



Course code	PHM2006
Course title (English)	Medicinal Chemistry for Pharmaceutical Professionals
Course title (Chinese)	药物化学 (药学专业)
Units	3
Language of Instruction	English
Description (English)	<p>This course is intended to provide the undergraduate students majoring in Pharmaceutical Sciences a broad working knowledge of the different aspects of the chemical and physical properties of drugs (such as chemical bonds, functional groups, acid–base properties), and on the design, development and optimization of drug candidates for their potential use in the treatment of human diseases based on the modulation of presently-known drug targets, including proteins, nucleic acids, receptors and others. Focuses will be placed on the structure-activity relationships of drugs and their pharmacokinetic and pharmacodynamics properties. Other related topics such as the use of computers in drug discovery and medicinal chemistry research, the quantitative structure-activity relationship (QSAR), and how to get the drugs to the market, etc., will also be briefly introduced in the course.</p>
Description (Chinese)	<p>本课程旨在为药学专业的本科生提供有关于药物的化学和物理性质（例如化学键、官能团、酸碱性质）的各个方面以及药物设计、药物开发的广泛应用知识。基于目前已知的药物靶点（包括蛋白质、核酸、受体等）的调节、设计、开发、优化候选药物，挖掘药物在人类疾病治疗中的潜在用途。学科重点将放在药物的构效关系及其药代动力学和药效学特性上。其他相关主题，例如计算机在药物发现和药物化学研究中的使用、定量构效关系（QSAR）以及如何将药物推向市场等，也会在课程中简要介绍。</p>

Learning Outcomes

Upon completion of the course, students should be able to:

Regarding the KNOWLEDGE aspect, the students are expected to be able to describe and integrate the most important concepts, principles and knowledge in medicinal chemistry

Regarding the SKILLS aspect, the students are expected to gradually develop the basic skills that would enable them to apply the learned concepts, principles and knowledge in understanding and explaining real cases and situations in real world life and scenarios.



Regarding developing and/or enhancing the **GENERIC SKILLS AND VALUES** of the students, this course is expected to do and accomplish the following:

The students will have frequent exercises during lectures and after lectures (through homework) to think critically and creatively. Through the design of the home work, they will have ample opportunities to exercise their independent problem-solving skills.

Indicative teaching plan

Week	Content/Topic/Activity
1	Introduction to drug and drug development-I
	Introduction to drug and drug development-II
2	Drug Discovery: Finding a Lead -I
	Drug Discovery: Finding a Lead-II
3	Drug Design: Optimizing Target Interactions -I
	Drug Design: Optimizing Target Interactions -II
4	Drug Design: Optimizing Access to Target-I
	Drug Design: Optimizing Access to Target-II
5	Computers in Medicinal Chemistry-I
	Computers in Medicinal Chemistry-II
6	Case Study I (Drug Design)
	Case Study II(Drug Design)
7	Pharmacokinetics and Drug Metabolism-I
	Pharmacokinetics and Drug Metabolism-II
8	Drug and Drug Targets: Proteins, Enzymes
	Drug and Drug Targets: Receptors
9	Drug and Drug Targets: Lipids andCarbohydrates
	Drug and Drug Targets: Nucleic Acids
10	Case Study III (Finding a Drug Target)
	Case Study IV (Finding a Drug Target)
11	Drug Targets Interactions-I
	Drug Targets Interactions-II
12	Small molecule drug discovery; concepts of combinatorial and parallel synthesis
	Small molecule drug discovery; concepts of combinatorial and parallel synthesis
13	Get the drug to the market
	Get the drug to the market
14	Overview of the course
	Overview of the course