



Course code	PHM3003
Course title (English)	Pharmaceutical Science Laboratory II
Course title (Chinese)	综合药学实验 (二)
Units	2 units (2 credit hours)
Language of Instruction	English
Description (English)	This course is designed to provide the students the basic knowledge and skills of the experiments for mechanistic studies of drug actions/pharmacology. Specifically, this course will focus on studying important classes of drugs such as anticancer drugs, antibiotics, and drugs in cardiovascular systems using bacteria, cell culture and experimental animals. In addition, role of liver function impairment on drug action is studied.
Description (Chinese)	本课程旨在让学生了解研究药物作用的分子机制的药理学主要实验方法，主要介绍抗癌药、抗生素、心血管药物等的药理学研究实验，使用细菌、细胞和实验动物等多种实验材料。

Learning Outcomes

Upon completion of this course, the students are expected to have a sound understanding of the methods used to study important classes of drugs such as anticancer drugs, antibiotics, and drugs in cardiovascular systems using bacteria, cell culture and experimental animals.

In addition, the students are also expected to develop critical thinking, problem solving and teamwork skills. The students are encouraged to have a proactive and responsible attitude.

During the lectures, through the introduction of the experimental design and hands-on experiments, the students will have the opportunities to gradually learn about the commonly-used scientific approaches and methodologies, as well as the ethics issues associated with drug research.



Indicative Teaching Plan

Week	Content/ topic/ activity (4 hours per session)
1-2	Session 1. 1. General introduction 2. Introduction of cell culture experiment 3. Cell viability and cytotoxicity assay for anticancer drugs.
3-4	Session 2. 1. Flow cytometry assay for anticancer drugs. 2. Detection of cell apoptosis.
5-6	Session 3. 1. Introduction of bacteria culture experiment. 2. Application of antibiotics.
7-8	Session 4. 1. Introduction of animal experiment 2. Establishment of mouse liver function impairment models 3. Intraperitoneal injection of drugs 4. Observe animal reactions and record the time of loss and recovery of righting reflex in mice 5. Dissect the mice, collect samples, and perform analysis
9-10	Session 5. 1. Rat anaesthesia and fixation, record normal electrocardiogram of rats. 2. Induce arrhythmia and record abnormal electrocardiogram of rats. 3. Treat the rats with arrhythmia using drugs and check whether electrocardiogram of rats recover normal.
11-12	Session 6. 1. Group the fasting mice and inject different drugs. 2. Blood glucose concentration measurement.