

ADVANCED DRUG DELIVERY SYSTEM

Module designation	<i>Advanced Drug Delivery System</i>
Semester(s) in which the module is taught	2
Person responsible for the module	1. Helmy Yusuf, S.Si., M.Sc., Ph.D., Apt (Course Coordinator) 2. Prof. Dra. Esti Hendradi, MSi, Ph.D., Apt 3. Prof. Dr. Dwi Setyawan, M.Si., Apt 4. Prof. Dewi Melani H., S.Si., M.Phil., Ph.D., Apt 5. Helmy Yusuf, S.Si., M.Sc., Ph.D., Apt 6. Dr.rer.nat. ML Ardhani DL. S.Si., M.Pharm., Apt
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory / elective / specialisation</i>
Teaching methods	<i>lecture, discussion, assignment</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: Contact hours (structured activities.): 90,67 hours Private study including independent learning activities: 90,67 hours</i>
Credit points	<i>2 SCU / 6 ECTS</i>
Required and recommended prerequisites for joining the module	<i>NA</i>

<p>Module objectives/intended learning outcomes</p>	<p>Students are:</p> <p>LO1: Able to realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently</p> <p>LO2: Able to internalize the spirit of independence, struggle, and entrepreneurship</p> <p>LO4: Able to develop a pharmaceutical professional performance with analytical acumen in solving pharmaceutical problems and managing research in the pharmaceutical field related to national and global systems and policies, both inter and inter-disciplinary approaches</p> <p>LO5: Able to access and review information through an Information and Communication Technology (ICT) system, decide on a specific subject of study, maintain the feasibility of implementing research designs, conduct research, analyze data, conclude research results comprehensively, and create strategic issues based on the study that reflect the latest updates in the field of pharmaceutical sciences, and communicate them in the media and scientific forums at the national and international level through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms.</p> <p>LO9: Able to carry out molecular manipulation of substances and develop formulations and manufacturing of pharmaceutical preparations with active pharmaceutical ingredients derived from natural products and synthetic compounds through the manufacture of polymorphs, nanoparticles, solid dispersions.</p> <p>LO11: Able to develop systems for evaluating the bioavailability of drugs in the body, pharmaceutical products circulation permits, and their in-vitro and in-vivo evaluations with specific delivery systems with appropriate analytical methods.</p> <p>LO13: Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system.</p> <p>LO15: Able to plan and organize concepts and procedures for quality assurance and recommendations on pharmaceutical products, which include drugs, cosmetics, foods, and beverages as products and therapeutic goods.</p>
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Content	This course aims to provide up-to-date information on the basics, formulation strategies, and various therapeutic applications of advanced drug delivery. This course teaches the philosophy of how to practically articulate the concepts of pharmacy, chemistry, and molecular biology in such a way as to generate new ideas for designing and developing advanced drug delivery systems for the treatment of various diseases. This course is divided into three parts; 1) begins with the basics related to physiological resistance, stability and material engineering in drug delivery, 2) continues by discussing various strategies that have been used in advanced drug delivery systems which have been further developed into solid, semisolid and liquid dosage forms, 3) discuss topics that focus on drug delivery systems with unique active ingredients such as proteins/peptides, multicomponent natural ingredients as well as vaccines. Each topic provides objectives and questions/assignments for assessment and facilitates student learning.
Exams and assessment formats	<i>Final exam (100 minutes), Presentation (100 minutes), take-home written assignments</i>
Study and examination requirements	<i>the final grade in the module is composed of 30% performance on final exams, 30% presentations, 30% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass</i>
Reading list	<ol style="list-style-type: none"> 1. Jain, Kewal K., ed. Drug delivery systems. Vol. 2059. Springer, 2020. 2. Mahato, Ram I., and Ajit S. Narang. Pharmaceutical dosage forms and drug delivery. CRC Press, 2017. 3. Keservani, Raj K., Anil K. Sharma, and Rajesh K. Kesharwani, eds. Drug Delivery Approaches and Nanosystems, Volume 1: Novel Drug Carriers. CRC Press, 2017. 4. Mitra, Ashim, Chi H. Lee, and Kun Cheng. Advanced drug delivery. John Wiley & Sons, 2013. 5. Allen, Loyd, and Howard C. Ansel. Ansel's pharmaceutical dosage forms and drug delivery systems. Lippincott Williams & Wilkins, 2013.