Department of Environmental Science and Health

College of Science

University of Salahaddin

Subject: Medicinal Plants

Course Book: 4th Year/ 1st Semester

Lecturer's name: Dr. Badr QaderSurchi

Mrs. Rezan Sabah Ahmed

Academic Year: 2023/2024

Course Book

1. Course name	**Medicinal Plants**
2. Lecturer in charge	**Dr Badr Qader Surchi** **Rezan Sabah Ahmed**
3. Department/ College	Department of Environmental Science and Health College of Science
4. Contact	e-mail: badr.surchi@su.edu.krd badirbotany@gmail.com Mob. Badr: 07504564589 e-mail:rezan.s.ahmed@su.edu.krd Mob. Rezan: 07503883358
5. Time (in hours) per week	Theory 2hrs./week Practical 2hrs/week
6. Course code	
7. Teacher's academic	Ph.D. – Assistant Professor MSc Assistant lecturer
8. Keywords	Medicinal Plants – Secondary Metabolites– Health disorders - Complementary and Alternative Medicine
9. Teacher's academic profile	**Dr Badr** • Date of Birth: 1 July 1973 • Place of Birth: Erbil • Nationality: Iraqi • Marital status: Married • Sex: Male **Education**: • B.Sc.: Biology/ College of Science (1997-1998)/ University of Salahaddin/ Kurdistan Region/Iraq. • M.Sc.: Plant Biology/ Biology Department/ College of Science (2006)/ University of Salahaddin/ Kurdistan Region/ Iraq. • Ph.D. Medicinal plant (2018)/Bioengineering and Sciences Department/ Natural and Applied Sciences Institute/Kahramanmaraş sütçü imam University (Turkey). **Mrs. Rezan Sabah Ahmed** I graduated from Salahaddin University, Department of Environmental Health and Science, Science College, in 2013. In 2017, I finished my M.Sc. degree in environmental microbiology.

10. Course overview:

Due to consumers' growing use of herbs and dietary supplements, students need basic knowledge of this topic for their professional practices. The course on medicinal plants is being taught at the Department of Environmental Science and Health College of the Science University of Salahaddin. This course is designed to provide an appreciation for the contribution of plants to traditional (alternative) and modern medicines worldwide. To achieve this, we will examine historical and cultural aspects of plants and medicine, therapeutic uses of plants, illnesses caused by some plants and their toxins to humans and animals, psychoactive plants, beneficial effects of some food plants, the contribution of medicinal plants to alternative and modern medicines, some medicinalplants of the Kurdistan region, and the future of medicinal plants.

11. Course objective:

- To understand the basic principles of Medicinal plants.
- To provide an overview of Complementary and Alternative Medicine (CAM) therapies
- To understand the mechanisms of action and the critical compounds
- To understand what the best ways are of using herbs and alternative medicine
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12. Student's obligation

- Attend all lectures/ teaching halls.
- Student engagements and activities will be monitored.
- Students should prepare for quizzes in each session.
- Show respect and dress appropriately.
- Respect fellow students and their ideas
- Mobile phones should be switched off or kept in silent mode.
- Performing the official tests/ exams
- If a student misses more than 5% of the total hours during the course, they will be informed by the department for an initial warning, and if reached 10% or more, will be reported to be expelled from thatcourse in the academic year.
- Provide reports and give presentations.

13. Forms of teaching

1- Lecture presentation by lecturer using data show or board or both2- Brainstorming and Group discussion

2- Direct questions

3- Use of relevant pictures/ educational films

4- Lecture slides will be distributed in PowerPoint/ PDF format to be printed or in a Word document.

5- A digital copy of each lecture will be given to all students weekly to obtain their hard copy before the lecture day. All the covered topics will be presented as PowerPoint presentations.

14. Assessment scheme:

The grade scheme is as follows:

Midterm: 50%

Midterm Theory Exam(s): 15%

Midterm Exam %10

Activities (Quizzes, Seminars, Reports, Assignments) %5

Midterm Practical Exam 25%

Activities (Seminars, Labs, or Fields) %6

Weekly reports (Results, Discussion, References) %8

Quizzes %6

Mid-term exams %15

Final examination (Theory Exam) 50%

Activities during the course include quizzes, seminar presentations, daily attendance, active participation, reports, and posters, ...

The first Midterm exam will be around 4^{th} to 5^{th} Weeks.

Final semester exams will be at the end of the course.

15- Student learning outcome:

After finishing the course, students will be able to:

Define medicinal plants.

Determine evidence for plant medicine therapies for variousdisease states.

Evaluate existing evidence that supports (or does not support) plant medicine therapies forvarious disease states.

Review the current research on plant medicine efficacy.

Review recent research about herb's safety for human consumption.

Discuss current regulations of plant medicine.

Develop answers to herbs and alternative medicine-related questions posed by patients orother health care practitioners.

health disorders and how to treat them with medicinal plants.

16- Course Reading List and References:

Ben-Erik van Wyk. Medicinal Plants of the World. 2017.

Linda, RN. And Karl L. Larson. Consumer Health and Integrative Medicine. ISBN 9781284144123. Printed in the United States of America, 2020.

Andrew Chevallier. Encyclopaedia of Herbal Medicine. ISBN: 9781465449818. DorlingKindersley, 2016

17. The Theoretical Topics:

W	Theoretical Topics	hours	Date
1	Explaining the Coursebook and Plant and Environment	2	
2	History and importance of medicinal plants	2	
3	Plant parts used, dosage forms and plant route of administration	2	
4	Plant Primary metabolites	2	
5	Plant Secondary metabolites		
6	Modes of action medicinal plants	2	
7	The nutritional value of medicinal plants	2	
8	**1st Midterm Exam**	1	
9	Ethnobotany and Traditional systems of medicinal plants	2	
10	Alternative Medicine	2	
11	Medicinal Plants and Human Health	2	
12	Health disorders and how to treat them with plant medicine and herbs 1	2	
13	Health disorders and how to treat them with medicinal plants 2	2	
14	General Recommendations	2	
15	**2nd Midterm Exam**	1	

18. Practical Topics

W	Practical Topics	hours	Date
1	Introduction	2	
2	Survey and plant collection	2	
3	Plant identification (Identification and classification of plants and seeds using herbarium voucher samples).	2	
4	Root and Rhizome medicinal plants	2	
5	Stem and leaf medicinal plants	2	
6	Flower, fruit and seed medicinal plants	2	
7	**1st Midterm Exam**	1	
8	Drying, cutting, and powdering process	2	
9	Crud extraction	2	
10	Oil extraction	2	
11	The percentage yield, Determination of total condensed tannin and Determination of antioxidant activity	2	
12	Phytochemicals analysis in solvents extraction of plants by Liquid chromatography mass-spectrometry LC-MS/MS	2	
13	Phytochemicals analysis in solvents extraction of plants by Gas chromatography mass-spectrometry GC-MS/MS	1	
14	**2nd Midterm Exam**		

19. Examinations:

- Compositional 2. Definitions, 3. True or false type of exams 4. Multiple choices, 5- Fill the blanks,
- Matching between two groups, 7- Select the most appropriate words or statements.
- Why do we study medicinal plants?
- Write the definition only (4) of the following terms or statements:

Astringent Herbs, Nutritive Herbs, Natural products, Antimicrobials, True alkaloids

- What is the difference between Primary Metabolites and Secondary Metabolites
- Count, for example, all plant parts used to treat illnesses.

Compositional questions: In this type of exam, the questions usually start with Explain how, What arethe reasons for…?, Why…?, How….? With their typical answers

Examples should be provided.

Q: Fill in the following blanks with scientific words:

1- Green plants absorb light in their leaves and convert it to energy by photosynthesis.

a----------, **b**---------- and **c** ---------- can affect the rate of photosynthesis.

2- Medicinal plants are classified in many ways. Some of them are **according to**: -

a. ----------. **b** ----------

c---------- **d**- ----------

3- Different parts of a plant (**a** ----------, **b** ----------, **c** ----------, d----------

or **e**----------) often contain quite different active ingredients, so that one part may be **f**---------- and another one quite **g**----------.

4- *Rosmarinus officinalis* L. Therapeutic category **a**----------, **b** ----------, **c**----------.

5- Primary metabolites are the compounds that are directly involved in the metabolic activities of an organism essential for its **a** ----------, **b** ----------, and **c** ----------.

Q: Write ten dosage forms and types of medicinal plant uses.

Q: Why are plants very important?

20. Extra notes:

For the practical session, students need to bring their lab coats.

We must have some scientific trips to drug factories/ or drug companies to see the manufacturingprocess and hygienic conditions.

The planned schedule is flexible and may change depending on local circumstances, including unexpected holidays.

21. Peer review

This course book must be reviewed and signed by a peer. The peer approves the contents of your course book by writing a few sentences in this section.

(A peer is a person who has enough knowledge about the subject you are teaching; they must be a professor, assistant professor, lecturer, or an expert in your subject field).