BACHELOR 'S PROGRAMME

MEDICAL CHEMISTRY

3RD YEAR OF STUDY, 1ST SEMESTER

COURSE TITLE	*Drug pharmaceutical forms*
COURSE CODE	31010030050SL1223109
COURSE TYPE	full attendance/ tutorial
COURSE LEVEL	1st cycle (Bachelor's degree)
YEAR OF STUDY, SEMESTER	3rd year of study, 1st semester
NUMBER OF ECTS CREDITS	5
NUMBER OF HOURS PER WEEK	4 (2 lecture hours + 2 laboration)
NAME OF LECTURE HOLDER	Assoc. Prof. PhD Doina LUTIC
NAME OF SEMINAR HOLDER	Assoc. Prof. PhD Doina LUTIC
PREREQUISITES	Advanced level of English

A	**GENERAL AND COURSE-SPECIFIC COMPETENCES**
	General competences: → Operation with notions of structure and reactivity of chemical, biochemical and pharmaceutical compounds. → Carrying out professional tasks efficiently and responsibly, in compliance with the legislation and deontology specific to the field, under qualified assistance. → Performing analyzes and ensuring quality control through methods and techniques specific to clinical and medical analyzes in compliance with the rules of good practice in analytical laboratories, procedures, instructions and quality specifications in force. → Carrying out team activities, using communication skills to achieve the proposed objectives. **Course-specific competences**: → Developing the critical ability for defining and optimizing the complex composition of a pharmaceutical product: selection of excipients and establishing the proper ratios with regard to active compound; → Determination of the composition, structure and physico-chemical properties of chemical, biochemical and pharmaceutical compounds; → Application of chemical and biochemical technologies in various fields, in compliance with occupational safety and health and environmental protection regulations; → Interdisciplinary approach to topics in the fields of chemistry and biochemistry. → Learning how to deal about the efficient use of information sources, resources of communication and assisted professional training in Romanian and preferably in a language of international circulation.
B	**LEARNING OUTCOMES**
	→ Defining the main requirements for a drug pharmaceutical formulation (activity, bioavailability, toxicity, stability, environmental implications, price etc.); → Understanding of the reasons, peculiarities and requirements entailed for associating various components, in order to obtain a readily usable product (medical drug); → Classifications of various drug pharmaceutical forms and highlighting their main characteristics (advantages, drawbacks, warnings, circuits in the body); → Examples of natural, artificial and synthetic compounds used as drug excipients; → Defining the methods for the preparation of drugs, using different feedstock, while respecting the work security rules and environmental protection.

C	**LECTURE CONTENT**
	Introduction. Classification of medicines. Components of a drug and their transformation into the body. Pathways of drug entry into the body. Models of drug transport into the body cells. The roles of pharmaceutical forms (PF). Routes of administration of medicines. Bioavailability. Types and importance of PF. The importance of excipients. Distribution, metabolism and elimination of drugs from the body. Dosage of medicines. PF for oral administration: tablets, capsules, granules, powders, pills. PF for rectal administration. Semi-solid PF: creams, ointments, gels, poultice, transdermal patches, lotions. PF for parenteral administration: main features, advantages, disadvantages. Injectable and infusable PF. Excipients. Delayed drugs: controlled release, sustained release, slow release. Concepts, composition, advantages, perspectives. Manufacturing technologies of PF. Defects of PF.
D	**RECOMMENDED READING FOR LECTURES**
	1. D. Lutic – teaching course, electronic form (available on Moodle) 2. https://en.wikipedia.org/wiki/Dosage_form 3. Kewal K. Jain, Drug Delivery System, Humana Press, 2014. 5. https://www.slideshare.net/ankit_2408/routes-of-drug-administration-1 6. Jennifer Le, Drug Administration, diponibil la: http://www.msdmanuals.com/home/drugs/administration-and-kinetics-of-drugs/drug-administration 7. http://www.healthline.com/health/administration-of-medication#training3 8. *** Selected scientific reviwe articles
E	**SEMINAR CONTENT**
	1. Notions of occupational safety and health and laboratory fire protection. Chemical calculations related to the content of bioactive substance in a medicine. Romanian Pharmacopoeia and European Pharmacopeia. Preparation of iodine tincture. 2. Determination of the active component content of generic drugs based on acetylsalicylic acid. 3. Preparation of alcoholic and oily plant extracts for drugs. 4. Preparation of a drug in the form of a cream and critical evaluation of the product. 5. Preparation of therapeutic syrups. 6. Study of the controlled release of the active component from a delayed-acting drug 7. Brief examination from laboratory activity: checking the understanding of the role of excipients by analyzing / commenting on drug leaflets.
F	**RECOMMENDED READING FOR SEMINARS**
	1. D. Lutic – flyer reports 2. C. Cernătescu – Technology of cosmetic products (Tehnologia produselor cosmetice), in Romanian, Editura PIM, Iași, 2016. 3. *** Romanian Pharmacopoeia (Farmacopeea Română), Editura medicală, Bucureşti, 1993, in Romanian 4. *** medicine leaflets
G	**EDUCATION STYLE**
LEARNING AND TEACHING METHODS	Video projector-assisted exposure, heuristic conversation, algorithmization, experiments, problematization, critical analysis, written communication.
ASSESSMENT METHODS	Cumulative evaluation: checking the quality of the written exam paper and taking the oral exam Critical observation, conversation, presentation as a form of formative evaluation
LANGUAGE OF INSTRUCTION	English