

Module Descriptions

Module designation	Pharmaceutical Chemistry
Semester(s) in which the module is taught	6 th Semester (S1 Chemistry Programme, Universitas Negeri Surabaya)
Person responsible for the module	apt. Aulia Charis Aqsha, S.Farm., M.Farm
Language	Bahasa Indonesia (Regular Class)
Relation to curriculum	Elective course
Teaching methods	Case Method 2 workhours per week (2 x 170 minutes per week)
Workload (incl. contact hours, self-study hours)	1 CU for a bachelor's degree equals 170 minutes (50 minutes face-to-face, 60 minutes structured, 60 minutes independent learning) per week × 14 weeks, excluding mid and end-term exams. = 39.67 work hours per semester = 1.587 ECTS.
Credit points	2 credits (2 SKS), equivalent to 3.18 ECTS.
Required and recommended prerequisites for joining the module	Required: none. Recommended: prior knowledge of General Chemistry and Organic Chemistry; basic understanding of physicochemical concepts (e.g., pH, solubility, stereochemistry); ability to read and summarise scientific sources.

Module objectives/intended learning outcomes	<p>Upon successful completion, students are able to:</p> <p>Knowledge</p> <ul style="list-style-type: none">• Explain the position of chemistry within pharmaceutical science and the historical development of pharmacy.• Describe drug concepts (definitions, terminology, dosage forms, and administration routes).• Describe drug fate in the body: biopharmaceutics, pharmacokinetics (absorption, distribution, metabolism, excretion/ADME), and pharmacodynamics.• Explain basic structure–activity relationships (SAR) and key physicochemical determinants of biological activity.• Identify selected groups of drugs (analgesics/antipyretics, antihistamines/antitussives, antibiotics including sulfonamides), vitamins, addictive substances, and basic principles of pharmaceutical analysis. <p>Skills</p> <ul style="list-style-type: none">• Use information sources (including ICT) and case examples to relate physicochemical properties of drug molecules to biological activity.• Communicate scientific reasoning through discussion and oral presentations. <p>Competences</p> <ul style="list-style-type: none">• Work collaboratively in project tasks; demonstrate honesty and responsibility in academic work; apply pharmaceutical chemistry concepts to everyday contexts and societal issues.
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Content	<p>A study of the role and position of chemistry in pharmaceutical sciences and the historical development of pharmacy; the concepts, definitions, and classification of drugs; dosage forms, routes of administration, and drug use; drug disposition and fate in the human body covering the biopharmaceutic phase, pharmacokinetics (absorption, distribution, metabolism, and excretion/ADME), and pharmacodynamics; structure–activity relationships (SAR) and the relationship between physicochemical properties and biological activity; selected therapeutic drug classes including analgesics and antipyretics, antihistamines and antitussives, and antibiotics; as well as an overview of vitamins, addictive substances, and basic pharmaceutical analysis, delivered through project-based learning supported by discussions, question-and-answer sessions, assignments, and presentations so that students are able to master the core concepts, relate chemical principles to pharmaceutical contexts and everyday cases responsibly, work collaboratively, and communicate their knowledge scientifically.</p>
Examination forms	Essay and Oral Presentation
Study and examination requirements	<p>Study and Examination Requirements/Assessment:</p> <ol style="list-style-type: none"> 1. Individual assignments (case analysis reports) 2. Group case studies and discussions 3. Documentation and presentation of case study findings <p>Assessment Recap (Case Study-Oriented):</p> <ol style="list-style-type: none"> 1. Participatory Activities/Case Study Analysis: 52,5% 2. Project Result Assessment / Product Assessment: 25% 3. Portfolio: 7,5% <p>Test:15% Total: 100%</p>

Reading list	<ul style="list-style-type: none">• Nugroho, Nurfina Aznam. (2001). Materi Pokok Kimia Farmasi (Modul 1–6). Pusat Penerbitan Universitas Terbuka, Jakarta. (Online: http://repository.ut.ac.id/4684/1/PEKI4421-M1.pdf)• Schunack, Walter, et al. (1990). Senyawa Obat: Buku Pelajaran Kimia Farmasi. Gajah Mada University Press, Yogyakarta.• Azis, Hubeis. (1996). Ilmu Farmasetika dan Perkembangannya Masa Kini. Jurusan Farmasetika Universitas Airlangga, Surabaya.• Anief, Moh. (1997). Apa Yang Perlu Diketahui Tentang Obat. Gajah Mada University Press, Yogyakarta.• Siswandono & Soekardjo. (2000). Kimia Medisinal. Airlangga University Press.• Relevant scientific articles and online resources aligned with the weekly topics.
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