Course Specifications

General Information

Course name	Phytochemistry (1)
Course number	PHCG3208
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	2
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - 1- Current updated information of the biosynthetic pathways of the acetate malonate and shikimic acid pathways
2 - 2-Origin and isolation / identification methods of bioactive substances belonging to these pathways
3 - 3-Therapeutic and toxicological activities of these substances
4 - 4- Therapeutic application in pharmacy & home remedies

Intended Learning Outcomes

Knowledge and Understanding	* A1) To know the potentially useful medicinal plants of these pathways * A2) To know the importance and value of ethno pharmacology in drug discovery * A3) To study the biosynthesis of secondary metabolites and major biosynthetic pathways * A4) To know the Latin and bilingual (English/Arabic) common names of potentially used medicinal plants * A5) To know examples of commonly misused natural drugs and their semisynthetic/synthetic derivatives /analogues * A6) To use different references to collect the necessary information * D2) Provision of advice on the limitations and precautions of commonly used herbal medicines especially by pregnant and lactating mothers
Intellectual Skills	* B1) To know and to correlate the mechanisms, concepts and principles of biosynthetic pathways in plants * B2) To expand the horizon of the organic chemistry * B3) To apply the fundamental principles of organic chemistry and biochemistry for construction of natural products * B4) To predict the physico-chemical properties of phenols * B5) To evaluate the plant/plant, plant/drug and plant/nutrient interactions based on the secondary plant constituents
Professional Skills	* C1) Ethnobotanical and ethnopharmacological aspects of plant drugs * C2) To acquire updated information on old known medicinal plants * C3) To be familiar with the supposed actions and uses of herbal ingredients whether or not these have been substantiated by animal and human studies * C4) Chemical, biological and therapeutic activities of plant constituents biosynthesized in the mentioned pathways
General Skill	* D1) Provision of advice on the use of medicinal plants as natural remedies * D3) Provision of advice on the activities and toxicities of important addictive drugs of plant origin

Course Contents

1 - Evaluation of Phytochemistry
2 - Introduction & Definitions
3 - Shikimates: Shikimic acid pathway, chemistry
4 - Phenols & Phenolic acids: Properties & Extraction, Pharmacological properties
5 - Phenols containing drugs: Uva-ursi, Cynara, Rosemarinus, Tolu balsam
6 - Coumarins: chemistry, classification, extraction & pharmacological properties
7 - Coumarin containing drugs: Hippocastanum, Ammi visnagae, Angelica
8 - Lignans & Neolignans: chemistry & pharmacology.
9 - Podophylum, Silybum, Schizandra
10 - Shikimate: Phynylpropane chain: Turmeric, Ginger, Kava
11 - Flavonoids: occurrence & classification
12 - Flavonoids: Chemistry & Biosynthesis
13 - Flavonoids: Properties, extraction & pharmacology
14 - citroflavonoids, Rutin, Isoflavonoids: Soya
15 - Ginkgo biloba, Passion, Thyme, Yarrow
16 - Anthocyanins: Properties, extraction & pharmacology.
17 - Anthocyanins containing drugs: Blueberry, Black currant, vitis venifera
18 - Tannins: Generalities & classification
19 - Tannins: chemistry, properties & Pharmacology.
20 - Tannins containing drugs: Quercus, Hamamelis, Alchemilla vulgaris.
21 - Crataegus, blackberry
22 - Polyketide: Walnut
23 - Quinones: chemistry, properties, extraction & pharmacology
24 - Quinones containing drugs: Senna, Cascara, Aloe, Rheum
25 - Hypericum,
26 - ,Orcinols & Phloroglucinols: Cannabis, Hops

Teaching and Learning Methods

1 - 1) Lectures: 2 credit hours/week
2 - 2) Tutorials
3 - 3) Case study
4 - Assignments & reports

Teaching and Learning Methods for the Disabled Students

1 - Depend on the kind of disability the teacher respectively method of teaching will determine.

Students Assessment

Assessment Method	TIME	MARKS
Midterm Exam	After 8 weeks	30%
Oral / Discussion	After 6 weeks	8%
Assignments	After 5 weeks	5%
Reports	At the end of semester	7%
Final Exam	After 16 weeks	50%

Books and References

Course note	Dr. Mazen Awni El-Sakka
Essential books	Medicinal Natural Products (P.M. Dewick)
Recommended books	Pharmacognosy, Phytochemistry & Medicinal Plants (by Jean Bruneton) 3rd ed 2008