

Course Syllabus

وصف المقرر الدراسي

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1. College	Pharmacy	١. المؤسسة التعليمية
2. Department	Pharmacognosy & medicinal plant	٢. القسم العلمي / المركز
3. Course name /code	Pharmacognosy II	٣. اسم / رمز المقرر
4. Delivery format (on campus- hybrid – online)	online	٤. أشكال الحضور المتاحة
5. Semester – year	3 rd Class, 1 st Semester	٥. الفصل / السنة
6. Total credit hours	Theory 2 hours Practical 2 hours	٦. عدد الساعات الدراسية (الكلي)
7. Date this document is prepared	2024	٧. تاريخ إعداد هذا الوصف
8. Aims of the course	This course is intended to study chemistry of natural product namely glycosides, volatile oils, fixed oils, tannins and resins. The course includes chemistry, pharmacology, uses of these constituents and plants containing these constituents.	٨. أهداف المقرر

Course outcomes and learning methods applied

مخرجات المقرر وطرائق التعليم والتعلم والتقييم

a. Knowledge

الاهداف المعرفية

Phytochemistry is the study of phytochemicals, which are chemicals derived from natural sources (plants, animals and micro-organisms) . Phytochemists strive to describe the structures of the large number of secondary metabolites , the functions of these compounds in human , and the biosynthesis of these compounds.

Phytochemistry can be considered a subfield of botany or chemistry. Activities can be led in botanical gardens or in the wild with the aid of ethnobotany. Phytochemical studies directed toward human (i.e. drug discovery) use may fall under the discipline of Pharmacognosy, whereas phytochemical studies focused on the ecological functions and evolution of phytochemicals likely fall under the discipline of chemical ecology

Learning and teaching methods

طرائق التعليم والتعلم

They are different methods of learning or understanding new information, the way a person takes in, understand, expresses and remembers information. There are 4 predominant learning styles: Visual, Auditory, Read/Write, and Kinaesthetic

- appropriate handouts which provide students with complex diagrams or difficult or critical text.

independent learning tasks;

- essays, dissertations and projects;
- library searches;
- portfolios;
- posters;
- videos.

b. Skills

الاهداف المهاراتية

Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to demonstrate as a result of a completing a course so study the, so one of the most important skills in Phytochemistry is learning many Techniques commonly used in the field of Phytochemistry like extraction, isolation, and structural elucidation (MS,1D and 2D NMR) of natural products, as well as various chromatography techniques (PC, TLC, HPLC, and LC-MS).

c. Attitude

الاهداف الوجدانية والقيمية

Phytochemical investigations of medicinal, aromatic, endemic, in vitro cultivated and unexplored plants in order to detect new biologically active secondary metabolites and search for chemotaxonomic as well as structure-biological activity relationships

Application of modern methods and techniques for extraction of biologically active compounds from medicinal plants

Development of methods for quantitative analysis of biologically active compounds in medicinal plants.

Preparation of essential oils from aromatic and medicinal plants, characterization of their main components and searching for chemotaxonomic and other relations

d. Other skills acquired through the course (related to personal development and employment) المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقبالية التوظيف والتطور الشخصي)

Medical students have consistently expressed interest in learning about alternative healing modalities, especially herbal and natural products. To fill this void in medical education at our institution, a novel elective was developed and implemented for fourth year medical students. This herbal/natural product course uses guest lecturers, classroom presentations, and active learning mechanisms that include experiential rotations, case-based learning, and team-based learning to increase student knowledge of herbal/natural product safety and efficacy.

Learning and teaching method:

- **Problem-Solving Method**

This approach is used mainly at the time of necessity. The issue should be presented to the pupils in plain language and in accordance with their comprehension and prior learning. With the assistance of the teacher, the students will be expected to analyse and synthesise the issue and attempt to identify a solution.

- Students get the ability to solve their own challenges.
- They improve their ability to make observations and make arguments.

• **Laboratory Method**

It is also referred to as the experimental approach. It takes more than just lecturing to make science instruction meaningful, efficient, engaging, and understandable. You also need to provide students with the chance to practise what they are learning. Students are provided all the tools they need in the lab, together with the appropriate instruments, to do their experiments on their own initiative and with their own initiative, then they conduct the experiment, record the observation, and deduce their conclusion. Where necessary, the teacher leads the class.

- Students gain practical knowledge and competence using scientific tools and equipment.
- It aids in the formation of thinking, logical reasoning, and problem-solving habits.
- It is completely a student's-centred approach
- It supports the development of a more scientific mindset, attitude, and disposition.

It opens the door for the investigation, testing, and confirmation of scientific truths and principles.

• **Observation Method**

In this method, students learn new things by acquiring knowledge through observing. Students might be able to recognise nature in their surroundings through observations. Careful observation and listening are required during consideration.

- The students efficiently and clearly observe the similarities and differences between objects.
- They can develop confidence, self-reliance, and self-dependence.

• **Project Method**

This method involves discovery, and investigation to find out something, which was unknown to the students. Here, the student has the authority to choose which experiments are required and how he would do them. The student will behave scientifically. With this approach, the students are given a challenge and asked to come up with a solution.

- They learn how to be patient, content, and satisfied.
- They'll be able to establish a connection between the numerous topics.

9. Assessments methods

A wide range of assessment methods currently available include essay questions, patient management problems, modified essay questions (MEQs) checklists, OSCE, student projects, Constructed Response Questions (CRQs), MCQs, Critical reading papers, rating scales, extended

matching items, tutor reports, portfolios, short case assessment and long case assessment, log book, trainer's report, audit, simulated patient surgeries, video assessment, simulators, self assessment, peer assessment and standardized patients.

10.Course structure					
week	hours	Learning outcomes	Subject/chapter	Learning methods	Assessment methods
1st	2	Introduction: General biosynthesis pathways of secondary metabolites.	Biosynthesis	Lecture	Quiz
2nd	2	Acetate and shikimic acid pathway.	Biosynthesis	Lecture using different methods	Discussion
3-8	2	Glycosides: Biosynthesis, physical and chemical properties; cardiac glycosides; saponin glycosides; anthraquinone glycosides; flavonoid glycosides; cyanophore lycosides.	Phytochemistry of glycosides	Lecture using different methods	Oral quiz
9	2	Glycosides: Isothiocyanate glycosides; aldehyde glycosides	Phytochemistry of glycosides	Lecture using different methods	Oral quiz
10-12	2	Volatile oils: Introduction; chemistry of volatile oils;	Phytochemistry of volatile oils	Lecture using different methods	Oral quiz
13	2	Lipids: fixed oils and .waxes.	Phytochemistry of fixed oils	Lecture using different methods	Oral quiz
14-15	2	Resins and resin combination; tannins.	Phytochemistry of tannins & Resin	Lecture using different methods	Oral quiz

11. Infrastructure بنية المقرر			
1. Required text books	<ul style="list-style-type: none"> • Pharmacognosy by Tyler, 9th edition.. • Trease & Evans Pharmacognosy 16th edition 2009 • Fundamentals of pharmacognosy and phytotherapy by Michael Heinrich....second edition • 		١- الكتب المقررة المطلوبة
2. Fundamental readings Text book of Pharmacognosy by C. K. Kokate, S. B. Gokhale, A.P. Purohit, Nirali Prakashan Text book of Pharmacognosy by C.S. Shah and J. S. Qadry, CBS Publishers & Distributors Pvt. Ltd. Text Book of Pharmacognosy by T. E. Wallis. CBS Publishers & Distributors Pvt. Ltd.			2. المراجع الرئيسية (المصادر)
a. Books and other recommended reading Study of crude drugs by M. A. Iyengar, Manipal Press Ltd, Manipal Powder crude drugs by M. A. Iyengar, Manipal Press Ltd, Manipal Anatomy of crude drugs by M. A. Iyengar, Manipal Press Ltd, Manipal Augmented Text Book of Homeopathic Pharmacy by Dr. D D Banerjee, B Jain Publishers (P) Ltd			آ الكتب والمراجع التي يوصى بها (المجلات العلمية، التقارير،)

<p>Journals</p> <ul style="list-style-type: none"> • <u>Chemistry of Natural Compounds</u> • <u>Journal of Natural Products</u> • <u>Natural Product Reports</u> • <u>Natural Product Research</u> 		
<p>b. Electronic resources From authenticated online sources like Scopus, Science Direct. Elsevier, PubMed and Web of Science</p>		<p>بإ المراجع الإلكترونية ،مواقع الإنترنت ،.....</p>
<p>1- Course development plan المقرر الدراسي</p> <p>اضافة مادة Phytotherapy للمرحلة الرابعة او الخامسة وبواقع كورس واحد</p> <p>دراسة الخصائص الطبية للمنتجات الطبيعية، والذي يساعد في اكتشاف أدوية وفهم كيفية عمل المكملات الغذائية.</p> <p>استخدام الطرق التحليلية لمراقبة جودة المنتجات الطبيعية في السوق.</p> <p>دراسة سبب استخدام الثقافات القديمة للعلاجات الطبيعية.</p> <p>تحليل المنتجات تحت المجهر، وتحديد أنواع المنتجات الطبيعية الطبية.</p>		<p>خطة تطوير</p>