



МЕДИЦИНСКИ УНИВЕРСИТЕТ СОФИЯ
ФАРМАЦЕВТИЧЕН ФАКУЛТЕТ
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Approved from the Faculty council with protocol № 4/16.06.2022

DEAN:

(prof. Al. Zlatkovq DSc)

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

SYLLABUS

of Pharmaceutical Analysis

INCLUDED IN “PHARMACY” EDUCATION CURRICULUM.

DEGREE OF EDUCATION: “MASTER”

CREDITS (ECTS): 18

	Semester	Academic hours /per week	Total academic hours /per academic year
Lectures	VII and VIII	2	60
Practicals	VII and VIII	6	165
Academic hours	VII and VIII	8	225
TYPE OF CONTROL:		2 colloquium per semester	Final academic year exam

ANNOTATION:

This syllabus is prepared in the Department of Pharmaceutical chemistry, Medical University – Sofia. The subjects are considered for **60 auditorium academic hours**.

The included material for study presents a methodology for quality evaluation of different synthetic and natural drugs, by underlying suitable analytical methods. A number of instrumental, chemical and physical-chemical methods have been discussed in principle, as well as in certain cases, applied for definite group of drugs. This discipline presents to the students the necessary knowledge about the chemical properties of the drugs, needed for determination of an appropriate analytical method, as well as the theoretical and practical abilities for its performance. A knowledge on the contemporary analytical documentation is acquired – Pharmacopoeias, standardizing documentation, etc., validation of an analytical methodology.

This subject is pointed to pharmacy students – Medical University, IV course (VIIth and VIIIth semester).

Type of control and evaluation: routine control- 4 (four) colloquia, two per semester, academic year exam – written and oral.

English language training

SYLLABUS of LECTURES

1. Pharmaceutical analysis, main objectives, types of analytical tests, guidelines and regulations. Standardization documents and pharmacopoeia, GMP, GLP –basic principles.
2. International conference on harmonization. Validation of analytical methods - concept, definition and methodology of analytical parameters.
3. Identity and purity tests. Determination of physicochemical constants, optical methods, stability tests, enantiomeric purity tests.
4. Quantitative determination of drugs – chemical and biological methods. Application of titrimetric methods.
5. Atomic spectrophotometry
6. UV- and IR-spectrophotometry. Raman spectrophotometry.
7. NMR-spectroscopy. Mass spectrometry.
8. Chromatographic methods for analysis: basic theory, chromatographic parameters, system suitability tests
9. Chromatographic methods for analysis: HPLC, TLC, GC, Chiral separations, size-exclusion chromatography
10. Analysis of drugs - halogen containing derivatives of aliphatic and aromatic structures and unsaturated compounds
11. Analysis of drugs - hydroxyl derivatives (alcohols and phenols). Ether analysis.

12. Analysis of drugs - carbonyl compounds (aldehydes and ketones) and their derivatives –oximes, hydrazones and Schiff bases.
13. Analysis of drugs - carboxylic acids. Amino acids - part I.
14. Analysis of drugs - carboxylic acids. Amino acids - part II.
15. Analysis of drugs - carboxylic acid derivatives–esters, amides, imides, lactones.
16. Analysis of drugs – beta-lactam antibiotics (penicillins, cephalosporins and beta-lactamase inhibitors). 2 hours
17. Analysis of drugs – amines and aromatic nitro compounds. 2 hours
18. Analysis of drugs – thiols and thioethers. 2 hours
19. Analysis of sulphonamides. 2 hours
20. Analysis of drugs with five-member heterocycle: furan, pyrole, imidazole and tetrazole derivatives – part I.
21. Analysis of drugs with five-member heterocycle: furan, pyrole, imidazole and tetrazole derivatives – part II.
- Analysis of tricyclic derivatives –dibenzazepine, dibenzocycloheptadiene.
22. Analysis of tricyclic derivatives – phenothiazine and thioxanthene compounds.
23. Analysis of drugs with six-member heterocycle: pyridine, pyrimidine and piperidine derivatives – part I.
24. Analysis of drugs with six-member heterocycle: pyridine, pyrimidine and piperidine derivatives – part II.
25. Analysis of drugs – indole, quinolone, isoquinoline and quinolone derivatives – part I.
26. Analysis of drugs – indole, quinolone, isoquinoline and quinolone derivatives - part II.
27. Analysis of benzodiazepine drugs.
28. Analysis of purine and xanthine derivatives.
29. Analysis of polycyclic drugs – tetracyclic antidepressants, tetracycline antibiotics, drugs with steroid structure – part I.
30. Analysis of polycyclic drugs – tetracyclic antidepressants, tetracycline antibiotics, drugs with steroid structure – part II.

Date:

Program author:

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(assoc. prof. L. Peikova, PhD)