

Department Postgraduate Courses

Plant Toxicity and Drug Interaction (PHG705)

In this course, the students will be able to understand the basic theories & principles behind herbal drug interaction and plant toxicity as well as to recognize the chemical compounds and their biological activity of these toxins. The students will be aware of drug-herb interaction (Pharmacodynamics), and vitamins and minerals-drug interaction. Genotoxicity, carcinogenicity, teratogenicity and toxic plants as allergens will also be studied

Spectroscopy and structural elucidation; Code: PHG703

This course is intended to provide the student with expertise in the various techniques used for the spectroscopic analysis of natural products. The student should be able to interpret various spectral data, including ultraviolet (UV), infrared (IR), nuclear magnetic resonance spectroscopy ($^1\text{H-NMR}$, $^{13}\text{C-NMR}$, 2D-NMR) and mass spectrometry (MS) for the structure elucidation of different compounds and natural products of diverse structures, such as carbohydrates, glycosides, tannins, alkaloids, terpenoids, and volatile oils.

Chemotaxonomy of Natural drugs and the Biosynthesis of their metabolites; Code: PHG701

The course is designed to provide students with basic information of chemotaxonomy of plants which comprises the study of chemical variation in different types of plants and use of this information in classification of plants. The classification of plants on the basis of specific class of secondary metabolites and their biosynthetic pathways constitutes chemotaxonomy.

Advanced Chromatographic techniques, code: PHG702

After completing this course, the students will be able to deal with qualitative & quantitative chromatographic analysis of herbal products, marker determination, validation and applications of the proposed schemes. In addition, students will be capable of applying different methods of GC, HPLC, HPTLC and other advanced chromatographic techniques in the analysis of crude drugs including isolation as well as purification of the bioactive compounds from their medicinal source.

Phytotherapy, code: PHG 602

Students are expected to understand the importance of herbal drugs in the current health care system. The World Health Organization (WHO) estimates that 80% of the entire world population depends on herbal drugs for their therapeutic needs. The use of herbal medicine to treat diseases has started since the dawn of civilization. Great historical figures such as Rhazes, Avicenna, and Ibn al-Baitar made significant contributions for the development of herbal therapy as science not fiction. Renaissance in herbal drug research revealed the unlimited therapeutic potential of herbal drugs. As pharmacy student in the 21st century, solid scientific knowledge on herbal drugs is crucial and will assist future pharmacists in their work. I hope the current book will ignite students' enthusiasm in herbal drugs and natural products

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Isolation and Identification of Bioactive Marine Natural Products, Code: PHG 709

After completion of the course, the students should have both the knowledge and skills that enable them to understand, describe and deal with the marine ecosystem and the classification of major phyla of marine organisms, the importance of marine drugs as leads for novel pharmaceuticals and cosmeceuticals. After attending this course, the students would be expected to deal with the general principles of marine natural products chemistry: definitions, samples, collection sites and techniques, products, and striking examples of outstanding molecules. Students should be able to deal with the techniques adopted for isolation schemes of different classes of marine products from different organisms, and how to modify the general principles to fit with the marine samples. In addition, students will apply the acquired knowledge regarding the different spectroscopic techniques, including IR, UV, MS and 1D,2D NMR techniques, to different unique classes of marine natural products.

Special Topics in Natural Products; Code: PHG705

The students will acquire knowledge of basic principles of metabolomics and quality control of herbal products including chemometry and to implement this knowledge in various phytochemical applications, including authentication, characterization and analysis of plant extracts/fractions or herbal mixtures. The students should be capable to demonstrate knowledge of the different classes of active constituents (secondary plant metabolites), and their analysis using different types of liquid chromatography-coupled to mass spectrometric techniques. The students should be capable to demonstrate knowledge of the different fields of advanced pharmacognosy and modern analysis techniques. The students will also prepare PowerPoint presentations based on data retrieval related to these topics from scientific search engines.