



ACADEMIC STANDARD FOR THE DISCIPLINE PHARMACOGNOSY

The Academic Standard for the discipline Pharmacognosy was approved by the Department council with a Protocol No. 1 / 09.01.23

1. Aim

The primary objective of education in the discipline Pharmacognosy is to acquire knowledge and skills in the field of medicinal plants: methods for quality and quantity analyses, chemical content and biologically active substances, therapeutic application and phytopharmaceutical products.

This objective correlates with the university mission and vision; discipline's contents and credit rating (according to ECTS), both made apparent in the curriculum; qualification characteristics of the speciality; academic degree (master); the place of the discipline within the overall curriculum in terms of discipline's importance and timing in the curriculum.

2. Learning

The topics and the hours for lectures and practical exercises are posted on the university website. Learning content is organized chronologically in such a way that each consecutive lection and related practical classes use previously studied topics and terms.

3. Prerequisites

The students must have obtained basic knowledge in Pharmaceutical botany, Biochemistry, Organic chemistry and Analytical chemistry in order to begin and successfully complete the Pharmacognosy course.

4. Academic resources

The academic staff of the department includes 2 associate professors and 8 assistant professors - 4 of them holding an educational and scientific degree "Doctor (PhD)".

The lectures in Pharmacognosy are given by one associate professor. Practical classes in Pharmacognosy are held by 4 assistant professors.

5. Material resources

For the discipline Pharmacognosy the department has one laboratory equipped with microscopes and one phytochemical laboratory.

6. Lecturing

Lectures are prepared and given in the form of multimedia presentations. Lectures' content and format are chosen by the leading lecturer.

7. Laboratory / practical classes

Practical classes are held separately for each group. Methodological guidelines and protocol notebooks are provided for every particular practical task within an exercise. Tasks can be assigned individually for each student or they may require working in groups. During the training, short tests are carried, which check student's knowledge and results (obtained knowledge and skills) of the particular exercise. Numerous topics are given in advance for a self-study. Presentations may be given by students during practical classes. After the presentation, a discussion is held by all students, with each presenter defending his position on the topic.

8. Information resources. Basic literature. Websites

A list of the main reference literature is presented, with a priority being given to the available resources that are published as "basic literature". Internet resources are also recommended, where appropriate materials for the student's preparation can be found.

Basic literature:

1. **Kitanov G.**, Pharmacognosy lectures Part I and II, Faculty of Pharmacy, Plovdiv
2. **Evans W.** *Trease and Evans' Pharmacognosy*, 16th Edition, Saunders Ltd., New York, 2009.
3. **Heinrich M., Barnes J., Gibbons S., Williamson E.** *Fundamentals of Pharmacognosy and Phytotherapy*, Elsevier, 2012.
4. **Shah B.** *Textbook of Pharmacognosy and Phytochemistry*, 2nd Edition, Elsevier, 2013.
5. **European Pharmacopoeia Monographs.** *European Pharmacopoeia* 9, 2016.
6. **WHO.** *Monographs on Selected Medicinal Plants*. WHO, Geneva: v.1, 1999; v.2, 2002; v. 3, 2007; v.4, 2009.

Additional literature:

1. **Gwynn J., P. J. Hylands.** *Plants as a source of new medicines*. Drug Discovery world (DDW) 1 (1), 54-59, 2000.
2. **Hamburger M., K. Hostettmann.** *Bioactivity in plants: the link between phytochemistry and medicine*. *Phytochemistry* 30 (12), 3864-3874, 1991.
3. **Helliwell K.** *Pharmacopoeial monographs for plant extracts*. *Pharmeuropa* 11.4, 586-589, 1999.
4. **Wagner H. S. Bladt.** *Plant drug analysis*. 2nd. Ed., Springer, 1996.
5. **BHP Monographs.** *British Herbal Pharmacopoeia*. (British Herbal Medicine Association), 1996.

6. **CITES:** *Convention for International Trade in Endangered Species* (Конвенция за Международна търговия със застрашени видове).
7. **EMA Monographs.** (Herbal medicinal products committee (HMPC)).
8. **ESCOP Monographs.** (European Scientific Cooperative for Phytotherapy) (<http://www.escop.com>), 1997, second ed. 2004.
9. **Indena** (<http://www.indena.it/pages/products.php>). *Product list. Active principles derived from medicinal plants*, 2008
10. **ISO Standarts.** *Specifications for medicinal and aromatic plants.* International Standard Organisation (ISO).
11. **WHO.** *Guidelines for quality specifications of plant materials and preparations.*
12. Research guidelines for evaluating the safety and efficacy of Herbal Medicines. Manila, Philippines, 5-9 October, pp. 13-15, 1992.
13. **WHO.** *Good Agricultural Practice of Medicinal and Aromatic Plants.* Ed. EU, 1998 (See: **International Council for Medicinal and Aromatic Plants, ICMAR News, 6, 1999**).
14. **WHO.** *Guidelines on good agricultural and collections practices (GACP) for medicinal plants.* 2003.

9. Control assignments

Students are occupied dynamically and intensively during the semester. It is assumed that the way in which knowledge and skills are acquired is an important factor in their depth, durability and applicability. Tutors should control student progress at least three times in the semester. Ongoing control can be performed through tests or control assignments. Students are provided with timely information and explanations on the control results, which assists their further preparation. Up to 3 (three) days after the announcement of the results the student has the right to get acquainted with his work. The results of these examinations are included as a component in the final semester grade.

10. Individual work and commitment of the students

The individual work of the students must be led by the assistant professors, who have to guide them in the literary sources, and methods for learning, as well. The extra-curricular work of the students involves conducting a 6-day practical training.

11. Collaboration between students and the teaching staff

This collaboration consists of:

- The teacher's commitment to the students' preparation on current difficulties in learning the subject and the opportunities with an individual learning program.
- Use of meeting hours for consultations.
- Including students in teams for scientific tasks, research projects, etc.

12. Exams

Ongoing assessments provided on the curriculum of the specialty are given for:

1. Student's results in practical classes, individual tasks, work of the student with the lecturer in scientific research etc.
2. At least three written tests or student papers.

13. Standards of evaluation:

Standards for the evaluation of the students' achievements are carefully thought out, and clearly defined so that the student's assessments are objective and not depended on the lecturer.

The final grade is determined on the basis of two main elements:

The first one includes the assessment of the student's academic activity throughout the semester (no more than 30%). It includes all the assessments from the ongoing control (tests).

The second one includes the exam grade (no more than 70%). The exam regulations are designed to minimize the possibility of manipulating the results. Clear standards for evaluation are developed for the discipline.

The level of reproduction and use of knowledge by students is defined as information-reproductive, technological-productive, problem-productive, innovative-creative. Based on the above, the standards for evaluation are developed as follows:

Poor (2) – for showing scant knowledge and gross errors that cannot be the basis for the next levels of training;

Satisfactory (3) – simple reproduction and key knowledge of the subject; not ready for analysis of the knowledge gained; poor language culture with a lot of mistakes.

Good (4) – for developed additional knowledge, good knowledge of the subject; but without being able to develop learning to analysis; comparatively good language culture; but with inaccuracies in the use of different concepts and terms;

Very good (5) – for well-developed key and additional knowledge, thinking and understanding the subject, good skills to apply the knowledge, adequate use of scientific concepts from the studied field, good language culture.

Excellent (6) – for shown individual and logical thinking, additional knowledge and skills, for excellent knowledge of the subject, creativity, interpretation of the concepts, skills to solve complex tasks and right argumentation for the decisions taken, accuracy and rich language culture of the presentation

When starting classes, students should be familiar with the evaluation standards, the procedures for conducting ongoing control, and the opportunities to receive feedback on their progress during the semester.

14. Final grade formation

Forms of evaluation:

- evaluation of tests throughout the semester;
- practical examination;
- entrance test before each semester theoretical examination;
- assessment of theoretical written exam after each semester (VI and VII) and oral examination on the studied material.

Formation of a final grade:

A final grade is formed for each semester as a result of the the tests during the semester, the practical examination, the entrance test, the theoretical written exam and the oral examination.

The Final Grade (FG) of the acquired knowledge in the course is rounded to a whole unit and is derived from the equation:

$$FG = 0.2 OG + 0.8 EG$$

where: OG - ongoing grade from the control throughout the semester (must not be "Poor 2"); and – EG - exam grade (must not be "Poor 2").

If OG and/or EG is “Poor 2”, the final grade is “Poor 2”.

The final grade is rounded to a whole unit and is written in the documentation.

Semester examination:

The semester exam includes a written examination (entrance test and two theoretical questions) and an oral examination.

Aspects of the evaluation:

The system for controlling the preparation of the students during the semester includes their presence at lectures and practical exercises, questions on the topic of the exercise. At the end of each exercise, the acquired knowledge is monitored and a control is performed by discussing the exercise. The laboratory exercises are performed by the students independently. A protocol is prepared for each exercise. Students defend the protocols in front of the tutor conducting the exercise. The grade for each student is formed on the basis of his/her theoretical preparation for the developed exercise and the accomplishment of the assigned tasks. The semester grade is formed through a written examination and an oral examination.

15. Documentation, result storage and control of the assessment procedure

- Assessed students have the right and obligation to be informed about the assessment regulation procedures and results, and to make claims and complaints in case of violation of the current rules.
- The students' rights, in accordance with the meaning of the preceding paragraph, are guaranteed provided that technical omissions or errors have occurred (e.g. in the calculation or assessment) or that there are reasons for a vast contrast between the knowledge, skills and competencies the student have actually shown and his/her final grade.
- Corrections of the grades in cases regarding the provisions of the previous paragraph shall be made in the Student Book, the examination report or the account in the General Registry only by the leader of the discipline.
- Potential disagreements and claims on the part of the students should be directed in a written form to the assessment team, whose responsibility is to provide an argued answer by the end of the next working day.
- Revealed and proven cases of serious violation of the rights of the student in terms of assessing his / her knowledge, skills and competences are directed with a written complaint to the Vice-rector for quality and accreditation.

Exam materials are preserved and the students are informed about them. The period during which the students have access to the examination tests and results is up to 3 working days after the examination.

This requirement shall be in accordance with the Higher Education Act Art. 56. par. 1, " The members of the academic board shall be obliged to develop and announce in an appropriate way a description of the provided by them course of lectures, including number, titles and sequence of topics of the curriculum, recommended literature, method of evaluation of the mark and form of checking of knowledge and skills."

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