PHILADELPHIA UNIVERSITY

Faculty of pharmacy

Department of Pharmaceutical Sciences

First Semester 2016/2017

COURSE SYLLABUS FOR
PHARMACOGNOSY AND PHYTOCHEMSITRY

Course title: Pharmacognosy and Phytochemsitry	**Course code:** 0 510217
Course Level: 2nd year	**Course prerequisite (s) and/or co-requisite (s):** Phytochemistry and Pharmacognosy Laboratory: 510218 prerequisite : Organic chemistry (2) : 511212
Pharmacognosy Lecture Time: Dr. Yousef Abusamra: • **Sun/Tues/Thurs:** 8.10 – 9.00, 10.00 – 11.00 • **Mon. / Wed.:** Doesn't exist	**Number of credit hours:** 3

Academic staff:

Name	Rank	Office No. and location	Office hours	E-mail address
1. Dr. Yousef Abusamra	Assistant professor	**"408"** Faculty of Nursing	**Sun/Tues/Thurs:** 9.00 – 10.00 11.00 – 12.00 **Mon/Wed:** 10.30 – 12.30	yabusamra@philadelphia.edu.jo
2. Dr. Soha Telfah	Assistant professor	**"532"** Faculty of Pharmacy	**Sun/Tues/Thurs:** **Mon/Wed:**	s_telfah@philadelphia.edu.jo

Course module description:

The course is designed to provide the student basic information about pharmacognosy & phytochemistry: nomenclature, taxonomy, monographs, quality control, methods for extraction, characterization, detection of active ingredient in medicinal plants, complementary and alternative medicine (CAM) , pharmacologically active compounds which are obtained from natural origin mainly plant origin, secondary metabolite as alkaloids, cardiac glycosides and cannabinoids .special emphasis will be made on those products used in pharmacy as prescription medicine, controlled drugs or OTC. The chemical structures of the phytochemicals will have a big ration of concern. The student should be able to recognize the category where a certain drug is situated.

Course module objectives:

This course will provide students with the knowledge of:

1- Pharmacognosy including: taxonomy of the official naturally occurring crude drugs, the major official references, The course explains the methods used for the production of secondary metabolites in vitro by plant tissue and cell culture which is widely used these days for production of secondary metabolites
2- The course will provide the biosynthetic pathways for the formation of the above secondary metabolites
3- The knowledge of the mechanism of action and structure activity relationship of these constituents is explained.

4- The therapeutic value and toxicology of these natural constituents is also discussed.

Course / module components Course /module academic calendar:

Week	Basic and support material to be covered
1	**Introduction, definitions: crude drug, advanced crude drug, allopathic medicine, alternative medicine.**
2	**Classification, indigenous and cultivated plants, factors involved in production of plants, official drugs, monographs.**
3	**Quality control**
4	**Tissue culture.**
5	**Anthraquinones**
6 First examination	**Cardiac glycosides:** Digitalis, strophanthus, squill, oleander
7	**Alkaloids:** Introduction Nomenclature, Classification Physiological significance, Detection, isolation, and Biosynthesis.
8	**Amino alkaloids and Biosynthesis:** Ephedrine and pseudo ephedrine, cathine and cathinone, mescaline, muscarine, and colchicine
9	**Pyridine alkaloids and Biosynthesis :** Nicotine, trigonelline, epibatidine **Piperdine alkaloids and Biosythesis :** Coniine, arecoline, lobeline, pelletierine.
10	**Pyrrolizidine alkaloids:** Distribution in the plants and mechanism of hepatotoxicity **Tropane alkaloids and Biosynthesis:** Hyoscyamine and atropine, scopolamine, cocaine.
11 Second examination	**Quinoline alkaloids and Biosynthesis:** Cinchona alkaloids, campetothecine
12	**Quinolizidine alkaloids and Biosynthesis:** Sparteine, lupine, anagyrine **Isoquinoline alkaloids and Biosynthesis:** Berberine and protoberine
13	**Tetrahydroisoquinoline alkaloids:** Emetine and cephaline.
14	**Bisbenzylisoquinoline alkaloids:** Tubocurarine. **Benzophenanthridine alkaloids and Biosynthesis :** Sanguinarine.

	Indole alkaloids and Biosynthesis: Physostigmine, psilocin and psilocybin.
15	**Terpinoid indole alkaloids and Biosynthesis:** Ergot alkaloids, vinca rosea alkaloids, strychnine and brucine from Strychnos nux-vomica. **Imidazole alkaloids:** Pilocarpine from, Pilocarpus species.
16 **Final examination**	**Diterpene alkaloids:** Taxol from Taxus baccata, aconitine from *Aconitum napellus*.

Support material (s) (vcs, acs, etc).

- **Study guide (s) (if applicable)**

- **Homework and laboratory guide (s) if (applicable).**

Teaching methods:

- Lectures, discussion groups, tutorials, problem solving, debates, etc.

Assessment instruments:

- **Short reports and/ or presentations, and/ or Short research projects.**
- **Quizzes.**
- **Homework.**
- **Final exam.**

Allocation of marks	
Assessment instruments	**Mark**
First examination	20
Second examination	20
Final examination	40
Reports, research projects, Quizzes, Home, works, Projects	20
Total	**100**

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module references:

Text Books:

1- . Pharmacognosy Trease and Evans. 16th Edition, 2009, Published by ELBS, London **ISBN 978-0702029332**

2. Drugs of Natural Origin, 6th edition 2010 Gunnar Samuelsson

Swedish Pharmaceutical Press , **ISBN** 9186 4813

Reference books:

1. Chemistry of natural products vol.2 Prof. Hazem A. Kadry Prof. Makboul A. Makboul Dr Nedhal Al-Douri

Dar Alhamed publishing and distribution

P O Box. 1147

Jordan Tel: 5231081

Fax:009626- 5231081 2.

2. 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

3. Pharmacognosy , phytochemistry, Medicinal Plants. 2nd edition Jean Bruneton: Springer Verlag, 2008, **ISBN:** 1898298130, 2743000287

Journals:

1-Phytochemistry
2-Natural Products Research
3-Journal of Phytochemistry
4-Phytoterapia
5-Pharmaceutical Biology

Websites:

1. **Phytochemical** and Ethnobotanical Databases
1. **Phytochemistry** | Research Gate