**BİRUNİ UNİVERSİTY**

**“The Future of Science”**

**FACULTY OF PHARMACY**

**…Pharmaceutical and Medicinal Chemistry….. DEPARTMENT**

 **COURSE INFORMATION PACKAGE**

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| **Course Code** | **Course optic Code**  |  **Theory****hours/week** | **Application****hours/week** | **Credit** | **ECTS** |
|  **……ECZ338……** |  |   | …3. |  …2… |  **…2……** |
| **Course Name** | **Pharmaceutical and Medicinal Chemistry Laboratory II** |
| **Semester** | **2016-2017 Spring** |
| **Course Type** | **Obligatory**  |
| **Course Language** | **Turkish** |
| **Prequisites** | **Organic Chemistry** |
| **Mode of Delivery** | **In class, interactive.** |
| **Disabled Students** | **Disabled students, they need information about their own status submitted to the faculty may request the provision of necessary convenience.**  |
| **Instructor(s)** | **Prof. Dr. Süreyya Ölgen** |
| **Course Assistant** | **None** |
| **Teaching Methods:**  | 1: Lecture, 2: Question-Answer, 3: Discussion, 4: Demonstration, 5: Study Group, 6: Brain Storming, 7: Sample Case, 8: Self Study, 9: Similarity Search, 10: Experiment/Practice-Application, 11: Problem Solving |
| **Assessment Methods:** | A: Pre-Testing, B:Exam, C: Performance Task, D: Laboratory Report, E: Behaviour, E: Professionalism, G: Obey the safety rules, H: Pre-study |
| **Course Objective** | Introduction of Pharmacopeia, bioequivalent and bioavailability concepts and content of in vitro, in vivo analytical methods, method validation, reagent preparation and problem solving, pharmacopeia analysis of paracetamol and aspirin. Synthesis of benzoine benzocaine and ethyl p-amino benzoate, their structural elucidation and yield calcuation. |
| **Learning Outcomes** | **The students will be able;**Gains knowledge and practical application experience of pharmaceutical analysis of drugs, their suitability of international standardization, international regulations, preparation of reagents and problem solving, drug synthesis, purifications, structural elucidation and yield calculation. |

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|  **Week** **1.****2.****3.****4.****5.****6.****7.** **8.****9.****10.****11.****12.****13.****14.****15.****16.** | **Course Contents and Learning Activities** Introduction to PharmacopeiaConcepts of Bioavailability and Bioequivalance, in vitro and in vivo analytic methods and validation Preparation to Reagents and Theoretical Calculation Methods, Problem SolvingQuantitative Analysis Methods, UV and HPLC-Theoretical InformationPharmacopeia Analaysis of Aspirin Aspirin UV Quantitative Analysis and CalculationsPharmacopeia Analysis of ParacetamolParacetamol UV Quantitative Analysis and CalculationsMidtermSynthesis Planning Techniques-Theoretical InformationSynthesis of BenzocaineStructural Elucidation of Benzocaine and Yield Calculation Synthesis of Benzoin Structural Elucidation of Benzoin and Yield Calculation Synthesis of Ethyl Para-Aminobenzoat Structural Elucidation of Ethyl Para-Aminobenzoat and Yield Calculation  |

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| **Assessment Methods**  | **Number** | Percentage % |
| **Attendance(a)** | 16 | 5 |
| **Laboratory Report** | 8 | 8 |
| **Application/Obey the Rules** | 11 | 11 |
| **Pre-Study** | 11 | 11 |
|  **Specific Practical Training**  | 0 | 0 |
| **Pre-tests** | 11 | 11 |
| **Presentation** | - | - |
| **Midterm** | 1 | 14 |
| **Final exam** | 1 | 40 |
| **Total** |  | **100** |

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| **Textbook/****References** |  ***Different texts from various sources*** |
|  | 1. Kar, Ashutosh. Advanced Practical Medicinal Chemistry.: New Age International, p16 <http://site.ebrary.com/>
2. Dickson, C., Medicinal Chemistry Laboratory Manual “Investigations in Biological and Pharmaceutical Chemistry” CRC Press, 1998
3. Farmasötik Kimya Pratikleri I ve II, Ankara Üniversitesi Eczacılık Fakültesi Yayınları, 2015.
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| No | **Competencies of Pharmacy Program** | Katkı |
| 1 | 2 | 3 | 4 | 5 |
| 1 | Implements skills in all areas of occupations obtained from pharmaceutical basic and professional sciences within the scope and framework of rules of ethics, religion, language, race, gender and socio-economic discrimination in collaboration with the relevant professional administrators and regulatory authorities. |  |  | X |  |  |
| 2 | Communicates effectively with community members, health care professionals, policy makers and administrators to transfer informations of professional pharmacy applications and usage of pharmaceutical products. |  | X |  |  |  |
| 3 | In the frame of pharmaceutical care and clinical applications, evaluates accuracy and cost-effectiveness of medication treatment, solves the problems and gives decisions. | X |  |  |  |  |
| 4 | Acquires the current and evidence-based information by using relevant information technologies to apply the rational use of natural, synthetic and biotechnological drugs and gives education, information and consultation to community members, other health-care providers and constitutions.  |  | X |  |  |  |
| 5 | Experiences the basic and professional knowledge to manage, apply and make decision of the entire process related to design, handling and consumption of natural, synthetic and biotechnological pharmaceuticals. |  |  |  |  | X |
| 6 | Possess cultural competency and consciousness to design, implement, and monitor patient-oriented pharmacy practice for the improvement of the quality of heath care by making joint cooperation. | X |  |  |  |  |
| 7 | Raises consciousness to application of modern scientific and technological developments in pharmaceutical field by the awareness of lifelong learning. |  | X |  |  |  |
| 8 | Experiences to research and development, quality control, good manufacturing practices and has knowledge to manage and apply the license process of pharmaceutical products.  |  |  |  |  | X |
| 9 | As a pharmacist with the universal norms, has foreign language proficiency to follow professional developments, conducts research and developments and competent to communicate patients and other healthcare professionals. |  | X |  |  |  |
| 10 | Gathers patient histories, determines needs and priorities of patients, prevents individual diseases, knows how to define and apply the planning and management process of treatment.  | X |  |  |  |  |

WORKLOAD AND ECTS CALCULATION

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| **Activities** | **Number** | **Duration (hour)** | **Total Work Load** |
| **Course Duration (x16)** |  |   |  |
| **Laboratory** | 8 | 3 | 24 |
| **Application/Obey the Rules** | 8 | 1 | 8 |
| **Pre Study**  | 8 | 1 | 8 |
| **Field activities** |  |  |  |
| **Presentation / Seminar Preparation** |  |  |  |
| **Project** |  |  |  |
| **Homework assignment** |  |  |  |
| **Pre-Test (Study duration)** | 11 | 1 | 11 |
| **Midterms (Study duration)** | 1 | 5 | 5 |
| **Final Exam (Study duration)**  | 1 | 5 | 5 |
| Total Workload | **37** | **16** | **61** |
| **ECTS Credit of Course (Total WorrkLoad/25)** |  |  | **2.44** |