

## Doctor of Philosophy (PhD)

Course	Code	Hours			Aim
		Theoretical	Practical	Total	
Advanced course in chromatography	0906801	3	-	3	<p>This course will give an overview of the various modern instrumental chromatographic techniques used in the pharmaceutical research and industry through education of graduate students with:</p> <ul style="list-style-type: none"> <li>-Advancements in chromatographic techniques: droplet counter current chromatography (DCCC); Centrifugal counter current chromatography CCCC, HPLC; chiral separation of racemates; immunoaffinity chromatography; supercritical fluid chromatography; hyphenated techniques GC-MS and HPLC-MS.</li> <li>-The course is designed to provide analysts with theoretical foundation of and practical experience with modern chromatographic techniques. Students will learn to use state-of-the-art instrumentation to develop, optimize, validate and apply methods for qualitative and quantitative determinations.</li> <li>-Furthermore the students will be able to apply this knowledge efficiently in</li> </ul>

					choosing the suitable instrument professionally in analytical problems.
Applied experimental pharmacology	0902704	3	-	3	<p>The course is considered as an aid for experimental pharmacologists to pave a way for the performance of the various protocols and techniques used in the field of research in pharmacology. The course will cover various therapeutic classes of drugs and adopted prototype methods of screening and biological assays using in vitro or in vivo models.</p> <p>The course demonstrate an in-depth understanding of basic laboratory techniques used to support clinical research.</p> <p>It also provides the bases for pharmacologists in the field of research and industry to search for new drugs of potential use for human therapy.</p>
Quality control of pharmaceutical products and validation of analytical methods.	0907704	3	-	3	<ul style="list-style-type: none"> <li>•Provides postgraduates with basic and advanced knowledge in the area of quality control and validation of analytical methods.</li> <li>•Equip post graduates with skills and experience to benefit across their studies and / or their current work. Based on the cited theoretical knowledge, the acquisition of analytical research skills for the control of bulk products and</li> </ul>

					of finished medicament preparations
Recent approaches in spectral analysis	0906804	3	1	4	The course provides students with a more detailed exposure to the theoretical and applied aspects of the spectroscopic techniques used in structure-elucidation of organic compounds. The students will survey the theory and application of a number of instruments such as: Visible, Ultra Violet, Infrared, Nuclear Magnetic Resonance, Atomic Absorption and Mass Spectrometry. The students will be also exposed to spectroscopic techniques as fingerprinting tools in natural products identification and quality assessment procedures. This course would enable the student to interpret 2-dimensional $^1\text{H}$ and $^{13}\text{C}$ spectra of organic molecules and to identify complex natural products structures from their NMR spectra. The course will also help students to "Solve" and work-out the structure of unknown natural products using a combination of UV, IR, 2D-NMR spectroscopy and Mass Spectrometry. The students are required to use the chemical literature (library journals, internet, etc) to explore practical ways of using instruments to solve

					relevant chemical problems.
Selected Topics in natural Products	0906802	3	-	3	The course deals with the different adopted scientific routines and approaches in drug discovery from natural sources, from terrestrial or marine organisms, and the main biological streams (e.g. anticancer, hepato-protective, anti-neurodegenerative or anti-hypertensive) targeted in the routine search for bioactive compounds and their structural requirements. The course will also throw some light on evaluation of drug-targeted studies. Meta-analysis and evidence-based reviews will be explained. The health-impact and forms of the different marketed nutraceuticals and nutritional products will be also displayed. The course will also enlighten the students on additional herbal issues of concern like herb-drug interactions and forensic Pharmacognosy.
Seminar I	0906803	3 (seminar/ tutorial)	-	3	This activity teaches students how to apply research, problem-solving in relation to qualitative and quantitative information and how to extend it to situations where evaluations lack or involve limited information. The activity also orients the students on how to identify people who can contribute to the solution of a problem or

					<p>task and identify resource materials useful in the solution of a problem and create innovative solutions to complex problems. The exercise aims at developing, in the students, skills related to scientific searching in the literature on new topics in the pharmacognosy field. The latter will provide the students with a multi-disciplinary non-curricular information and allow students to get exposed to up-to-date professional or technical information. The activity would also educate the students on how to identify reliable sources of information, how to extract and apprehend scientific materials presented in full articles, how to prepare a referenced scientific report, and finally to present the information compiled in a clear and comprehensive way to the audience and answer their inquiries. It will help the students to gain professional skills in the fields of developing biologically active compounds by modulating raw proactive natural products and elucidation of their structures.</p>
Seminar II	0906805	3 (seminar/ tutorial)	-	3	<p>This activity teaches students how to apply research, problem-solving in relation to qualitative and</p>

				<p>quantitative information and how to extend it to situations where evaluations lack or involve limited information. The activity also orients the students on how to identify people who can contribute to the solution of a problem or task and identify resource materials useful in the solution of a problem and create innovative solutions to complex problems. The exercise aims at developing, in the students, skills related to scientific searching in the literature on new topics in the pharmacognosy field. This will provide the students with a multidisciplinary non curricular information and allow him to get exposed to up-to-date professional or technical information. The activity would also educate the students on how to identify reliable sources of information, how to extract and apprehend scientific materials presented in full articles, how to prepare a referenced scientific report, and finally to present the information compiled in a clear and comprehensive way to the audience and answer their inquiries. It will help the students to gain professional skills in the fields of developing biologically active compounds by modulating</p>
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