite Courses None

Type	Must
Language	English
Coordinator	Assist. Prof. Dr. Aysun Cebeci Aydın
Instructor	Assist. Prof. Dr. Aysun Cebeci Aydın
Adjunct	None
Aim	The aim of this course is to introduce students the fundamental concepts in microbiology. History of microbiology, evolution, microbial diversity, microbial genetics will be covered throughout the course. Basic microbiology techniques will be taught in laboratory hours.
Learning Outcomes	Students will learn about 1. The basic concepts of microbiology 2. Chemical basis of microbiology 3. Microbial growth, control, and metabolism, 4. Microbial genetics, 5. Microbial diversity, 6. Microbiology and human interactions
Course Content	History of microbiology, the basic concepts of microbial evolution, microbial metabolism, genetics, immunology.

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Introduction to Microbiology	Related part in suggested books, scientific articles
2	Fundamentals in chemistry, atoms, interactions	Related part in suggested books, scientific articles
3	Basic microscopy techniques in microbiology	Related part in suggested books, scientific articles
4	Prokaryotic organisms	Related part in suggested books, scientific articles
5	Microbial metabolism, enzymes, photosynthesis	Related part in suggested books, scientific articles
6	Spring Break	
7	Midterm	
8	Microbial growth	Related part in suggested books, scientific articles
9	Control of microbial growth	Related part in suggested books, scientific articles
10	Microbial genetics I	Related part in suggested books, scientific articles
11	Microbial genetics II	Related part in suggested books, scientific articles
12	Biotechnology	Related part in suggested books, scientific articles
13	Second midterm	
14	Immunology	Related part in suggested books, scientific articles
15	Final Exam Week	

SOURCES

Lecture Notes Lecture slides, multimedia

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Other Sources	Microbiology: An Introduction (12th Edition), 2015, G. J. Tortora, B. R. Funke, C. L. Case, ISBN: 978-0-32192915-0, PEARSON publishing Basic Practical Microbiology ©2006 Society for General Microbiology ISBN 0 95368 383 4 Additional Materials: Brock Biology of Microorganisms (15th Edition) Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley
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COURSE MATERIALS SHARING

Documents	Lecture notes and slides
Exams	2 Midterm and 1 Final Exam

EVALUATION SYSTEM

SEMESTER STUDY	NUMBER	CONTRIBUTION
Midterm 1	1	20
Midterm 2	1	20
Laboratory assignments	7	10
Quiz	7	10
SUB-TOTAL		60
Contribution of Semester Study		60
Contribution of Final Exam	1	40
TOTAL		100

Course Category

Sciences and Mathematics	100%
Engineering	0%
Social Sciences	0%

THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES AND PROGRAM COMPETENCE

No. Program Outcomes	Contribution Level				
	1	2	3	4	5
1 Understanding of Life Sciences, Mathematics and Engineering at the bachelor level					X
2 Having the ability of developing a new scientific method or a technological product or process, and, designing experiments, implementing, collecting data and evaluating regarding those issues					X
3 Choosing technical equipment used in the applications related to microbiology, having sufficient knowledge in adopting and using new technological equipment					X
4 Having the ability of reaching the information, using resources, contributing to the literature by transferring the process and results of scientific studies as written or verbally in the national and international environments					X
5 Having the ability of working as an individual or a team, in the teams composed of discipline or different disciplines, gaining awareness of leadership and taking responsibility				X	
6 Having advanced level of foreign language knowledge to manage efficient verbal, written and visual communication in the major field				X	
7 Having the understanding of ethics in science and the responsibility in profession with the awareness of lifelong learning, being beneficial to society and consciousness to global issues					X
8 Being aware of the social impacts of the solutions and applications of the challenges regarding microbiology					X

*Increasing from 1 to 5.

ECTS / WORK LOAD TABLE

Activities	Number	Duration (Hours)	Total Work Load
Course Length (includes exam weeks: 16x total course hours)	15	5	75
Out-of-class Study Time (Pre-study, practice)	15	5	75
Assignments	4	3	12
Midterm I	1	14	14
Midterm II	1	14	14
Final Exam	1	20	20

Total Work Load			180
Total Work Load / 30			210/30
Course ECTS Credit			7

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FACULTY OF LIFE AND NATURAL SCIENCES
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS
COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Biostatistics	MBG204	Spring	3 + 2	4	6

Prerequisite Courses: None

Type	Elective
Language	English
Coordinator	
Instructor	Assoc. Prof. Dr. Gökmen Zencirli
Adjunct	None
Aim	The aim of this course is to introduce students the fundamentals of biostatistics and biostatistics methods with specific applications and examples in life sciences and to make them understand and evaluate the literature in their field
Learning Outcomes	Students will, <ol style="list-style-type: none"> 1. Describe the basic concepts of biostatistics 2. Calculate the descriptive statistics and choose the appropriate statistics depending on the type of data 3. Learn the basis of probability, discrete and continuous probability distributions 4. Learn the types of sampling methods 5. Learn how to estimate the population parameters 6. Learn the basis of hypothesis tests 7. Learn how to test the statistical assumptions 8. Make one, two or multi-sample inference with hypothesis testing 9. Learn the types and the use of nonparametric tests 10. Learn how to analyze categorical data 11. Learn the basis of correlation and regression analysis 12. Choose the appropriate statistical test depending on the hypothesis and data 13. Apply the appropriate statistical test depending on the hypothesis and data 14. Interpret the statistical test results 15. Report the statistical test results
Course Content	Introduction to biostatistics and basic concepts; descriptive statistics; probability and probability distributions; sampling methods and parameter estimation; introduction to hypothesis testing and testing statistical assumptions; one-sample, two-sample and multi-sample inference with hypothesis testing; nonparametric tests; categorical data analysis; correlation and regression analysis

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Introduction to Biostatistics and Basic Concepts	Related part in suggested books, scientific articles
2	Descriptive Statistics	Related part in suggested books, scientific articles
3	Probability and Probability Distributions	Related part in suggested books, scientific articles
4	Sampling Methods & Parameter Estimation	Related part in suggested books, scientific articles
5	Midterm	
6	Spring Break	Spring Break
7	Introduction to Hypothesis Testing & Testing Statistical Assumptions	Related part in suggested books, scientific articles
8	Hypothesis Testing: One-Sample Inference	Related part in suggested books, scientific articles
9	Hypothesis Testing: Two-Sample Inference	Related part in suggested books, scientific articles
10	Hypothesis Testing: Multi-sample Inference	Related part in suggested books, scientific articles
11	Nonparametric Tests	Related part in suggested

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		books, scientific articles
12	Second midterm	
13	Categorical Data Analysis	Related part in suggested books, scientific articles
14	Correlation and Regression Analysis	Related part in suggested books, scientific articles
15	Final Exam Week	Final Exam

SOURCES

Lecture Notes Lecture slides, multimedia

Other Sources Rosner, B. (2010) Fundamentals of Biostatistics. 7th Edition, Boston: Brooks/Cole.
Additional Materials:
 Crawley, M. J. (2013). The R Book, Chichester, West Sussex, United Kingdom: Wiley.
 Scientific research and review articles

COURSE MATERIALS SHARING

Documents Lecture notes and slides
Exams 2 Midterm and 1 Final Exam

EVALUATION SYSTEM

SEMESTER STUDY	NUMBER	CONTRIBUTION
Midterm 1	1	15
Midterm 2		15
Assignments	4	20
Quiz	4	20
SUB-TOTAL		70
Contribution of Semester Study		70
Contribution of Final Exam	1	30
TOTAL		100

Course Category

Sciences and Mathematics	100%
Engineering	0%
Social Sciences	0%

RELATIONSHIPS BETWEEN LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

No. Program Qualifications	Contribution Level				
	1	2	3	4	5
1 Describing the basic concepts of biostatistics					X
2 Calculating the descriptive statistics and choosing the appropriate statistics depending on the type of data					X
3 Learning the basis of probability, discrete and continuous probability distributions				X	
4 Learning the types of sampling methods				X	
5 Learn the estimation of the population parameters					X
6 Learning the basis of hypothesis tests					X
7 Learning to test the statistical assumptions					X
8 Making one, two or multi-sample inference with hypothesis testing					X
9 Learning the types and the use of nonparametric tests				X	
10 Learning how to analyze categorical data					X
11 Learning the basis of correlation and regression analysis					X
12 Choosing the appropriate statistical test depending on the hypothesis and data					X
13 Applying the appropriate statistical test depending on the hypothesis and data					X

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14 Interpreting the statistical test results									X
15 Reporting the statistical test results									X

*Increasing from 1 to 5.

ECTS / WORK LOAD TABLE			
Activities	Number	Duration (Hours)	Total Work Load
Course Length (includes exam weeks: 16x total course hours)	15	5	75
Out-of-class Study Time (Pre-study, practice)	15	3	45
Assignments	4	3	12
Midterm I	1	14	14
Midterm II	1	14	14
Final Exam	1	20	20
Total Work Load			180
Total Work Load / 30			180/30
Course ECTS Credit			6

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FACULTY OF LIFE AND NATURAL SCIENCES
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COURSE DESCRIPTION AND SYLLABUS

Course Title	Code	Semester	T+L Hours	Credit	ECTS
Chemistry for Life Sciences II	HSG 106	SPRING	3 + 2	4	6

Prerequisite Courses :-

Type	Compulsory
Language	English
Coordinator	Dr. İsmail Akpik
Instructor	Dr. İsmail Akpik
Adjunct	None
Aim	This course will focus on teaching the fundamentals of chemistry; to understand the interaction between chemistry and the world around us.
Learning Outcomes	<ol style="list-style-type: none"> 1- Learning the process of scientific thinking 2- The course will cover multiple areas of chemistry. Students will learn the basics of analytical chemistry, physical chemistry, Nuclear chemistry and applications of the relevant fields. 3- Students will discover chemical processes, cycles and properties that are key to the study of life
Course Content	The course covers the following topics: Chemical Bonding II: Valence Bond and Molecular Orbital Theories, Intermolecular Forces: Liquids and Solids, Solutions and Their Physical Properties, Chemical Kinetics, Principles of Chemical Equilibrium, Acids and Bases, Additional Aspects of Acid Base Equilibria, Solubility and Complex Ion Equilibria, Spontaneous Change: Entropy and Gibbs Energy, Electrochemistry, Nuclear Chemistry

WEEKLY TOPICS AND PRELIMINARY STUDY

Week	Topic	Preliminary Study
1	Chemical Bonding II: Valence Bond and Molecular Orbital Theories	The relevant articles from the literature
2	Chemical Bonding II: Valence Bond and Molecular Orbital Theories	The relevant articles from the literature
3	Intermolecular Forces: Liquids and Solids	The relevant articles from the literature
4	Spontaneous Change: Entropy and Gibbs Energy	The relevant articles from the literature
5	Solutions and Their Physical Properties	The relevant articles from the literature
6	Principles of Chemical Equilibrium	The relevant articles from the literature
7	Acids and Bases (Lecture Free Week)	The relevant articles from the literature
8	Midterm Exam I	
9	Spring Break	The relevant articles from the literature
10	Additional Aspects of Acid Base Equilibria	The relevant articles from the literature
11	Solubility and Complex-Ion Equilibria	The relevant articles from the literature
12	Electrochemistry	The relevant articles from the literature
13	Chemical Kinetics	
14	Midterm Exam II	The relevant articles from the literature
15	Nuclear Chemistry	The relevant articles from the literature
16	Final Exam Week	

SOURCES

Lecture Notes	Lecture notes and Lecture slides
Other Sources	Course Textbook: "General Chemistry: Principles and Modern Applications" by Ralph H. Petrucci, F. Geoffrey Herring, Jeffery D. Madura, Carey Bissonnette; 11th Edition, Pearson Canada Inc (2017)

COURSE MATERIALS SHARING

Documents	Lecture notes, slides, and molecular model set
Exams	2 Midterms and 1 Final Exam

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EVALUATION SYSTEM		
SEMESTER STUDY	NUMBER	CONTRIBUTION
Midterm 1	2	40
Quiz	4	20
SUB-TOTAL		60
Contribution of Semester Study		60
Contribution of Final Exam	1	40
TOTAL		100

Course Category	
Sciences and Mathematics	100%
Engineering	0%
Social Sciences	0%

RELATIONSHIPS BETWEEN LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS						
No. Program Qualifications		Contribution Level				
		1	2	3	4	5
1	Accessing knowledge, evaluating and interpreting information by doing scientific research in the field of Molecular Biology and Genetics					X
2	Ability to use scientific knowledge for development of new methods in Molecular Biology and Genetics					X
3	To be able to understand and analyze materials by using basic knowledge on Molecular Biology and Genetics					X
4	Design and implement analytical, modeling and experimental research				X	
5	Solve and interpret the problems encountered in experimental research					X
6	Considering scientific and ethical values during the collection and interpretation of data					X
7	Integrating knowledge of different disciplines with the help of scientific methods, and completion and implementation of scientific knowledge using data					X
8	To gain leadership ability and responsibility in disciplinary and interdisciplinary team works				X	
9	To be able to contribute to the solution of social, scientific and ethical problems encountered in the field of Molecular Biology and Genetics				X	
10	To be able to define, interpret and create new information about the interactions between various discipline of Molecular Biology and Genetics					X

*Decreasing from 1 to 5.

ECTS / WORK LOAD TABLE			
Activities	Number	Duration (Hours)	Total Work Load
Course Length (includes exam weeks: 16x total course hours)	15	5	75
Out-of-class Study Time (Pre-study, practice)	15	2	30
Internet search, library work, literature search	15	1	15
Quiz	4	2.5	10
Midterm	2	15	30
Final Exam	1	20	20
Total Work Load			180
Total Work Load / 30			180/30
Course ECTS Credit			6

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