Course Title	Code	Semester	Theoretical (hours/week)	Practice (hours/week)	Laboratory (hours/week)	ECTS
PHARMACOGENETİCS AND PHARMACOGENOMİCS	MTP 518	2. Semester/Fall	3	0	0	5
Prequisites	None					
Course language	Turkish					
Course type	Elective					
Teaching Methods	Interactively, Slide Presentation, If necessary,accessing data sources via internet					
Instructor(s)						
Course Objectives	Pharmacogenetics, according to genetic makeup of the patient's response to drug kinetics and medicine is a science dealing with change among individuals and ethnic groups. The aim of this course; student of pharmacology and general knowledge and concepts to learn about pharmacogenetics, to be informed about changes in the effects of drugs due to genetic factors, drug pharmacokinetics and be informed about the changes due to genetic factors in the pharmacodynamics of transporter molecules carrying drugs to be informed about the pharmacogenetics, diagnosis and treatment used to evaluate the genetic characteristics of altering effects of drugs and distinguish the ability, medication side effects, and to establish the relationship between pharmacogenetics in their formation and its ability to interpret the clinical situation and understanding of the importance of individualized treatment that pharmacogenetics is important, evaluate their ability to transfer their skills to earn and in a systematic way what they have learned.					
Course Learning Outcomes	1. To define general information and concepts on pharmacogenetics 2. Being able to identify the genetic changes in the enzyme responsible for the metabolism of drugs 3. To understand the mechanisms that modify the effects of drugs and bioavailability at the molecular level 4. changing diagnostic and therapeutic effects of drugs used to evaluate the genetic characteristics and be able to distinguish the 5. Be able to identify molecules that mediate the adverse effects of the drug and, if able to establish the relationship between pharmacogenetics					
References	1. Good & Gilman's The Pharmacological Basis of Therapeutics, 2012 2. Rang and Dale s Pharmacology, 7th. Edition 2011 3. Medicinal Chemistry, Gareth Thomas, 2nd. Edition 2007 4. Basic and Clinical Pharmacology. B.katzung. Appleton & Lange. 11th ed. 2007. 5. Th Cell: A Molecular Approach, Geoffrey M. Cooper and Robert E. Hausman, 5th Edition, 2009 6. Pharmacology primary, 3rd ed. / Terry Kenakin. 2009. 7. Pharmacology: Principles and Practice. Bachmann, Kenneth A. Elsevier / Academic Press, 2009 8. Aational Therapy in Terms of Medical Pharmacology. S. Oguz Kayaalp'in. Pelican Publishing. 13th Edition, 2012					

Topics of Weeks:

Weeks	Topics
Week 1	Introduction to Pharmacology Definition and Basic Concepts
Week 2	Pharmacogenetics and Pharmacogenomics Definition and Basic Concepts
Week 3	Individual therapy and pharmacogenetics
Week 4	lchanges in drug pharmacokinetics -1 due to genetic factors - genetic changes in phase II enzyme (CYP2D6, CYP2C19, CYP2C9, CYP2C8, CYP2A6, CYP1A2, CYP2B6, CYP3A polymorphisms and their changes in the pharmacokinetics of drugs
Week 5	Changes in drug pharmacokinetics -2 attributed to genetic factors - genetic changes in Phase II enzymes (NAT-2-UGT 1A1, GST and other polymorphisms and their changes in the pharmacokinetics of drugs)
Week 6	In discussing the changes due to genetic factors on drug pharmacokinetics example Case
Week 7	the transporter-1 carrying molecule drugs Pharmacogenetics - Pharmacogenetics of efflux transporter (ABC ABC1 and other family members)
Week 8	Pharmacogenetics of transporter molecules that carry drug-2 - Uptake of pharmacogenetics conveyors (organic anion and cation transporter molecules OATP1B1 et al, OCT1, and others)
Week 9	Discussing the effects of the drug carrying case examples of molecules and drug transporter pharmacogenomics
Week 10	Drug pharmacodynamics of genetic factors related changes-1 - G6PDH deficiency and medications - warfarin to tolerance - Hereditary methemoglobinemia and hemoglabinopati are - Corticosteroids regardless glaucoma crisis - Feniltioür and feniltiokarbamid `s inability to get the bitter taste (taste blindness) and smell blindness - resistant rickets vitamin D - Malignant hyperthermia and muscular rigidity
Week 11	Changes due to genetic factors in drug pharmacodynamics-2 - receptors associated with neurotransmitters and other functional molecules polymorphisms (adrenergic, dopaminergic, serotonergic receptors, nerve ending membrane dopamine and serotonin transporter molecules and ions genetic changes and their impact on drugs in the channel)
Week 12	Drug-related changes in the genetic factors in pharmacodynamics-3 - to change the outcome of the treatment of cancer somatic gene variation in tumor tissue (EGFR mutations and gefitinib treatment, etc .)
Week 13	Genetic differences and associated conditions and the ability to be able to inhibit the induction of enzymes involved in drug metabolism
Week 14	Community genetics

Student Workload Table

Activities	**Number**	**Duration**	**Total work load**
Course Duration (X14)	14	3	42
Laboratory			
Practice			
Field Study			
Study Time Of Outside Of Class (Pre-Study, Practice, Etc.)	14	4	56
Presentations (Video shoot/Poster preparation/Oral presentation, Etc.)			
Seminars			
Project			
Case study			
Role playing, Dramatization			
Writing articles, Critique			
Time To Prepare For Midterm Exam	2	10	20
Final Exam Preparation Time	1	7	7
Total Work Load (hour) / 25(s)	**125/25=5**		
ECTS	**5**		

Evaluation System

Semester Work	The number of	Contribution
Midterm Exam	1	40%
Half Year End Exam	1	60%
Laboratory		
Application		
Field Work		
Class-Specific Internship (If Any)		
Assignments		
Presentations and Seminars		
Projects		
Other		
Do your homework		
Application		
Laboratory		
The sum of the grades		100

COURSE LEARNING OUTCOMES AND A RELATIONSHIP WITH PROGRAM QUALIFICATIONS

No.	PROGRAM QUALIFICATIONS					
		LO1	LO2	LO3	LO4	LO5
1	Degree level qualification at the level of expertise in the field of molecular medicine based on up-to-date information, enhances and deepens.	3	3	3	3	3
2	Requires a level of knowledge of the field of molecular medicine technologies, technical equipment and machinery and tools that are specific to the field information	3	3	3	3	3
3	Molecular Medicine is having in the field of information integrate with information from different disciplines to create new information, comments, analysis and synthesis by using different research methods and propose solutions.	3	3	3	3	3
4	The report of his research the author.	3	3	3	3	3
5	Empirical research plans.	3	3	3	3	3
6	Molecular Medicine in matters requiring expertise in the field of fiction, propose solutions, and solves the problems, assesses the results obtained when necessary.	3	3	3	3	3
7	Molecular Medicine and public health-related priority issues Area scientific clinical and/or descriptive research/presentations/publication.	3	3	3	3	3
8	The information related to the field of molecular medicine evaluates and directs the learning a critical approach.	3	3	3	3	3
9	Professional development related to the field of molecular medicine and performs studies the principles of life-long learning.	3	3	3	3	3
10	Current developments in the field of Molecular Medicine information, and their work in the same field or with groups other than the written, oral and Visual systematically as he discusses and shares.	3	3	3	3	3
11	The vocational and professional environment, social relationships, and those relationships are a critical perspective, norms and makes the need to improve them.	3	3	3	3	3
12	Collection of data related to the field of molecular medicine, towards restriction, interpretation, announcing social, scientific and ethic values in oversees and teaches these values.	3	3	3	3	3
13	The basic unit of society, current developments in the field of Molecular Medicine is to cover the national children and family values, and evaluates in line with the realities of the country.	3	3	3	3	3
14	Ethical principles and the importance of the individual and of the community for the Ethics Committee, ethics.	3	3	3	3	3
15	Molecular Medicine in the field with strategy, policy and implementation plans and results obtained within the framework of the quality processes.	3	3	3	3	3

Contribution to the level of proficiency: 1. Lowest, 2. Low / Medium, 3. Average, 4. High, 5. Excellent