

Semmelweis University, Faculty of Medicine

Pharmaceutical Innovation and Business Administration Master of Science

Name of the host institution (and any contributing institution):

Department of Pharmacology and Pharmacotherapy

Name of subject: Fundamentals in Pharmacology**in English:** Fundamentals in Pharmacology**in German:** not applicable

Credit value: 5**Semester:** 2025/2026 1st Semester

| Hours per semester | Lecture | Course work | Seminar |
|--------------------|---------|-------------|---------|
| 150 | 17 | 116 | 9 |

| Hours per week | Lecture | Practical lesson | Seminar |
|---|---------|------------------|---------|
| Course blocks tailored to the students' employment obligations on Fridays and Saturdays Course dates: 14 th November 14.00-18.15 29 th November 9.00-13.00 5 th December 14.00-18.00 6 th December 9.00-13.00 seminar 23 rd January 9.00-17.00 | | | |

Type of course:

compulsory

Academic year:

2025/2026

Language of instruction (for optional and elective subjects):

English

Course code:

(in the case of a new course, to be completed by the Dean's Office, following approval

Course coordinator name: Prof. Dr. Peter Ferdinandy

Course coordinator location of work, telephone availability: Department of Pharmacology and Pharmacotherapy, 1089 Budapest, Nagyvárad tér 4. Tel: +36-1-2104416, e-mail: ferdinandy.peter@semmelweis.hu

Course coordinator position: Head of Department, full professor

Course coordinator Date and number of habilitation: June 2 2001., 26/2001 Hab.

Objective of instruction and its place in the curriculum:

During the first part of the *Fundamentals in Pharmacology* course, students are introduced to the principles of assigning drugs to specific disorders based on pharmacotherapeutic protocols. Emphasis is placed on problem-oriented thinking to develop therapeutic strategies for priority public health conditions, in accordance with current clinical guidelines. This foundational knowledge is delivered through a combination of pre-recorded video lectures, handouts, and consultation sessions.

In the second part of the semester, the course shifts its focus to current trends in pharmacotherapy development. Key therapeutic areas—such as cardiology, oncology, neurodegenerative disorders, and immunology—are explored in depth. Additionally, cross-cutting themes including personalized medicine, advanced therapy medicinal products (ATMPs), vaccine development, and RNA-based therapies are also addressed.

Method of instruction (lecture, group work, practical lesson, etc.):

pre-recorded online lectures

real-time online lectures

in-person seminar

Competencies acquired through completion of course:

- awareness of major diseases of public health importance
- foundational pharmacological knowledge
- a pharmacotherapeutic strategy for diseases of public health importance according to current guidelines
- insight into ongoing developments in major therapeutic areas (e.g., cardiology, oncology).
- understanding of advanced therapy medicinal products (ATMPs), personalized medicine, RNA therapies, and vaccine development.
- ability to discuss and evaluate emerging drug technologies and their implications for future practice.
- skills in utilizing various learning resources (videos, handouts, consultations) effectively.

- encouragement of self-directed learning and staying updated with evolving medical knowledge.
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Course outcome (names and codes of related subjects):

none

Prerequisites for course registration and completion: (CODE):

none

In the case of multi-semester courses, position on the possibility of and conditions for concurrent registration:

none

The number of students required to start the course (minimum, maximum), student selection method:

all students admitted

Detailed course syllabus (if the course can be divided into modules, please indicate):

(Theoretical and practical instruction must be broken down into hours (weeks), numbered separately; names of instructors and lecturers must be listed, indicating guest lecturers/instructors. It cannot be attached separately! For guest lecturers, attachment of CV is required in all cases!)

Modul I – Basic clinical pharmacology

1. Infectious Diseases Treatment Strategy - Dr. Kornél Király, associate professor; Dr. Zsófia Gulyás-Onódi, assistant professor; Dr. Erzsébet Kató, assistant professor – 2 hours
2. Treatment strategy for respiratory and gastrointestinal diseases - Dr. Klára Gyires, Professor Emerita, clinical pharmacologist, Dr. Zoltán Zádori, associate professor – 2 hours
3. Endocrine Disease Treatment Strategy - Dr. Bence Ágg, associate professor, Dr. Júlia Timár, retired associate professor – 2 hours
4. Treatment strategy for cardiovascular diseases and metabolic syndrome - Dr. Péter Ferdinandy, professor, clinical pharmacologist, Dr. Anikó Görbe, professor, specialist in clinical laboratory tests, specialist in psychotherapy, Dr. Zoltán Varga, associate professor – 2 hours
5. Strategy for the treatment of psychiatric and neurological diseases - Dr. István Gyertyán, Research associate, Dr. László Hársing, retired professor, Dr. Ildikó Miklya, retired associate professor – 2 hours
6. Pain Relief - Dr. Al-Khrasani Mahmoud, associate professor, pharmacist in drug supply and organization, Dr. Kornél Király, associate professor – 2 hours
7. Treatment strategy of autoimmune diseases - Dr. Klára Gyires, professor emeritus, specialist in clinical pharmacology, Dr. Zoltán Zádori, associate professor – 2 hours
8. Individualized pharmacotherapy, special patient populations - Dr. Zsófia Gulyás-Onódi, assistant professor, Dr. Ildikó Miklya, retired associate professor – 2 hours

Modul II – trends in the development of pharmacotherapies

9. Development and clinical application in advanced therapy medicinal products (ATMPs) – Dr. Tamás Masszi, professor, László Cervenák PhD – 2 hours

10. Current trends in neuropsychiatric pharmacology – Prof. Dr. István Bitter, professor – 2 hours

11. Exploring the promise of RNA-based therapies: Current Advances and Future Prospects – Prof. Dr. Péter Ferdinandy, professor – 2 hours

12. Transformative trends in oncology: New Frontiers in Treatment – Dr. István Peták

13. Recent Advances in Vaccine Development: Innovation, Efficacy, and Impact – Dr. János Szebeni, professor, Dr. Julianna Lisiewicz – 2 hours

Other courses with overlapping topics (obligatory, optional, or elective courses) in interdisciplinary areas. To minimize overlaps, topics should be coordinated. Code(s) of courses (to be provided):

Discovery of medicines

Requirements for attendance, options for making up missed sessions, and method of absence justification:

Full attendance is required. Completing additional e-learning materials are required to make up missed courses.

Assessment methods during semester (number, topics, and dates of midterms and reports, method of inclusion in the course grade, opportunities for make-up and improvement of marks):

(number, topics, and dates of midterms and reports, method of inclusion in the course grade, opportunities for make-up and improvement of marks)

MCQ completed at the end of Modul I with two make-up opportunities.

Number and type of individual assignments to be completed, submission deadlines:

January 26, 2026

Requirements for the successful completion of the course:

Written multiple choice test at the end of the semester, evaluation with the five mark scale (excellent=5, good=4, average=3, satisfactory=2, unsatisfactory=1)

Examination requirements (list of examination topics, subject areas of tests, lists of mandatory parameters, figures, concepts and calculations, practical skills, optional topics for the project assignment recognized as an exam and the criteria for its completion and evaluation)

Topics from Modul I and II

Method and type of grading (Share of theoretical and practical examinations in the overall evaluation. Inclusion of the results in the end-of-term assessment. Possibilities of and conditions for offered grades.): (Share of theoretical and practical examinations in the overall evaluation, Inclusion of

the results in the end-of-term assessment, Possibilities of and conditions for offered grades)

Formulation of the grade:

88 to 100 points: excellent (5)

76-87,5 points: good (4)

63-75 points: average (3)

50-62 points: satisfactory (2)

Less than 50 points: unsatisfactory (1)

Signature of habilitated instructor (course coordinator) announcing the course:

Prof. Dr. Péter Ferdinandy

Head of Department

Signature of the director of the host institution:

Prof. Dr. Péter Ferdinandy

Head of Department

Date of submission:

8th August 2025