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| **Doctorate Program** | | | | | |
| Code | Course Name | ECTS | D+U+L | T/S | Language |
| Fall Semester | | | | | |
| 521703303 | [AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY I](#DERS521701303) | 7.5 | 3+0+0 | COMPULSORY | TURKISH |
| 521704303 | [CENTRAL NERVOUS SYSTEM PHARMACOLOGY I](#DERS521702303) | 7.5 | 3+0+0 | COMPULSORY | TURKISH |
| 521703301 | [EXPERIMENTAL PHARMACOLOGY I](#DERS521701301) | 7.5 | 1+4+0 | ELECTIVE | TURKISH |
| 521703302 | [PHARMACOLOGICAL DRUG INTERACTIONS](#DERS521701302) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521703304 | [MEDICATION USE IN OLD AGE](#DERS521701304) | 7.5 | 2+2+0 | ELECTIVE | TURKISH |
| 521703305 | [AUTACOIDS](#DERS521701305) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521703307 | [CARDIOVASCULAR SYSTEM PHARMACOLOGY I](#DERS521701307) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521703308 | [MOLECULAR PHARMACOLOGY](#DERS521701308) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521703309 | [ADVANCED PHARMACOKINETICS](#DERS521701309) | 7.5 | 1+4+0 | ELECTIVE | TURKISH |
| 521703310 | [HERBAL DRUGS](#DERS521701310) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521703311 | [BASIC CONCEPTS IN PHARMACOLOGY](#DERS521701311) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521101600 | SPECIALIZED FIELD COURSE | 5 | 3+0+0 | COMPULSORY | TURKISH |
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| Spring Term | | | | | |
| 521704305 | [CENTRAL NERVOUS SYSTEM PHARMACOLOGY II](#D18) | 7.5 | 3+0+0 | COMPULSORY | TURKISH |
| 521704301 | [DRUGS AFFECTING WATER AND ELECTROLYTE BALANCE](#DERS521702301) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704302 | [EXPERIMENTAL PHARMACOLOGY II](#DERS521702302) | 7.5 | 1+4+0 | ELECTIVE | TURKISH |
| 521704304 | [MEDICATION USE DURING PREGNANCY](#DERS521702304) | 7.5 | 2+2+0 | ELECTIVE | TURKISH |
| 521703306 | [AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY II](#DERS521701306) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704306 | [ENDOCRINE SYSTEM PHARMACOLOGY](#DERS521702306) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704307 | [CHEMOTHERAPEUTICS](#DERS521702307) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704308 | [CANCER CHEMOTHERAPY](#DERS521702308) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704309 | [PHARMACOGENETIC](#DERS521702309) | 7.5 | 2+2+0 | ELECTIVE | TURKISH |
| 521704310 | [CARDIOVASCULAR SYSTEM PHARMACOLOGY II](#DERS521702310) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704311 | [ADVANCED CLINICAL PHARMACOLOGY](#DERS521702311) | 7.5 | 2+2+0 | ELECTIVE | TURKISH |
| 521704312 | [ADVANCED THERAPEUTIC DRUG MONITORING](#DERS521702312) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521704313 | [PHARMACOLOGICAL BASIS OF PAIN](#DERS521702313) | 7.5 | 3+0+0 | ELECTIVE | TURKISH |
| 521701600 | SPECIALIZED FIELD COURSE | 5 | 3+0+0 | COMPULSORY | TURKISH |
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| **COURSE CODE:** | **521703301** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **EXPERIMENTAL PHARMACOLOGY I** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Semra YIGITASLAN | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | | x |  |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring   Fall **x** | 1 | | 4 | |  | 3 | 7.5 | MANDATORY ELECTIVE  **x** | |
|  | | | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | **Number** | | **Percentage (%)** |
| Midterm Exam | | **1** | | **50** |
| Quiz | |  | |  |
| Homework | |  | |  |
| Project | |  | |  |
| Oral examination | |  | |  |
| Other ( ……… ) | |  | |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | General information about experimental animals, ethical rules, introduction of experimental animals, manipulation, drug administration methods, injection techniques, blood collection techniques, anesthesia techniques, antinociceptive activity tests, motor activity, + maze tests (anxiolytic activity and learning test), antidepressant activity, antiepileptic activity and indirect blood pressure measurement in rats. | | | | |
| **COURSE AIMS** | | | | | ethical rules, technical information and in vivo study methods regarding the use of experimental animals | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | |  | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Have knowledge about planning, continuing and terminating experimental animal studies | | | | |
| **TEXTBOOK** | | | | | 1. Başaran A. , Experimental Animals, Nisan Bookstore, Eskişehir, 2003; | | | | |
| **OTHER REFERENCES** | | | | | 1. Waynforth HB, Flecknell PA, Experimental and Surgical Technology in the rat, Academic Press, London (Second ed.).  2. Harkness JE, Wagner JE, The Biology and Medicine of Rabbits and Rodents Williams and Wilkins ,Philadelphia , (Fourth ed.). | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Isolated organ bath, computer, animal housing unit | | | | |
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|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Introduction of experimental animals | | | | | |
| 2 | |  | | Basic manipulation techniques | | | | | |
| 3 | |  | | Code of Ethics | | | | | |
| 4 | |  | | Oral and parenteral drug administration techniques to rodents | | | | | |
| 5 | |  | | Techniques for collecting blood from rodents | | | | | |
| 6 | |  | | Anesthesia Techniques | | | | | |
| 7 | |  | | Antinociceptive activity evaluation (Tail flick, tail clip, hot plate, writhing tests) | | | | | |
| 8 | |  | | **Midterm Exam** | | | | | |
| 9 | |  | | Motor activity assessment (Rot a rod test) | | | | | |
| 10 | |  | | + Maze test ( for anxiolytic activity and learning test ) | | | | | |
| 11 | |  | | Forced swim test in rat and mouse for antidepressant activity | | | | | |
| 12 | |  | | Anticonvulsant activity tests | | | | | |
| 13 | |  | | Indirect blood pressure measurement in the rat (tail cuff) | | | | | |
| 14 | |  | | Euthanasia in experimental animals | | | | | |
| 15 | |  | | Autopsy in experimental animals | | | | | |
| 16 | |  | | **End of semester exam** | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Learn about the methods used in experimental research. |  | **X** |  |
| LO 2 | Learn about the use of experimental animals. |  | **X** |  |
| LO 3 | Learn about planning experimental studies |  | **X** |  |
| LO 4 | Learn to collect materials to be examined in experimental studies. |  | **X** |  |
| LO 5 | Learn the experimental study termination criteria. |  | **X** |  |
| LO 6 | Learn in vivo studies, in vitro studies, in situ studies, and recording systems. |  | **X** |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Semra YIGITASLAN  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521703302** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **PHARMACOLOGICAL DRUG INTERACTIONS** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Assoc. Prof. Dr. Mahmut OZDEMIR | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring   Fall **x** | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | |  | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | When drugs are administered outside the body or simultaneously into the body, they can increase or decrease each other's effects in various ways. In this case, chemical, pharmaceutical, pharmacokinetic, and pharmacodynamic interactions can occur. | | | | |
| **COURSE AIMS** | | | To provide information about the types of drug interactions that may occur when more than one drug is used together. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Understand pharmacological interactions that may increase or decrease drug effects | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Having sufficient knowledge about drug interactions and being careful about this issue when writing prescriptions. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Introduction to pharmacodynamics, pharmacokinetics, pharmaceutical interactions |
| 2 |  | Definition of Pharmacodynamic Interactions and Antagonism |
| 3 |  | Chemical antagonism and antidotes |
| 4 |  | Physiological antagonism |
| 5 |  | Pharmacological antagonism |
| 6 |  | Synergism (sumation, potentiation) |
| 7 |  | Midterm Exam |
| 8 |  | Pharmacokinetic interactions |
| 9 |  | Pharmacokinetic interactions at the level of absorption |
| 10 |  | Pharmacokinetic interactions at the distribution level |
| 11 |  | Pharmacokinetic interactions at the level of biotransformation |
| 12 |  | Pharmacokinetic interactions at the excretion level |
| 13 |  | End of semester exam |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Knowing pharmaceutical interactions |  |  | **X** |
| LO 2 | Knowing pharmacodynamic drug interactions |  |  | **X** |
| LO 3 | Define antagonism, know physiological, pharmacological and chemical antagonism |  |  | **X** |
| LO 4 | Knowing synergism, defining summation and potentiation |  |  | **X** |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
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| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Assoc. Prof. Dr. Mahmut OZDEMIR  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521703303** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY I** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Kevser EROL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **X** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring   Fall **x** | 3 | | 0 | |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
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| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | **Number** | | **Percentage (%)** |
| Midterm Exam | | **1** | | **50** |
| Quiz | |  | |  |
| Homework | |  | |  |
| Project | |  | |  |
| Oral examination | |  | |  |
| Other ( ……… ) | |  | |  |
| **Final Exam** | |  | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | Providing general information and mechanisms regarding the autonomic nervous system and the concepts of sympathetic and parasympathetic systems. | | | | |
| **COURSE AIMS** | | | | | Cross-review of information regarding the autonomic nervous system. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | autonomic nervous system drugs, their indications for use, side and toxic effects and contraindications. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | knows the general pharmacological properties of drugs used in autonomic nervous system diseases . | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | |  | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | OSS Login | | | | | |
| 2 | |  | | OSS Login | | | | | |
| 3 | |  | | OSS communication mechanisms | | | | | |
| 4 | |  | | OSS communication mechanisms | | | | | |
| 5 | |  | | Acetylcholine biosynthesis and biotransformation | | | | | |
| 6 | |  | | Cholinergic receptors | | | | | |
| 7 | |  | | Cholinergic receptors | | | | | |
| 8 | |  | | **Midterm Exam** | | | | | |
| 9 | |  | | Biosynthesis and biotransformations of catecholamines | | | | | |
| 10 | |  | | Biosynthesis and biotransformations of catecholamines | | | | | |
| 11 | |  | | Adrenergic receptors | | | | | |
| 12 | |  | | Adrenergic receptors | | | | | |
| 13 | |  | | Structure of ganglia and neurotransmitters | | | | | |
| 14 | |  | | Drugs that stimulate ganglia | | | | | |
| 15 | |  | | Ganglion blocking drugs | | | | | |
| 16 | |  | | **End of semester exam** | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | knows the general pharmacological properties of drugs used in autonomic nervous system diseases . |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Kevser EROL  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521703304** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **MEDICATION USE IN OLD AGE** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Fatma Sultan KILIC | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring   Fall **x** | 2 | | 2 | |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | |  | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | Determining the drugs to be preferred in cases of illness and old age, where old age is a special condition . | | | | |
| **COURSE AIMS** | | | | | Choosing the right medicine in old age | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | Ensuring the use of medications that will not harm the elderly. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Aims to learn the pharmacokinetics of drugs used in the elderly. Also, to have general information about the usage guidelines and polypharmacy of system drugs. | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Source books and lecture notes | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Factors affecting the absorption of drugs in the elderly, | | | | | |
| 2 | |  | | Factors affecting drug metabolism in the elderly | | | | | |
| 3 | |  | | Factors affecting the distribution of drugs in the elderly | | | | | |
| 4 | |  | | Excretion of drugs in the elderly | | | | | |
| 5 | |  | | Antihypertensives, diuretics and anticoagulants used in the elderly | | | | | |
| 6 | |  | | Antiarrhythmics, cardiotonic glycosides used in the elderly, | | | | | |
| 7 | |  | | Respiratory tract medications used in the elderly | | | | | |
| 8 | |  | | **Midterm Exam** | | | | | |
| 9 | |  | | Gastrointestinal drugs used in the elderly, | | | | | |
| 10 | |  | | drugs used in the elderly , | | | | | |
| 11 | |  | | Analgesics and non-steroidal anti-inflammatory drugs used in the elderly, | | | | | |
| 12 | |  | | Antibiotics used in the elderly, | | | | | |
| 13 | |  | | Hormones used in the elderly, | | | | | |
| 14 | |  | | Polypharmacy in the elderly | | | | | |
| 15 | |  | | General rules for drug use in the elderly | | | | | |
| 16 | |  | | **End of semester exam** | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Know the factors affecting the absorption of drugs in the elderly. |  |  | **X** |
| LO 2 | Know the factors affecting the metabolism of drugs in the elderly. |  |  | **X** |
| LO 3 | Know the factors affecting the distribution of drugs in the elderly. |  |  | **X** |
| LO 4 | Knows the situations related to the excretion of drugs in the elderly. |  |  | **X** |
| LO 5 | Antihypertensives, diuretics and anticoagulants used in the elderly can list their effects. |  |  | **X** |
| LO 6 | Antiarrhythmics and cardiotonic glycosides used in the elderly can list their effects. |  |  | **X** |
| LO 7 | Knows the effects of respiratory tract medications used in the elderly |  |  | **X** |
| LO 8 | Knows the effects of gastrointestinal medications used in the elderly |  |  | **X** |
| LO 9 | Knows the effects of neuropsychiatric drugs used in the elderly |  |  | **X** |
| LO 10 | Knows the effects of analgesics and non-steroidal anti-inflammatory drugs used in the elderly. |  |  | **X** |
| LO 11 | Know the effects of antibiotics used in the elderly |  |  | **X** |
| LO 12 | Know the effects of hormone drugs used in the elderly |  |  | **X** |
| LO 13 | Is knowledgeable about polypharmacy in the elderly. |  |  | **X** |
| LO 14 | Can list the general rules for drug use in the elderly |  |  | **X** |

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| **Instructor of the Course**  Prof. Dr. Fatma Sultan KILIC  **Signature** | **Date:** 25.01.2018 |

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| **COURSE CODE:** | **521703305** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **AUTOCOIDS** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Kevser EROL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring  Fall x | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
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| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | General properties of autacoids, histamine, serotonin, peptide structured autacoids and eicosanoids | | | | |
| **COURSE AIMS** | | | Teaching the basic effects of autacoids and detailed mechanisms of action of drugs that affect the autacoid system. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Understanding the mechanisms of action of drugs that affect autocoid systems | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Define autocoid and know its features  Learning about histamine, serotonin, prostaglandins, angiotensins and other autacoids | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman.  8. Hardman JG, Limbird LE, Gilman AG, The Pharmacological Basis of Therapeutics,McGraw -Hill, New York, (10th ed.)2001.  9. Lüllmann H, Mohr K, Ziegler A. Atlas of Pharmacology, Medicine -Sciences Flammarion, Paris (2nd edition), 1996 | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Entrance, |
| 2 |  | Histamine |
| 3 |  | Antihistamines |
| 4 |  | Serotonin |
| 5 |  | Serotonin antagonists |
| 6 |  | Peptide structured autacoids, angiotensins |
| 7 |  | Endothelins |
| 8 |  | **Midterm Exam** |
| 9 |  | Quinines |
| 10 |  | Cyclooxygenase products |
| 11 |  | Lipoxygenase products |
| 12 |  | Drugs affecting eicosanoid synthesis and receptors |
| 13 |  | Nitric oxide |
| 14 |  | Platelet activating factor, EpDRF , EDHF |
| 15 |  | Medicines used to treat gout and asthma |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Know the definition and properties of autocoids |  |  | **X** |
| LO 2 | Know histamine and antihistamines |  |  | **X** |
| LO 3 | Know the effects of serotonin and serotonin syndrome |  |  | **X** |
| LO 4 | Knows peptide structured autacoids and their effects |  |  | **X** |
| LO 5 | Knows prostaglandins |  |  | **X** |
| LO 6 | Knows nitric oxide and platelet activating factor |  |  | **X** |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Kevser EROL  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521703307** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CARDIOVASCULAR SYSTEM PHARMACOLOGY 1** | | | | | |
| **TEACHING THE COURSE**  **STAFF** | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Category of the Course** | | |
| Technical | Medical | Other( …… ) |
| Prof. Dr. Basar SIRMAGUL | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring  Fall x | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
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| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Cardiovascular physiology and diseases, pharmacological treatment approaches, main drug groups, their preventive and therapeutic properties will be given along with main treatment approaches and internal information. | | | | |
| **COURSE AIMS** | | | basic principles such as blood volume, blood pressure, vascular tone, heart rate and contraction strength while evaluating cardiovascular diseases and treatment criteria. Treatment in pathological conditions will be discussed with clinical case discussions. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | specific effects of drugs on the cardiovascular system . The main objective of the course is to evaluate the differentiation of cardiovascular responses in normal and pathological conditions and the possible responses to drugs within the framework of this hemostasis. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Pharmacological treatment approaches for cardiovascular system diseases are learned. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman.  8. Hardman JG, Limbird LE, Gilman AG, The Pharmacological Basis of Therapeutics,McGraw -Hill, New York, (10th ed.)2001.  9. Lüllmann H, Mohr K, Ziegler A. Atlas of Pharmacology, Medicine -Sciences Flammarion, Paris (2nd edition), 1996 | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Pathophysiological manifestations in the cardiovascular system |
| 2 |  | Introduction to the principles of pharmacological treatment of the cardiovascular system |
| 3 |  | Diuretics |
| 4 |  | Drugs affecting the renin angiotensin system |
| 5 |  | Treatment of myocardial ischemia |
| 6 |  | Simulation programs in the cardiovascular system |
| 7 |  | Drug interactions and side effects |
| 8 |  | **Midterm Exam** |
| 9 |  | Antihypertensive drugs |
| 10 |  | Heart failure treatment |
| 11 |  | **Antiplatelet, antiarrhythmic , anticoagulant drugs** |
| 12 |  | Hyperlipoproteinemia treatment |
| 13 |  | Calcium channel antagonists and vasodilators |
| 14 |  | Beta receptor antagonists |
| 15 |  | Centrally acting cardiovascular system drugs |
| 16 |  | **Final exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | cardiovascular system diseases are learned. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Basar SIRMAGUL |  |

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| **COURSE CODE:** | **521703308** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **MOLECULAR PHARMACOLOGY** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  **Prof. Dr. Engin YILDIRIM** | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring  Fall x | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Cell structure, organelles, drugs affecting these structures, receptors, ion channels, mitochondria, protein synthesis, cell nucleus, DNA, drug effects on RNA, effects of drugs on subcellular structures, basic elements of biological structure-drug relationship, molecular basis of major events related to subcellular components, its modification by drugs and substances, signal transduction systems, receptor isolation studies. | | | | |
| **COURSE AIMS** | | | Understanding drug action at the molecular and cellular level. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Use of modern pharmacological techniques in solving medical pharmacological problems. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Knows how to investigate and interpret the effects and mechanisms of action of drugs at the molecular level. | | | | |
| **TEXTBOOK** | | | 1.Bruce Alberts, Alexander Johnson, Molecular Biology of Thecell  2. KAYAALP, S O. (2012); Medical Pharmacology in Terms of Rational Treatment. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Macromolecules: structure, shape, functions |
| 2 |  | Studying cells in an experimental environment |
| 3 |  | Protein function |
| 4 |  | Basic genetic mechanisms |
| 5 |  | Recombinant DNA technology |
| 6 |  | PCR |
| 7 |  | Mid-term exam |
| 8 |  | General principles of cellular signaling |
| 9 |  | Signaling via G-protein coupled receptors |
| 10 |  | Signaling via enzyme-coupled receptors |
| 11 |  | Target cell adaptation |
| 12 |  | Western blotting |
| 13 |  | Southern blotting |
| 14 |  | Northern blotting |
| 15 |  | Article discussion |
| 16 |  | End of semester exam |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Knows how to investigate and interpret the effects and mechanisms of action of drugs at the molecular level. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Engin YILDIRIM  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521703309** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **ADVANCED PHARMACOKINETICS** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  **Assoc. Prof. Dr. Mahmut ÖZDEMİR** | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **X** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring ****  Fall **x** | 1 | | 4 | |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | | | **Type of activity** | | **Number** | | **Percentage (%)** |
| Midterm Exam | | **1** | | **50** |
| Quiz | |  | |  |
| Homework | |  | |  |
| Project | |  | |  |
| Oral examination | |  | |  |
| Other ( ……… ) | |  | |  |
| **Final Exam** | | | | **50** |
| **RECOMMENDED PREREQUISITE(S), IF ANY** | | | | |  | | | | |
| **BRIEF CONTENT OF THE COURSE** | | | | | This course will examine the absorption, distribution and elimination of drugs and how these processes relate to how quickly, in what quantity and for how long drugs produce effects in target organs. | | | | |
| **OBJECTIVES OF THE COURSE** | | | | | the maximum beneficial effects of a drug in a selected patient while minimizing its undesirable effects. | | | | |
| **CONTRIBUTION OF THE COURSE TO PROVIDING VOCATIONAL EDUCATION** | | | | | Application of pharmacokinetic principles to increase therapeutic efficacy and reduce toxicity. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Know the absorption of drugs, their distribution in blood and tissues, metabolism, phase I and phase II reactions and microsomal enzymes.  Know the elimination and clearance from the kidney and other organs. | | | | |
| **BASIC TEXTBOOK** | | | | | 1.Atkinson, Principles of Clinical Pharmacology | | | | |
| **AUXILIARY RESOURCES** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co.  1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **NECESSARY TOOLS AND EQUIPMENT IN THE COURSE** | | | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Clinical Pharmacokinetics | | | | | |
| 2 | |  | | Clinical Pharmacokinetics | | | | | |
| 3 | |  | | Drug absorption and bioavailability | | | | | |
| 4 | |  | | Drug absorption and bioavailability | | | | | |
| 5 | |  | | Effect of liver disease on pharmacokinetics | | | | | |
| 6 | |  | | Effect of liver disease on pharmacokinetics | | | | | |
| 7 | |  | | Mid-term exam | | | | | |
| 8 | |  | | Effect of renal disease on pharmacokinetics | | | | | |
| 9 | |  | | Effect of renal disease on pharmacokinetics | | | | | |
| 10 | |  | | Pharmacokinetics in patients requiring renal replacement therapy | | | | | |
| 11 | |  | | Population pharmacokinetics | | | | | |
| 12 | |  | | Population pharmacokinetics | | | | | |
| 13 | |  | | Compartmental analysis of drug distribution | | | | | |
| 14 | |  | | Comparison of compartmental and noncompartmental pharmacokinetics | | | | | |
| 15 | |  | | Distribution models in drug kinetics | | | | | |
| 16 | |  | | End of semester exam | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Know the factors affecting absorption |  |  | **X** |
| LO 2 | Knows the distribution of drugs in blood and tissues |  |  | **X** |
| LO 3 | the blood brain barrier, sequestration, redistribution, ion trap phenomenon and presystemic elimination |  |  | **X** |
| LO 4 | Knows how to adjust the dosage of drugs in liver and kidney diseases |  |  | **X** |
| LO 5 | Knows the metabolism of drugs, their phases and reactions |  |  | **X** |
| LO 6 | Knows how to perform pharmacokinetic measurements and calculations in the clinic |  |  | **X** |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
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| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Assoc. Prof. Dr. Mahmut OZDEMIR  **Signature** |  |

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| **COURSE CODE:** | **521703310** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **HERBAL DRUGS** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Kevser EROL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Category of the Course** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **X** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring  Fall x | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
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| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Herbal medicines, methods of obtaining them, their benefits and harms, their effects on the body and the changes they undergo in the body. | | | | |
| **COURSE AIMS** | | | Understanding the concepts of herbal medicine, food supplement, nutraceutical, functional food; providing information about the sources, effects, mechanisms of action and undesirable effects of nutraceutical and food supplements. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | |  | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Understanding the basic concepts of herbal medicines and food supplements and being able to provide consultancy for the correct application of these products. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Projection | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Overview of folk remedies |
| 2 |  | Transition from folk remedies to modern treatment |
| 3 |  | Salicylates |
| 4 |  | Cardiac glycosides |
| 5 |  | Belladonna alkaloids |
| 6 |  | Vinca alkaloids |
| 7 |  | Opioids |
| 8 |  | Midterm Exam |
| 9 |  | Nutritional supplements |
| 10 |  | Nutritional supplements |
| 11 |  | Nutritional supplement-drug interactions |
| 12 |  | Nutritional supplement-drug interactions |
| 13 |  | Nutritional supplement-drug interactions |
| 14 |  | Nutritional supplement-drug interactions |
| 15 |  | General review |
| 16 |  | End of year exam |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Understands basic concepts about herbal medicines and food supplements |  |  | **X** |
| LO 2 | Can provide consultancy on the use of herbal medicines and food supplements |  | **X** |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
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| **Instructor of the Course**  Prof. Dr. Kevser EROL  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521703311** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **BASIC CONCEPTS IN PHARMACOLOGY** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Fatma Sultan KILIC | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring   Fall **x** | 3 | | 0 | |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
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| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | What is pharmacology, what is medicine, what effects do medicines have on the body, what the body does to medicines, what can be poisoning and treatments, what are the undesirable side effects of medicines, it is a course aimed at providing information about rational drug use. | | | | |
| **COURSE AIMS** | | | | | 1- What is pharmacology?  2-Pharmacokinetics of drugs,  3- Pharmadynamics of drugs,  4-Effects of drugs and factors that change them,  5-Receptors and drug-receptor action theories ,  6-Dose- response relationships of drugs ,  7- Agonist-antagonist- partial agonist concepts,  8-Sequestration, redistribution, virtual distribution, ion trap concepts,  9-Concepts of bioavailability, bioequivalence, pharmacological equivalence,  10-Efficiency- Power concepts | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | Identification of drug interactions in the body and the factors affecting them | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To have knowledge of the concepts of pharmacokinetics and pharmacodynamics of drugs and receptor theories. | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Source books and lecture notes | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | |  | | | | | |
| 1 | |  | | What is pharmacology? | | | | | |
| 2 | |  | | Pharmacokinetics of medicines, | | | | | |
| 3 | |  | | Pharmadynamics of medicines, | | | | | |
| 4 | |  | | Effects of medicines and factors changing these effects, | | | | | |
| 5 | |  | | Receptors and theories of medicine-receptor effects, | | | | | |
| 6 | |  | | Dose-response relationships of medicines, | | | | | |
| 7 | |  | | Agonist - antiagonist - partial agonist concepts, | | | | | |
| 8 | |  | | Secestration, redistribution, virtual distribution, ionic trap concepts | | | | | |
| 9 | |  | | Bioadvantage, bioequivalance, pharmacologic equivalance concepts, | | | | | |
| 10 | |  | | Efficacy-Power concepts | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | pharmacology ? |  |  | **X** |
| LO 2 | of drugs , |  |  | **X** |
| LO 3 | Pharmadynamics of drugs |  |  | **X** |
| LO 4 | Effects of drugs and factors that change them, |  |  | **X** |
| LO 5 | Receptors and theories of drug-receptor action , |  |  | **X** |
| LO 6 | Dose- response relationships of drugs , |  |  | **X** |
| LO 7 | Agonist-antagonist-partial agonist concepts |  |  | **X** |
| LO 8 | Sequestration, redistribution, virtual distribution, ion trap concepts, |  |  | **X** |
| LO 9 | Concepts of bioavailability, bioequivalence, pharmacological equivalence |  |  | **X** |
| LO 10 | Efficiency- Power concepts |  |  | **X** |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Fatma Sultan KILIC  **Signature** | | | **History:**  25.01.2018 | | | | | |
| **COURSE CODE:** | **521704301** | | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **DRUGS AFFECTING WATER AND ELECTROLYTE BALANCE** | | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Engin YILDIRIM | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | | **Category of the Course** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring x  Autumn  | 3 | | 0 | |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | Diuretics are drugs used in water and electrolyte balance and acid -base balance disorders. | | | | |
| **COURSE AIMS** | | | | | Drugs that increase the rate of urine excretion, sodium, potassium, magnesium balance disorders  To provide information about the drugs used and the drugs used in acidosis-alkalosis. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | Water, electrolytes (such as sodium, potassium, magnesium) and  Identify drugs that affect acid- base balance. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Know the mechanisms of fluid-electrolyte and acid-base balance in the body . Fluid-electrolyte  and knows the pharmacological properties of drugs used in acid- base balance disorders. | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | |  | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Basic concepts regarding diuretic effect | | | | | |
| 2 | |  | | Carbonic anhydrase inhibitors | | | | | |
| 3 | |  | | Thiazide group diuretics | | | | | |
| 4 | |  | | Loop diuretics | | | | | |
| 5 | |  | | Potassium-sparing diuretics | | | | | |
| 6 | |  | | Aldosterone antagonists | | | | | |
| 7 | |  | | Sodium channel inhibitors | | | | | |
| 8 | |  | | Midterm Exam | | | | | |
| 9 | |  | | Osmotic diuretics | | | | | |
| 10 | |  | | Clinical pharmacology of diuretics | | | | | |
| 11 | |  | | Dehydration, sodium balance disorders and treatment | | | | | |
| 12 | |  | | Hyperhydration | | | | | |
| 13 | |  | | Drugs used in hypo- and hyperkalemia | | | | | |
| 14 | |  | | Drugs used in hypo and hypercalcemia | | | | | |
| 15 | |  | | Drugs used in hypo- and hypermagnesemia | | | | | |
| 16 | |  | | Drugs used in acidosis | | | | | |
| 17 | |  | | Drugs used in alkalosis | | | | | |
| 18 | |  | | End of semester exam | | | | | |
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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Know the mechanisms of fluid-electrolyte and acid-base balance in the body . Fluid-electrolyte  and knows the pharmacological properties of drugs used in acid- base balance disorders. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
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| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Engin YILDIRIM  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704302** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **EXPERIMENTAL PHARMACOLOGY II** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Semra YIGITASLAN | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring x  Autumn  | 1 | | 4 | |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
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| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | In vitro and in situ study techniques in experimental animals , isolated organ preparations, preparation of physiological fluids, recording systems, evaluation of results, isolated smooth muscle preparations, preparation of dose-response curves, experimental ulcer models, in situ direct blood pressure measurement, Cell Culture Techniques | | | | |
| **COURSE AIMS** | | | | | Teaching in vitro and in situ working methods with laboratory animals | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | Ability to plan and carry out in vitro and in situ studies using laboratory animals. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Have knowledge about planning, continuing and terminating experimental animal studies | | | | |
| **TEXTBOOK** | | | | | 1. Başaran A. , Experimental Animals, Nisan Bookstore, Eskişehir, 2003; | | | | |
| **OTHER REFERENCES** | | | | | 1. Waynforth HB, Flecknell PA, Experimental and Surgical Technology in the rat, Academic Press, London (Second ed.) 1994.  2. Harkness JE, Wagner JE, The Biology and Medicine of Rabbits and Rodents Williams and Wilkins ,Philadelphia, (Fourth ed.)1995. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Cell culture laboratory, cage, live animal, microscope | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Introduction of experimental animals | | | | | |
| 2 | |  | | Basic manipulation techniques and ethical rules | | | | | |
| 3 | |  | | Dose-response curves and their evaluation | | | | | |
| 4 | |  | | Preparation of physiological solutions | | | | | |
| 5 | |  | | Isolated intestinal preparations | | | | | |
| 6 | |  | | Isolated rat stomach fundus | | | | | |
| 7 | |  | | Isolated vascular preparations | | | | | |
| 8 | |  | | **Midterm Exam** | | | | | |
| 9 | |  | | Primary cell culture preparation methods | | | | | |
| 10 | |  | | Primary cell culture preparation methods | | | | | |
| 11 | |  | | Biochemical evaluations in experimental ulcer models | | | | | |
| 12 | |  | | Anesthesia techniques | | | | | |
| 13 | |  | | Experimental ulcer models | | | | | |
| 14 | |  | | Direct blood pressure measurement in the animal in situ | | | | | |
| 15 | |  | | Direct blood pressure measurement in the conscious animal | | | | | |
| 16 | |  | | **End of semester exam** | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Learn about the methods used in experimental research. |  |  | **X** |
| LO 2 | Learn about the use of experimental animals. |  |  | **X** |
| LO 3 | Learn about planning experimental studies |  |  | **X** |
| LO 4 | Learn to collect materials to be examined in experimental studies. |  |  | **X** |
| LO 5 | Learn the experimental study termination criteria. |  |  | **X** |
| LO 6 | Learn in vivo studies, in vitro studies, in situ studies, and recording systems. |  |  | **X** |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Semra YIGITASLAN  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704303** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CENTRAL NERVOUS SYSTEM PHARMACOLOGY I** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Fatma Sultan KILIC | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring  Fall X | 3 | | 0 | |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | Neurotransmitter systems in the central nervous system, amine structure, amino acid structure and peptide structure neurotransmitters, adenosinergic system, nitrergic system, neurosteroid system | | | | |
| **COURSE AIMS** | | | | | Teaching the neurotransmitter systems in the central nervous system. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | | Understanding of basic neurotransmitter systems. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To provide information about the functioning of the central nervous system and the functions of neurotransmitters. | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Source books and lecture notes | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Introduction and History | | | | | |
| 2 | |  | | Neuromediators, synapses and their interactions | | | | | |
| 3 | |  | | Dopaminergic system | | | | | |
| 4 | |  | | Adrenaline and noradrenaline | | | | | |
| 5 | |  | | Serotonin | | | | | |
| 6 | |  | | Acetylcholine | | | | | |
| 7 | |  | | Histamine | | | | | |
| 8 | |  | | **Midterm Exam** | | | | | |
| 9 | |  | | GABA and glycine | | | | | |
| 10 | |  | | Aspartate and glutamate | | | | | |
| 11 | |  | | Opioid peptides | | | | | |
| 12 | |  | | Substance P , other kinins and neuropeptides | | | | | |
| 13 | |  | | Nitrergic system | | | | | |
| 14 | |  | | Adenosinergic system | | | | | |
| 15 | |  | | Neurosteroids | | | | | |
| 16 | |  | | **End of semester exam** | | | | | |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Introduction and History |  |  | **X** |
| LO 2 | Neuromediators, synapses and their interactions |  |  | **X** |
| LO 3 | Dopaminergic system |  |  | **X** |
| LO 4 | Adrenaline and noradrenaline |  |  | **X** |
| LO 5 | Serotonin |  |  | **X** |
| LO 6 | Acetylcholine |  |  | **X** |
| LO 7 | Histamine |  |  | **X** |
| LO 8 | GABA and glycine |  |  | **X** |
| LO 9 | Aspartate and glutamate |  |  | **X** |
| LO 10 | Opioid peptides |  |  | **X** |
| LO 11 | Substance P , other kinins and neuropeptides |  |  | **X** |
| LO 12 | Nitrergic system |  |  | **X** |
| LO 13 | Adenosinergic system |  |  | **X** |
| LO 14 | Neurosteroids |  |  | **X** |

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| **Instructor of the Course**  Prof. Dr. Fatma Sultan KILIC  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704304** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **MEDICATION USE DURING PREGNANCY** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Fatma Sultan KILIC | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring x  Autumn  | 2 | 2 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Determining the drugs to be preferred in cases of illness and pregnancy, where pregnancy is a special condition . | | | | |
| **COURSE AIMS** | | | Correct choice of medication during pregnancy. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Ensuring the use of drugs that will not harm the pregnant woman or the baby. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Understanding of the damage that drugs used during pregnancy can cause to the pregnant woman and the mother is provided. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Reference books and notes | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Factors affecting the metabolism of drugs in pregnancy |
| 2 |  | Factors affecting the metabolism of drugs in pregnancy |
| 3 |  | Transfer of drugs across the placenta |
| 4 |  | Distribution of drugs in the feto-placental unit |
| 5 |  | Antihypertensives and diuretics, anticoagulants used in pregnancy |
| 6 |  | Antiarrhythmics, cardiotonic glycosides used during pregnancy, |
| 7 |  | Respiratory medications used during pregnancy |
| 8 |  | **Midterm Exam** |
| 9 |  | Gastrointestinal drugs used during pregnancy, |
| 10 |  | Neuropsychiatric drugs used during pregnancy , |
| 11 |  | Analgesics and non-steroidal anti-inflammatory drugs used during pregnancy, |
| 12 |  | Antibiotics used during pregnancy, |
| 13 |  | Hormones used during pregnancy, |
| 14 |  | Medicines used in labor, |
| 15 |  | Drugs that alter urinary function. |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Factors affecting the metabolism of drugs in pregnancy |  |  | **X** |
| LO 2 | Factors affecting the metabolism of drugs in pregnancy |  |  | **X** |
| LO 3 | Transfer of drugs across the placenta |  |  | **X** |
| LO 4 | Distribution of drugs in the feto-placental unit |  |  | **X** |
| LO 5 | Antihypertensives and diuretics, anticoagulants used in pregnancy |  |  | **X** |
| LO 6 | Antiarrhythmics, cardiotonic glycosides used during pregnancy, |  |  | **X** |
| LO 7 | Respiratory medications used during pregnancy |  |  | **X** |
| LO 8 | Gastrointestinal drugs used during pregnancy, |  |  | **X** |
| LO 9 | Neuropsychiatric drugs used during pregnancy , |  |  | **X** |
| LO 10 | Analgesics and non-steroidal anti-inflammatory drugs used during pregnancy, |  |  | **X** |
| LO 11 | Antibiotics used during pregnancy, |  |  | **X** |
| LO 12 | Hormones used during pregnancy, |  |  | **X** |
| LO 13 | Medicines used in labor, |  |  | **X** |
| LO 14 | Drugs that alter uterine function. |  |  | **X** |

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| **Instructor of the Course**  Prof. Dr. Fatma Sultan KILIC  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704305** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CENTRAL NERVOUS SYSTEM PHARMACOLOGY II** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Fatma Sultan KILIC | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Drugs that have a selective effect on the central nervous system , analgesics , anesthetics, central nervous system stimulants and depressants, drugs used in the treatment of psychosis and Parkinson's | | | | |
| **COURSE AIMS** | | | selectively acting drugs in the central nervous system | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Understanding drug groups that affect the central nervous system | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Causes, mechanisms of action and treatment of neuropsychiatric diseases | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment.Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman.  9. Hardman JG, Limbird LE, Gilman AG, The Pharmacological Basis of Therapeutics, McGraw-Hill, New York.  10.Rang HP, Dale MM, Ritter JM, Pharmacology, Churchill Livingstone, Edinburgh, (3th ed.)1995.  11. Lüllmann H, Mohr K, Ziegler A. Atlas of Pharmacology, Medicine-Sciences Flammarion, Paris (2nd edition), 1996.  12. Taner D. Functional Neuroanatomy, METU press. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Introduction, Neuromediators and synapses |
| 2 |  | General Anesthetics |
| 3 |  | Local anesthetics |
| 4 |  | Anxiolytic drugs |
| 5 |  | Hypnotics |
| 6 |  | Muscle relaxants |
| 7 |  | Alcohols |
| 8 |  | **Midterm Exam** |
| 9 |  | Antipsychotics |
| 10 |  | Drugs used to treat Parkinson's and Alzheimer's |
| 11 |  | Antidepressants |
| 12 |  | Drugs that stimulate the central nervous system |
| 13 |  | Antiepileptics |
| 14 |  | Anti-inflammatory analgesics |
| 15 |  | Opioids |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Introduction, Neuromediators and synapses |  |  | **X** |
| LO 2 | Know the mechanisms of action and drugs of general anesthetics |  |  | **X** |
| LO 3 | Know the mechanisms of action and drugs of local anesthetics |  |  | **X** |
| LO 4 | Know the mechanisms of action and drugs of anxiolytic drugs |  |  | **X** |
| LO 5 | Know the mechanisms of action of hypnotics and their drugs |  |  | **X** |
| LO 6 | Know the mechanisms of action and drugs of muscle relaxants |  |  | **X** |
| LO 7 | Know the mechanisms of action of alcohols and their drugs |  |  | **X** |
| LO 8 | Know the mechanisms of action and drugs of antipsychotics |  |  | **X** |
| LO 9 | Know the mechanisms of action and drugs used in the treatment of Parkinson's and Alzheimer's |  |  | **X** |
| LO 10 | of antidepressants and their drugs |  |  | **X** |
| LO 11 | Know the mechanisms of action of drugs that stimulate the central nervous system |  |  | **X** |
| LO 12 | Know the mechanisms of action and drugs of antiepileptics |  |  | **X** |
| LO 13 | Know the mechanisms of action and drugs of anti-inflammatory analgesics |  |  | **X** |
| LO 14 | action of opioids and their drugs |  |  | **X** |

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| **Instructor of the Course**  Prof. Dr. Fatma Sultan KILIÇ  **Signature** | | |  | | | | | |
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| **COURSE CODE:** | **521704306** | | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **ENDOCRINE SYSTEM PHARMACOLOGY** | | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Assoc. Prof. Dr. Mahmut OZDEMIR | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Information about the body's hormonal mechanism and related hormones. | | | | |
| **COURSE AIMS** | | | How the endocrine system works, Hormonal communication mechanisms in the pituitary gland, hypothalamus and end-organs. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | To provide information about treatment with hormones and drugs in this system. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Defines hormones and knows their properties. Knows the synthesis and release of hormones, their effects and receptors. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Introduction to the Endocrine System |
| 2 |  | Introduction to the Endocrine System |
| 3 |  | Pituitary and Hypothalamus Hormones |
| 4 |  | Pituitary and Hypothalamus Hormones |
| 5 |  | Thyroid Hormone and Medications |
| 6 |  | Thyroid Hormone and Medications |
| 7 |  | General Review |
| 8 |  | **Midterm Exam** |
| 9 |  | Drugs Affecting Calcium Balance |
| 10 |  | Corticosteroids |
| 11 |  | Corticosteroids |
| 12 |  | Insulin |
| 13 |  | Oral Antidiabetics |
| 14 |  | Sex Hormones |
| 15 |  | Sex Hormones |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Defines hormones and knows their physical and chemical properties. |  |  | **X** |
| LO 2 | Knows insulin and antidiabetic drugs |  |  | **X** |
| LO 3 | Knows thyroid hormones and medications |  |  | **X** |
| LO 4 | Knows corticosteroids and their clinical uses |  |  | **X** |
| LO 5 | Knows the drugs that affect parathyroid hormone and calcium balance |  |  | **X** |
| LO 6 | Know the female sex hormones |  |  | **X** |
| LO 7 | Know testosterone and androgens |  |  | **X** |
| LO 8 | Know the pituitary and hypothalamus hormones |  |  | **X** |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Assoc. Prof. Dr. Mahmut OZDEMIR  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521703306** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY II** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Kevser EROL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Providing general information and mechanisms regarding the autonomic nervous system and the concepts of sympathetic and parasympathetic systems. | | | | |
| **COURSE AIMS** | | | Review of information regarding the autonomic nervous system and general properties of autonomic nervous system drugs. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | autonomic nervous system drugs, their indications for use, side and toxic effects and contraindications. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | knows the general pharmacological properties of drugs used in autonomic nervous system diseases . | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | OSS Login |
| 2 |  | OSS Login |
| 3 |  | OSS Login |
| 4 |  | Sympathomimetics |
| 5 |  | Sympathomimetics |
| 6 |  | Sympatholytics |
| 7 |  | Sympatholytics |
| 8 |  | **Midterm Exam** |
| 9 |  | Parasympathetics |
| 10 |  | Parasympathetics |
| 11 |  | Parasympatholytics |
| 12 |  | Parasympatholytics |
| 13 |  | Drugs affecting the ganglia |
| 14 |  | Drugs affecting the ganglia |
| 15 |  | General review |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | knows the general pharmacological properties of drugs used in autonomic nervous system diseases . |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Kevser EROL  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521704307** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CHEMOTHERAPEUTICS** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Basar SIRMAGUL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | To provide information about the spectrum of antibiotics, the diseases they are used in, their mechanisms of action, side effects, contraindications and the development of resistance. | | | | |
| **COURSE AIMS** | | | Ensuring the right choice of antibiotics for the right disease. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | This the student's maximum in the subject To be informed | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Basic information about antibiotics is acquired and the issues to be considered when choosing antibiotics are learned. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment.Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Introduction to Chemotherapeutics |
| 2 |  | Introduction to Chemotherapeutics |
| 3 |  | Penicillins |
| 4 |  | Cephalosporins |
| 5 |  | Quinolones |
| 6 |  | Lincosamides |
| 7 |  | Sulfonamides |
| 8 |  | **Midterm Exam** |
| 9 |  | Tetracyclines |
| 10 |  | Chloramphenicol |
| 11 |  | Aminoglycosides |
| 12 |  | Antiviral Agents |
| 13 |  | Antifungals |
| 14 |  | Ectoparasite treatment, Helminth and Malaria Treatment |
| 15 |  | Narrow Spectrum and Polypeptide Structured Drugs |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Basic information about antibiotics is acquired and the issues to be considered when choosing antibiotics are learned. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Basar SIRMAGUL  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521704308** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CANCER CHEMOTHERAPY** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Kevser EROL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
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**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Fundamentals of cancer chemotherapy, alkylating agents, antimetabolites, vinca alkaloids and other herbal antineoplastics, cytotoxic antibiotics, cisplatin and other platinum derivatives, amifostine, L -asparaginase, hormones and hormone antagonists, clinical pharmacology of cancer chemotherapy, immunotherapy | | | | |
| **COURSE AIMS** | | | basic concepts related to cancer, types of drugs used in cancer chemotherapy , their side effects and selection. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | To be informed about the place of drug therapy in cancer treatment and the toxic effects of antineoplastics | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | |  | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Basic concepts about cancer and cancer chemotherapy |
| 2 |  | Factors limiting the effectiveness of drugs in antineoplastic therapy |
| 3 |  | Cell cycle |
| 4 |  | Common side effects of antineoplastic drugs |
| 5 |  | Alkylating agents |
| 6 |  | Antimetabolites |
| 7 |  | Midterm Exam |
| 8 |  | Vinca alkaloids and other antineoplastics of plant origin |
| 9 |  | Cytotoxic antibiotics |
| 10 |  | Cisplatin and other platinum derivatives and amifostine |
| 11 |  | L-asparaginase |
| 12 |  | Hormones and hormone antagonists |
| 13 |  | Other antineoplastics |
| 14 |  | Clinical pharmacology of antineoplastics |
| 15 |  | Immunotherapy |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 |  |  |  |  |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
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| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Kevser EROL  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521704309** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **PHARMACOGENETIC** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Engin YILDIRIM | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 2 | 2 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | It is related to the fact that drug kinetics and patient response to drugs vary among individuals and ethnic groups according to genetic structure . | | | | |
| **COURSE AIMS** | | | Understanding the differences in the pharmacokinetic and pharmacodynamic properties of the drug and its effects on our body due to the genetic characteristics of the individual. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Learning the basic principles of pharmacogenetics in order to increase the therapeutic efficacy of the drug and to reduce its side effects and toxic effects. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Knows the definition and general concepts of pharmacogenetics and understands the differences in drug effects that develop due to genetic characteristics. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co.  2. Atkinson, Principles of Clinical Pharmacology | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Macromolecules: structure, shape, functions |
| 2 |  | Studying cells in an experimental environment |
| 3 |  | Protein function |
| 4 |  | Basic genetic mechanisms |
| 5 |  | Recombinant DNA technology |
| 6 |  | PCR |
| 7 |  | Mid-term exam |
| 8 |  | General principles of cellular signaling |
| 9 |  | Signaling via G-protein coupled receptors |
| 10 |  | Signaling via enzyme-coupled receptors |
| 11 |  | Target cell adaptation |
| 12 |  | Western blotting |
| 13 |  | Southern blotting |
| 14 |  | Northern blotting |
| 15 |  | Article discussion |
| 16 |  | End of semester exam |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Knows the definition of pharmacogenetics and related general concepts and understands the differences in drug effects that develop due to genetic characteristics. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Engin YILDIRIM  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521704310** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **CARDIOVASCULAR SYSTEM PHARMACOLOGY II** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Basar SIRMAGUL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| SpringX  Autumn  | 3 | 0 |  | 3 | 7.5 | MANDATORY ELECTIVE  **X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Cardiovascular physiology and diseases, pharmacological treatment approaches, main drug groups, their preventive and therapeutic properties will be given along with main treatment approaches and internal information. | | | | |
| **COURSE AIMS** | | | basic principles such as blood volume, blood pressure, vascular tone, heart rate and contraction strength while evaluating cardiovascular diseases and treatment criteria. Treatment in pathological conditions will be discussed with clinical case discussions. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | specific effects of drugs on the cardiovascular system . The main objective of the course is to evaluate the differentiation of cardiovascular responses in normal and pathological conditions and the possible responses to drugs within the framework of this hemostasis. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Pharmacological treatment approaches for cardiovascular system diseases are learned. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Pathophysiological manifestations in the cardiovascular system |
| 2 |  | Introduction to the principles of pharmacological treatment of the cardiovascular system |
| 3 |  | Diuretics |
| 4 |  | Drugs affecting the renin angiotensin system |
| 5 |  | Treatment of myocardial ischemia |
| 6 |  | Simulation programs in the cardiovascular system |
| 7 |  | Drug interactions and side effects |
| 8 |  | **Midterm Exam** |
| 9 |  | Antihypertensive drugs |
| 10 |  | Heart failure treatment |
| 11 |  | **Antiplatelet, antiarrhythmic , anticoagulant drugs** |
| 12 |  | Hyperlipoproteinemia treatment |
| 13 |  | Calcium channel antagonists and vasodilators |
| 14 |  | Beta receptor antagonists |
| 15 |  | Centrally acting cardiovascular system drugs |
| 16 |  | **End of semester exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Pharmacological treatment approaches for cardiovascular system diseases are learned. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
| LO 11 |  |  |  |  |
| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Basar SIRMAGUL  **Signature** | **Date: 25.01.2018** |

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| **COURSE CODE:** | **521704311** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **ADVANCED CLINICAL PHARMACOLOGY** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Assoc. Prof. Dr. Mahmut OZDEMIR | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring x  Autumn  | 2 | 2 |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | basic pharmacodynamics and pharmacokinetic parameters, treatment principles and evaluation, rational prescribing, law applications in clinical practice and drug treatments, clinical applications in terms of public and social treatment approaches. | | | | |
| **COURSE AIMS** | | | Theoretical and practical understanding of the principles of providing optimal conditions between medicine and clinical practice . | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | To gain the principles of rational, effective and safe drug treatment. To know and examine current treatment methods. To gain the principles of possible side effects in drug use, ethical rules, new drug development steps, good clinical practice principles and general evaluation parameters. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Knows, measures and interprets the dose- concentration relationship. Can prepare a clinical research protocol, plan the study and interpret the measurements. | | | | |
| **TEXTBOOK** | | | 1. Clinical pharmacology, DR Laurence eight edition,Churchill Livingstone  2. Fundamentals of Clinical Pharmacology and basic regulations, Prof. Dr. S Oğuz Kayaalp | | | | |
| **OTHER REFERENCES** | | | 1. Walley T,Clinical pharmacology and therapeutics in undergraduate medical education in the UK  2. Dukes G. Clinical pharmacology and primary health care in Europe. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Pharmaceutical (steps from chemical substance to patented product formation) |
| 2 |  | Preclinical studies in experimental animals. |
| 3 |  | Ethical concepts and approaches |
| 4 |  | Routine pharmacological tests and procedures |
| 5 |  | Experimental protocols and clinical connections |
| 6 |  | Ethics in studies of human origins |
| 7 |  | New drugs and clinical trials |
| 8 |  | Phase studies |
| 9 |  | **Midterm Exam** |
| 10 |  | Clinical practice principles and obligations |
| 11 |  | Clinical evaluation |
| 12 |  | Statistics |
| 13 |  | Treatment groups and trials |
| 14 |  | Double blind – single blind etc. techniques |
| 15 |  | Meta-analyses and pharmacoepidemiology |
| 16 |  | **End of year exam** |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Knows, graphs and interprets the dose- concentration relationship |  |  | **X** |
| LO 2 | Plots plasma concentration curve, calculates AUC, Cmax and Tmax |  |  | **X** |
| LO 3 | Knows and calculates total clearance, renal clearance and hepatic clearance |  |  | **X** |
| LO 4 | Knows and measures virtual distribution volume |  |  | **X** |
| LO 5 | Know and apply distribution models in drug kinetics |  |  | **X** |
| LO 6 |  |  |  |  |
| LO 7 |  |  |  |  |
| LO 8 |  |  |  |  |
| LO 9 |  |  |  |  |
| LO 10 |  |  |  |  |
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| LO 12 |  |  |  |  |
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| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Assoc. Prof. Dr. Mahmut OZDEMIR  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704312** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **ADVANCED THERAPEUTIC DRUG MONITORING** | |  | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Basar SIRMAGUL | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | | | **YOUR COURSE** | | | |
| **Theoretical** | | **APPLICATION** | | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring x  Autumn  | 3 | | 0 | |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
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| **EVALUATION CRITERIA** | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | | | |  | | | | |
| **SHORT COURSE CONTENT** | | | | | The basic principles, objectives and importance of therapeutic drug level monitoring (TDM) and analysis methods of drugs will be covered theoretically and practically. | | | | |
| **COURSE AIMS** | | | | | At the end of the program, students will have knowledge of the theoretical background, objectives and principles of therapeutic drug level monitoring. | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | | |  | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Basic information and analysis methods regarding therapeutic drug level monitoring are learned. | | | | |
| **TEXTBOOK** | | | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman. | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Basic textbooks and technological equipment required for the course (computer, projector, etc.) | | | | |
|  | | **WEEKLY PLAN OF THE COURSE** | | | | | | | |
| **WEEK** | | **HISTORY** | | **TOPICS COVERED** | | | | | |
| 1 | |  | | Defining Advanced Therapeutic Drug Level Monitoring (ATMP) | | | | | |
| 2 | |  | | Why is TIDI necessary, characteristics and examples of drugs monitored in routine | | | | | |
| 3 | |  | | Advanced TIDI concepts | | | | | |
| 4 | |  | | Methods used to measure drug levels in serum | | | | | |
| 5 | |  | | FDA and EMA rules for the application of TIDI | | | | | |
| 6 | |  | | Criteria and characteristics of commonly monitored drugs | | | | | |
| 7 | |  | | The importance of TIDI | | | | | |
| 8 | |  | | Pharmacokinetic parameters and their use in TIDI | | | | | |
| 9 | |  | | Points to consider when collecting, processing and storing samples for TIDI | | | | | |
| 10 | |  | | Methods used in TIDI | | | | | |
| 11 | |  | | Interpreting TIDI results | | | | | |
| 12 | |  | | FINAL EXAM | | | | | |
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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Basic information and analysis methods regarding therapeutic drug level monitoring are learned. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
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| LO 12 |  |  |  |  |
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| **Instructor of the Course**  Prof. Dr. Basar SIRMAGUL  **Signature** | **History:**  25.01.2018 |

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| **COURSE CODE:** | **521704313** | | **DEPARTMENT: PHARMACOLOGY** | | | |
| **COURSE NAME:** | **PHARMACOLOGICAL BASIS OF PAIN AND EXPERIMENTAL PAIN MODELS** | | | | | |
| **TEACHING THE COURSE**  **STAFF**  Prof. Dr. Engin YILDIRIM | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Category** | | |
| Technical | Medical | Other( …… ) |
|  | |  | |  | x |  |

**COURSE LEVEL**

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| **SCIENTIFIC PREPARATION** | **DEGREE** | **DOCTORATE** | **SPECIALIZED FIELD COURSE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY CLASS HOURS** | | | **YOUR COURSE** | | | |
| **Theoretical** | **APPLICATION** | **Lab** | **Credit** | **ECTS** | **TYPE** | |
| Spring **X**  Autumn **** | 3 |  |  | 3 | 7.5 | MANDATORY ELECTIVE  ** X** | |
|  | | | | | | | |
| **EVALUATION CRITERIA** | | | | | | | |
| **SEMESTER ACTIVITIES** | | | **Type of activity** | | | **Number** | **Percentage (%)** |
| Midterm Exam | | | **1** | **50** |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral examination | | |  |  |
| Other ( ……… ) | | |  |  |
| **Final Exam** | | | | **50** |
| **PREREQUISITE(S)** | | |  | | | | |
| **SHORT COURSE CONTENT** | | | Definition, classification, physiopathogenesis of pain , experimental pain models, drugs used in pain treatment. | | | | |
| **COURSE AIMS** | | | 1- Learning the definition of pain and pain classification  2- Learning the pathogenesis of pain  3- Learning the pain transmission pathways  4- Learning theories of pain  5- Learning central and peripheral pain mechanisms  6- Learning experimental pain models used in pain research.  7- Learning about the drugs used in pain treatment | | | | |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | | | Learning the definition of pain and types of pain. Learning experimental pain models used in pain research. Learning about drugs used in pain treatment. | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | Knows pain mechanisms and experimental pain models used in pain research. Defines drug groups and their properties used in pain treatment. | | | | |
| **TEXTBOOK** | | | 1. KAYAALP, S O. 2012; Medical Pharmacology in Terms of Rational Treatment. Pelikan Publishing, Ltd. Co. | | | | |
| **OTHER REFERENCES** | | | 1. CİNGİ, I; EROL, K. 1996; Anadolu University Open Education Faculty Health Personnel Associate Degree Education, Pharmacology.  2. DÖKMECİ, I. 2007; Pharmacology Courses for MY Schools. Nobel Medical Bookstores.  3. SÜZER, Oner. Fundamentals of Pharmacology. 2005. 3rd Edition.. Nobel Medical Bookstores.  4. GOODMAN AND GILLMAN' S . 2011. The Pharmacological basis of Therapeutics.  12th edition.  5. Goodman and Gillman's Handbook of Pharmacology and Therapeutics. 2017.2nd Edition. Gunes Medical Bookstores.  5. Basic and Clinical Pharmacology: Bertram G. Katzung, 2014. Nobel Medical Bookstores  6. Pharmacology: HPRang, MM Dale, JMRitter,  7. Lippincott's Pharmacology: Richard Harvey, Pamela Champe.  8.Human Pharmacology, Molecular toClinical: Brody,Larner ,Mınneman.  9. The Pharmacology of Pain (1997). **Dickenson** , A. , **Besson** , J. -M. (Eds.) | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | |  | | | | |

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|  | **WEEKLY PLAN OF THE COURSE** | |
| **WEEK** | **HISTORY** | **TOPICS COVERED** |
| 1 |  | Definition and Classification of Pain |
| 2 |  | Pathogenesis of Pain |
| 3 |  | Pain Transmission Pathways |
| 4 |  | Pain Theories |
| 5 |  | Peripheral mechanisms of pain |
| 6 |  | Central mechanisms of pain |
| 7 |  | Perception of Pain |
| 8 |  | Midterm Exam |
| 9 |  | Animal Models Used in Pain Research |
| 10 |  | Nociception and Analgesia Tests (Tests Using Thermal Stimuli) |
| 11 |  | Nociception and Analgesia Tests (Tests Using Mechanical Stimulus) |
| 12 |  | Nociception and Analgesia Tests (Tests Using Chemical Stimulus) |
| 13 |  | Neuropathic Pain and Neuropathic Pain Models ( Models Dependent on Central Applications ) |
| 14 |  | Neuropathic Pain and Neuropathic Pain Models (Models Based on Systemic Applications) |
| 15 |  | Neuropathic Pain and Neuropathic Pain Models (Total Denervation Models) |
| 16 |  | Pain Pharmacology |
| 17 |  | End of semester exam |

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| **CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAM LEARNING OUTCOMES** | | **Contribution Level** | | |
| **NO** | **LESSON OUTCOMES** | **1**  **Little** | **2**  **Middle** | **3**  **High** |
| LO 1 | Knows pain mechanisms and experimental pain models used in pain research. Defines drug groups and their properties used in pain treatment. |  |  | **X** |
| LO 2 |  |  |  |  |
| LO 3 |  |  |  |  |
| LO 4 |  |  |  |  |
| LO 5 |  |  |  |  |
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| LO 12 |  |  |  |  |
| LO 13 |  |  |  |  |
| LO 14 |  |  |  |  |

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| **Instructor of the Course**  Prof. Dr. Engin YILDIRIM  **Signature** | **Date: 25.01.2018** |