Pharmaceutical Chemistry Practice
2025/2026 Academic year, 1st semester
Monday 8:00-11:00

DATE	THEME	SEMINAR, REPORT
Week 1 09.08.	**EQUIPPING, Preliminary testing** Equipping, rules to be observed in the laboratory Burning test demonstration and discussion. **Practice:** Differentation between inorganic and organic compounds	 Literature: The quality control of medicinal compounds
Week 2 09.15.	**PRELIMINARY TESTING AND CLASSIFICATION OF INORGANIC AND ORGANIC COMPOUNDS** **IDENTIFICATION OF INORGANIC DRUGS I.** Burning and other preliminary tests with model compounds. **Practice:** Preliminary tests of model compounds, their classification, identification of inorganic drugs **Unknown:** Identification of 2 inorganic drugs	Reactions of inorganic cations and anions. Preliminary tests. Classification of drugs (Literature: Qualitative analytical chemistry Pharmaceutical Chemistry lecture notes Practical materials
Week 3 09.22.	**PRELIMINARY TESTING AND CLASSIFICATION OF INORGANIC AND ORGANIC COMPOUNDS**, **ORGANIC FUNCTIONAL GROUPS** **IDENTIFICATION OF INORGANIC DRUGS II.** Burning and other preliminary tests with model compounds. **Practice:** Preliminary tests of model compounds, their classification, identification of inorganic drugs **Unknown:** Identification of 2 inorganic drugs, classification of 2 organic drugs	Reactions of inorganic cations and anions. Preliminary tests. Literature: Pharmaceutical Chemistry lecture notes Practical materials
Week 4 09.29.	**GENERAL PURITY TESTS FOR INORGANIC IONS** **Practice:** Limit test reactions in Ph. Eur.: chlorides, iron, sulphates **Unknown:** *Natrii chloridum*: purity tests (appearance of solution, iron, sulphates, phosphates) *Borax*: purity tests (pH)	Theory and practice of purity tests in Ph. Eur. Literature: Pharmaceutical Chemistry lecture notes Practical materials

Week 5 10.06.	**DETERMINATION OF PROTONATION MACROCONSTANTS** **pH-potentiometry**: - direct method: titration of ascorbic acid **UV - pH titration**: benzocaine (in small groups) Calculation of the mole fraction of macrospecies as a function of pH (personal task)	**PROJECT REPORT** **(weeks: 2–4.)**
Week 6 10.13.	**DETERMINATION OF ORGANIC FUNCTIONAL GROUPS** **Practice**: Identification of organic functional groups in model compounds **Unknown**: Classification of 2 organic molecules and determination of their functional groups	<u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes
Week 7 10.20.	**MAJOR ANALGETICS** *Morphini hydrochloridum, Codeini hydrochloridum, Codeini phosphas, Ethylmorphini hydrochloridum, Papaverini hydrochloridum* **Practice:** identification of the listed compounds **Identification:** 1 organic compound **Assay:** 1. Codeine phosphate: acidimetry in nonaqueous medium 2. Codeine hydrochloride + papaverine hydrochloride containing powder mixture	**1. Midterm retake (weeks:2-4.)** **(the exact date will be discussed)** Structure and chemical characteristics of the listed compounds. Nonaqueous titrations. <u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes
Week 8 10.27.	**MINOR ANALGETICS** *Acidum salicylicum, Natrii salicylas, Acidum acetylsalicylicum* *Phenazonum, Metamizolum natricum,* aminofenazon *Paracetamolum* **Practice:** identification of the listed compounds **Identification:** 2 organic compounds **Assay:** 1. Salicylic acid: alkalimetry 2. Phenazone: iodometry	Structure and chemical characteristics of the listed compounds. <u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes

Week 9 11.03.	**NON-STEROIDAL ANTIINFLAMMATORY DRUGS** *Diclofenacum natricum, Ibuprofenum, Indometacinum, Phenylbutazonum, Piroxicamum* **Identification**: 1 organic compound **Assay**: 1. Phenylbutazone: nonaqueous titration of acids 2. Diclofenac sodium: nonaqueous titration of bases	Structure and chemical characteristics of the listed compounds. Nonaqueous titration of acids. Literature: The quality control of medicinal compounds Pharmaceutical Chemistry lecture
Week 10 11.10.	**DETERMINATION of log*P*** **Determination of log*P***: - by traditional method (direct determination) - by TLC, HPLC (indirect determination)	**PROJECT REPORT** **(weeks: 5–9.)**
Week 11 11.17.	**LOCAL ANAESTHETICS** *Cocaini hydrochloridum***,** *Benzocainum***,** *Procaini hydrochloridum***,** *Tetracaini hydrochloridum* *Lidocainum* **Practice:** identification of the listed compounds **Identification:** 2 organic compounds **Quantitative determination:** Nonaqueous titration of basic compounds in the presence of neutral materials: Ung. anaestheticum (lidocaine)	Structure and chemical characteristics of the listed compounds. Literature: The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes
Week 12 11.24.	**SEDATO-HYPNOTICS, ANXIOLITICS** *Chlorali hydras, Chlorobutanolum, Ureum, Barbitalum, Phenobarbitalum, Phenobarbitalum natricum* *Alprazolamum, Diazepamum,* Medazepam*, Midazolamum, Nitrazepamum* **Practice:** identification of the listed compounds **Identification:** 2 organic compounds TLC identification of benzodiazepin containing tablets **Assay:** Phenobarbital: alkalimetry, potenciometric end-point detection	**2. Midterm retake (weeks:5-9.)** **(the exact date will be discussed)** Structure and chemical characteristics of the listed compounds. Literature: The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes

Week 13 12.01.	**DRUGS EFFECTING THE VEGETATIVE NERVOUS SYSTEM** *Pilocarpini hydrochloridum, Physostigmini salicylas, Atropini sulfas, Homatropini hydrobromidum, Homatropini methylbromidum, Hyoscini hydrobromidum,* *Adrenalini tartras, Ephedrini hydrochloridum,* *Isoprenalini hydrochloridum, Noradrenalini hydrochloridum* **Practice:** identification of the listed compounds **Identification**: 1 organic compound **Quantitative determination:** 1. Ephedrine hydrochloride + Codeine hydrochloride containing powder mixture 2. Tabl. Rhinatiol Cold (ibuprofen + pseudoephedrine HCl)	Structure and chemical characteristics of the listed compounds. Nonaqueous acidimetry in multicomponent mixtures Literature: The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes
Week 14 12.08.		**PROJECT REPORT** **(weeks: 10-13.)** **(The 3. midterm retake will be on the 1st week of the exam period)**

List of inorganic compounds for identification

Acidum boricum
Alumen
Aluminii chloridum hexahydricum
Aluminii sulfas
Ammonii bromidum
Ammonii chloridum
Bismuthi subnitras ponderosus
Borax
Calcii carbonas
Calcii chloridum hexahydricum
Calcii hydrogenophosphas dihydricus
Calcii sulfas
Dinatrii phosphas dodecahydricus
Kalii bromidum
Kalii carbonas
Kalii chloridum
Kalii iodidum
Kalii nitras
Kalii sulfas
Magnesii chloridum hexahydricum
Magnesii subcarbonas levis
Magnesii sulfas heptahydricus
Natrii bromidum
Natrii carbonas decahydricus
Natrii chloridum
Natrii dihydrogenophosphas dihydricus
Natrii hydrogenocarbonas
Natrii iodidum
Natrii metabisulfis
Natrii nitris
Natrii sulfas decahydricus
Natrii thiosulfas
Zinci oxidum
Zinci chloridum
Zinci sulfas heptahydricus