


Philadelphia University	 PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	Approved Date: 16/10/2022
Faculty: Pharmacy		Issue:
Department: Pharmacy		Credit Hours: 3
Academic Year: 2022-2023		Course Syllabus

Course Information

Course No.	Course Title	Prerequisite	
0510221	Pharmacognosy and Phytochemistry	Pharmaceutical Organic Chemistry (2) (0510210)	
Course Type		Class Time	Room No.
<input type="checkbox"/> University Requirement <input type="checkbox"/> Faculty Requirement <input type="checkbox"/> Major Requirement <input type="checkbox"/> Elective <input checked="" type="checkbox"/> Compulsory		Sec 3: Mon, Wed: 11:15 - 12:45	

Instructor's Information

Name	Office No.	Phone No.	Office Hours	E-mail

Course Delivery Method

<input type="checkbox"/> Blended <input type="checkbox"/> Online <input checked="" type="checkbox"/> Physical			
Learning Model			
Percentage	Synchronous	Asynchronous	Physical
			100%

Course Description

The course is designed to provide the student with basic information about pharmacognosy & phytochemistry, in terms of nomenclature, taxonomy, monographs, quality control, methods for extraction, characterization, detection of the active ingredient in medicinal plants, complementary and alternative medicine (CAM), pharmacologically active compounds obtained from natural origin mainly the plant origin, secondary metabolites as alkaloids, cardiac glycosides and anthraquinone glycosides. The chemical structures of these studied phytochemicals will be granted much interest. The student has to recognize the chemical structure mostly with its main features and is expected to be able to relate it to its botanical source, use, toxicity, and interactions with other drugs. Special emphasis will be made on those products used in pharmacy as prescription-only medicine, controlled drugs, and OTC. The course also has a mention of examples of semi-synthetic or synthetic drugs related to naturally occurring drugs, such as opium alkaloids.

Course Learning Outcomes

Number	Outcome	Corresponding Program Outcomes	Corresponding Competencies
Knowledge			
K1	Be familiar with the main terminology and definitions in pharmacognosy.	Kp1	C1
K2	Demonstrate the principles of the related analytical and scientific techniques.	Kp1	C1
K3	Categorize the main active ingredients from the natural sources (plants, animals, etc.), recognize their chemical structures, and illustrate the structure-activity relationship.	Kp1, Kp2	C1, C2
K4	Summarize the main putative pharmacological effects of the studied medicinal plants depending on their phytochemical content.	Kp1, Kp2	C1, C2
K5	State the main features of the pharmacological profile of the main active ingredients in plants and other natural sources (activity, toxicity, mechanism of action, etc.).	Kp1, Kp2	C1, C2
Skills			
S1	Perform some studied analytical techniques (extraction, chromatography, tissue culture, etc.)	Sp2, Sp3, Sp5	C8, C9, C11
S2	Classify medicinal plants according to their expected biological activities.	Sp2, Sp3, Sp5	C8, C9, C11
S3	Approve and validate medicines as possible treatments, or part of treatment for diseases.	Sp2, Sp3, Sp5	C8, C9, C11
S4	Evaluate the possible benefits and risks of the use of medicinal plants in the treatment of diseases and ailments.	Sp2, Sp3, Sp5	C8, C9, C11

Learning Resources

Course Textbook	Pharmacognosy Trease and Evans. 16th Edition, 2009, Published by ELBS, London ISBN 978-0702029332
Supporting References	<ul style="list-style-type: none"> • Drugs of Natural Origin, 7th edition 2015 Gunnar Samuelsson. Swedish Pharmaceutical Press, ISBN 978—91-980942-5-1. • Medicinal natural products, a biosynthetic approach, 3rd edition, 2009 Paul Dewick, John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, United Kingdom, ISBN 0 471 49640

	<ul style="list-style-type: none"> Pharmacognosy, phytochemistry, Medicinal Plants. 2nd edition Jean Bruneton: Springer Verlag, 2008, ISBN: 1898298130, 2743000287
Supporting Websites	<ul style="list-style-type: none"> Phytochemistry Natural Products Research Journal of Phytochemistry Fitooterapia Pharmaceutical Biology Journal of Ethnopharmacology
Teaching Environment	<input checked="" type="checkbox"/> Classroom <input type="checkbox"/> laboratory <input type="checkbox"/> Learning Platform <input type="checkbox"/> Other

Meetings and Subjects Time Table

Week	Topic	Learning Method*	Task	Learning Material
1	Introductory guidance topics and issues: vision and mission of the Faculty, course syllabus			Provided in the Learning Resources table
2	Introduction, definitions: crude drug, advanced crude drug, Classification, indigenous and cultivated plants, factors involved in production of plants, official drugs, monographs.	Lecture		
3	Quality control	Lecture, Flipped learning	Homework	
4	Tissue culture.	Lecture Flipped, learning	Short presentation	
5	<u>ALKALOIDS:</u> Introduction, Nomenclature, Classification Physiological significance, Detection, Isolation, and Biosynthesis.	Lecture		
6	<u>Amino alkaloids and Biosynthesis:</u> Ephedrine and pseudoephedrine, cathine and cathinone, mescaline, muscarine, and colchicine	Lecture, Collaborative learning	Case study	
7	<u>Aziridine alkaloids:</u> Mytomicine C. <u>Pyridine alkaloids and Biosynthesis:</u> Nicotine, trigonelline, epibatidine <u>Piperidine alkaloids and Biosynthesis:</u> Coniine, arecoline, lobeline, pelletierine.	Lecture, Problem-solving based learning	Short report	
8	<u>Pyrrolizidine alkaloids:</u> Distribution in the plants and mechanism of hepatotoxicity <u>Tropane alkaloids and Biosynthesis:</u>	Lecture, Problem-solving based	Video-washing report	

	Hyoscyamine and atropine, scopolamine, cocaine.	learning	
9	<u>Quinoline alkaloids and Biosynthesis:</u> Cinchona alkaloids, camptothecin derivatives. <u>Quinolizidine alkaloids and Biosynthesis:</u> Sparteine, lupine, anagryne.	Lecture, Collaborative learning	Homework
10	<u>Isoquinoline alkaloids and Biosynthesis:</u> Berberine and protoberberine. <u>Tetrahydroisoquinoline alkaloids:</u> Emetine and cephaeline.	Lecture, Collaborative learning	Homework
11	MID-TERM EXAM ***** <u>Bisbenzylisoquinoline alkaloids:</u> Tubocurarine, toxiferine. <u>Benzophenanthridine alkaloids and Biosynthesis:</u> Sanguinarine.		
12	<u>Indole alkaloids and Biosynthesis:</u> Physostigmine, ergot alkaloids, vinca alkaloids, and nux-vomica. <u>Imidazole alkaloids:</u> Pilocarpine. <u>Amaryllidaceae alkaloids:</u> Galanthamine.	Lecture, Problem-solving based learning	Case study
13	<u>CARDIAC GLYCOSIDES:</u> Pharmacology and chemistry.	Lecture, Problem-solving-based learning. Video-watching	Case study Short report
14	Digitalis, Strophanthus, squill, oleander	Lecture,	
15	<u>ANTHRAQUINONES:</u> Pharmacology and chemistry	Lecture	
16	Cascara, Rhubarb, Senna, Aloe, Carmine, Hypericin. FINAL EXAM		

Course Contributing to Learner Skill Development

Using Technology
<ul style="list-style-type: none"> Using PowerPoint or any relevant program for preparing presentations. Demonstration of data in various forms as plots, bars, etc., and illustrating them.
Communication Skills
<ul style="list-style-type: none"> Report writing. Teamwork in solving case studies and problems
Application of Concept Learnt
<ul style="list-style-type: none"> The suggestion of medications for various diseases and ailments. Participation in patient reassurance and support of his psychological health by offering advice and solutions. Involvement in the activities of drug discovery.

Assessment Methods and Grade Distribution

Assessment Methods	Grade	Assessment Time (Week No.)	Course Outcomes to be Assessed
Mid Term Exam	30%	11th Week	K1-K5 S1-S4
Term Works*	30%	Continous	K1-K5 S1-S4
Final Exam	40%	16th Week	K1-K5 S1-S4
Total	100%		

* Include quizzes, in-class and class assignments, presentations, reports, videotaped assignment, group, or individual project.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Corresponding Competencies	Learning Method*	Assessment Method**
Knowledge				
K1	Be familiar with the main terminology and definitions in pharmacognosy	C1	Lecture	Short exams with subjective and objective-typed questions.
K2	Demonstrate the principles of the related analytical and scientific techniques.	C1, C6	Lecture, flipped learning	-Short exams with subjective and objective-typed questions. -Video-watching assignment evaluation.
K3	Categorize the main active ingredients from the natural sources (plants, animals, etc.), recognize their chemical structures, and illustrate the structure-activity relationship.	C1, C2	Lecture, Collaborative learning, Problem solving-based learning	-Short exams with subjective and objective-typed questions.
K4	Summarize the main putative pharmacological effects of the studied medicinal plants depending on their phytochemical content.	C1, C2	Lecture, Flipped learning, collaborative learning,	--Short exams with subjective and objective-typed

			Problem solving-based learning.	questions. -Short report-writing. -Homeworks. Presentation
K5	State the main features of the pharmacological profile of the main active ingredients in plants and other natural sources (activity, toxicity, mechanism of action, etc.).	C1, C2	Lecture, Flipped learning, collaborative learning, Problem solving-based learning.	-Case-study solving reports. -Short exams with subjective and objective-typed questions. Short report-writing. -Presentation.
Skills				
S1	Perform some studied analytical techniques (extraction, chromatography, tissue culture, etc.)	C8, C9, C11	Lecture, collaborative learning, problem-solving-based learning, flipped learning.	-Case-study solving reports. -Short exams with subjective and objective-typed questions. Short report-writing. -Presentation. -Plot and graph illustrations. -Video-watching commenting evaluation.
S2	Classify medicinal plants according to their expected biological activities.	C8, C9, C11	Lecture, problem-solving-based learning, flipped learning	-Short exams with subjective and objective-typed questions. Short report-writing. -Presentation. - Short report writing.
S3	Approve and validate medicines as possible treatments, or part of treatment	C8, C9, C11	Lecture, Case study,	-Short exams with

	for diseases.		problem-solving-based learning, flipped learning.	subjective and objective-typed questions. Short report-writing. -Presentation. -Video-watching commenting evaluation. Homeworks. -Simulation scenarios.
S4	Evaluate the possible benefits and risks of the use of medicinal plants in the treatment of diseases and ailments.	C8, C9, C11	Lecture, case-study, flipped learning.	-Short exams with subjective and objective-typed questions. Short report-writing. -Presentation. -Video-watching commenting evaluation. Homeworks. -Simulation scenarios.

*Inclusion of lecture, flipped class, project-based learning, problem-solving learning, collaboration learning.

** Inclusion of quizzes, in-class and out-of-class assignments, presentations, reports, videotaped assignments, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum pass for the course is (50%) and the minimum final mark is (35%).
Missing Exams	<ul style="list-style-type: none"> • Anyone absent from a declared semester exam without a sick or compulsive excuse accepted by the dean of the college that proposes the course, a zero mark shall be placed on that exam and calculated in his final mark. • Anyone absent from a declared semester exam with a sick or compulsive excuse accepted by the dean of the college that proposes the course must submit proof of his excuse within a week from the date of the excuse's disappearance, and in this case, the subject teacher must hold a compensation exam for the student. • Anyone absent from a final exam with a sick excuse or a compulsive excuse accepted by the dean of the college that proposes the material must submit proof of his excuse within three days from the date of holding that exam.
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lecture days (n t) and seven

	lectures (days). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory or compulsive excuse accepted by the dean of the faculty, he is prohibited from taking the final exam and his result in that subject is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college that The article is introduced, it is considered withdrawn from that article, and the provisions of withdrawal shall apply to it.
Academic Integrity	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, intellectual property rights.

Program Learning Outcomes to be Assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Targeted Performance level

Description of Program learning Outcomes Assessment Method

Number	Detailed Description of Assessment

Assessment Rubric of the Program Learning Outcomes

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