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| 1 | Subject | Pharmacology | | | |
| 2 | Code | DFM209 | | | |
| 3 | Study Program | Study Program of Integrated studies in dental medicine | | | |
| 4 | Organizing Institution (Unit, Institute, Chair, Department) | UKIM, Medical Faculty, Department of preclinical and clinical pharmacology with toxicology | | | |
| 5 | Educational degree (first or second cycle) | Integrated study | | | |
| 6 | Study year/semester | 2/4 | 7 | Number of credits | 5 |
| 8 | Teacher | Prof. d-r. Dimche Zafirov *teaching is performed by all members of the Department of preclinical and clinical pharmacology | | | |
| 9 | Preconditions | Signatures of first and second semester courses | | | |
| 10 | Teaching goals: <ul style="list-style-type: none"> • Introduction to pharmacology as a subject and its aims; • Introduction to pharmacodynamic characteristics of drugs, how a drug affects an organism, modes of action of drugs upon the body. • Achieving basic knowledge of pharmacokinetic, the branch of pharmacology concerned with the movement of drugs within the body and the importance of knowing the pharmacokinetic properties of drugs. • Acquiring basic knowledge about toxicology and toxicological research as well as their importance in the development of drugs • Understanding the basic principles of pharmacogenetics • Acquiring knowledge of special pharmacology, in meaning of pharmacodynamic groups and their therapeutic areas. • Students will learn how to prescribe medicines and will gain understanding of all pharmaceutical dosage forms. | | | | |
| 11 | Brief content | | | | |
| | Theoretical course | | | | Class |
| | Introduction of pharmacology, general principles | | | | 3 |
| | Pharmacodynamics | | | | 3 |
| | Mechanism of action of drugs – molecular and cellular aspects | | | | 3 |
| | Pharmacokinetics, drug absorption and distribution, drug metabolism and elimination | | | | 4 |
| | Chemical mediators and basic principles of pharmacogenetics | | | | 3 |
| | Pharmacology of CNS | | | | 3 |
| | Pharmacology of VNS | | | | 2 |
| | General and local anaesthetic agents | | | | 3 |
| | Treatment of pain | | | | 4 |
| | Treatment of heart diseases | | | | 3 |
| | Vascular pharmacology and vasoactive drugs | | | | 3 |
| | Drugs used for the treatment of infections | | | | 4 |
| | Drugs used for treatment of respiratory, gastrointestinal and urinary diseases | | | | 3 |
| | Treatment of endocrine system diseases | | | | 2 |
| | Harmful effects of drugs, adverse drug reactions, pharmacovigilance | | | | 2 |
| | Total | | | | 45 |

| Practical lessons: | | | Class | |
|---|--|---|---|---------------|
| Pharmacography | | | 6 | |
| Pharmaceutical dosage forms | | | 6 | |
| Method and measurement in pharmacology | | | 2 | |
| Demonstrating experimental models: <i>In vitro</i> and <i>In vivo</i> | | | 1 | |
| Total | | | 15 | |
| 12 | Methods of studying: class room oriented lectures, interactive lectures, group work, practical training, seminar paper | | | |
| 13 | Total available time | 150 classes | | |
| 14 | Organization of the course | 45 classes - theoretical course, 15 classes- practical course, 90 classes - home individual learning and other activities | | |
| 15 | Forms of teaching activities | 15.1. | Theoretical course 45 classes | |
| | | 15.2. | Practical course, seminars Practical course- 15 classes | |
| 16 | Other forms of activities | 16.1. | Project tasks | |
| | | 16.2. | Individual tasks | |
| | | 16.3. | Individual (home) learning 90 classes | |
| 17 | Method of assessment | 17.1. | Continual assessment of knowledge – 2 tests: 1. Basic pharmacology 2. Special pharmacology points min-max 12-20 12-20 | |
| | | 17.2. | Active participation, seminar paper/project (oral/written presentation) - Theoretical course - Practical lessons points min-max 1-3 4-7 | |
| | | 17.3. | Final exam *Oral examination (integrative) – 3 questions on the basis of which the integrative knowledge in the field of pharmacology is assessed, which is important for understanding the subject **Practical examination (test) – pharmacography and pharmaceuticals dosage forms points min-max 24-40 6-10 | |
| 18 | Grading criteria (points / grade) | Up to 59 points | | 5 (five) (F) |
| | | from 60 to 67 points | | 6 (six) (E) |
| | | from 68 to 75 points | | 7 (seven) (D) |
| | | from 76 to 84 points | | 8 (eight) (C) |
| | | from 85 to 93 points | | 9 (nine) (B) |
| | | from 94 to 100 points | | 10 (ten) (A) |
| 19 | Requirement for signature and taking the final exam | <p>The student is required to actively follow all of the planned activities.</p> <p>Conditional criteria for assessment of knowledge: In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present seminar paper; In order to take the final exam, the student should obtain the minimum points from activity and test; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them with the final exam.</p> | | |

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| 20 | Language of the course | English | | | | |
| 21 | Method for evaluation of the quality of education | Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities | | | | |
| 22 | Literature | | | | | |
| | 22.1. | Mandatory textbooks | | | | |
| | | No. | Author | Title | Publisher | Year |
| | | 1 | Rang and Dale: H.P.Rang, M.M.Dale, J.M. Ritter, R. Flower | Pharmacology | Elsevier Churchill Livingstone | 2012 |
| | 22.2. | Additional literature | | | | |
| | | No. | Author | Title | Publisher | Year |
| 1 | | I.Golan, David E | Principles in pharmacology-Fourth edition | Wolters Kluwer | 2017 | |
| | | 2 | James M Ritter, Lionel D Lewis, Timothy GK Mant, Albert Ferro | A Textbook of Clinical Pharmacology and Therapeutics | Hodder Arnold, an imprint of Hodden Education | 2008 |