

## Module (Course Syllabus) Catalogue

### 2023-2024

College/ Institute	Khabat Technical Institute	
Department	Medicinal plant production	
Module Name	Processing Technology of Medicinal plants	
Module Code	PTM403	
Semester	5	
Credits	8	
Module type	Requisite <input checked="" type="checkbox"/>	Core <input type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours	5	
Weekly hours (Theory)	(2) hr Class	(2) Total hrs. Workload
Weekly hours (Practical)	(3) hr Class	(4.5) Total hrs. Workload
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Lecturer (Practical)	Nahla Jawher Kareem Karwan Talaat Mohammed	
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## Course Book

<b>Course Description</b>	The lectures include most of the treatments that are performed on medicinal plants before using them. Starting from planting and caring for it until the time of harvesting. The lectures also include how to extract active substances from plants and their types
<b>Course objectives</b>	Knowledge of good extraction methods for medicinal plants Appropriate methods for storing them in the laboratory. How to benefit from it How to plant and care for it during growth.
<b>Student's obligation</b>	1- Seminar 2- Presentation 3- Homework 4- Group Report 5- Quiz
<b>Required Learning Materials</b>	The lectures are presented in classes to students in different ways including data show, PowerPoint, manual papers and black and white boards. However, they are presented to student via lecturers' portal in university's website.
<b>Assessment scheme</b>	25% Mid Term (Theory and practical) 6% Quiz 29% Assignment (report, paper, homework, seminar.) 20% final practical 20% final theory
<b>Specific learning outcome:</b>	1 -The student learns how to grow and care for medicinal plants. 2 - How to harvest parts of medicinal plants. 3 - The student learns methods of extracting medicinal plants using chemical solvents. 4 - Knowledge of chemicals in medicinal plants. 5 - Identify some medicinal plants and benefit from them.

<b>Course References:</b>	<p>-Rajawi, Ali. Technology of medicinal and aromatic plants, basics of production and medicinal plants. 1992. Anglo-Egyptian Library.</p> <p>-Al-Dajwi, Ali. Encyclopedia of medicinal and aromatic plants - Book Two. 1996. Madbouly Library. Egypt.</p> <p>-Heikal, Muhammad Sayyid and Abdullah Abdul Razzaq Omar, medicinal and aromatic plants, their chemistry, production, and benefits. 2000. Knowledge facility.</p> <p>-Barsim, Bassem Kazem. Medicinal plants. 2014. Dar Al-Radwan for Publishing and Distribution.</p>	
<b>Course topics (Theory)</b>	<b>Week</b>	<b>Learning Outcome</b>
Methods of producing medicinal plants, growing medicinal plants, methods of propagation Extraction techniques of medicinal plants	1	
Collecting and preparing medicinal plants (collecting flowers, leaves, peels, roots, seeds, fruits)	2	
Medicinal plants are stored after drying	3	
1 -Distillation extraction (with water, steam, water and steam)	4	
2 -Extraction with Soxhlet (water, alcohol)	5	
3 -Extraction with hot and cold water	6	
4 -Extraction by boiling	7	
5 -Extraction by fermentation	8	
6 -The opposite current	9	
7 -Microwave extraction	10	
8 -Ultrasonic extraction	11	
Examples of medicinal plants	12	
<b>Practical Topics</b>	<b>Week</b>	<b>Learning Outcome</b>
Tools and equipment used in plant material extraction laboratories	1	
Collection and processing of medicinal plants	2	
Medicinal plants are stored after drying in lab.	3	
1 -Distillation extraction (with water, steam, water and steam)	4	



2 -Extraction with Soxhlet (water, alcohol)	5	
3 -Extraction with hot and cold water	6	
4 -Extraction by boiling	7	
5 -Extraction by fermentation	8	
6 -The opposite current	9	
7 -Microwave extraction	10	
8 -Ultrasonic extraction	11	
Examples of medicinal plants	12	

**Questions**

Q- Define the medicinal plant.

Q-What is the importance of medicinal plants?

Q-How are medicinal plants collected according to their parts?

Q-What are the ways to preserve medicinal plants after drying them?

Q-Number of toxic effects of plant extracts.

Q-What are the active ingredients in medical plants?

Q-List the advantages and disadvantages of the Soxhlet extraction method

Q-Give five examples of medicinal plants found in the home.

Q-How is extraction done by boiling?

Q-Extraction is known as distillation. Then how many types?

Q/How many methods of vegetative propagation are there? and define only one type?

Q /How many medicinal plants are divided according to morphological division (according to the part used)?



Q/ Medicinal plants can be divided into four categories, count them?

Q / How many points should be taken into consideration while collecting medicinal plants?

Q/ What are the biological factors that affect the stored medicinal plants? count and define them.

Q/ What is fumigation (Evaporation process) and why is it used?

Q/ What is vermin?

Q/ Fill in the following blanks:

1- The division of Pharmacological (drug) medicinal plants includes..... , ..... , ..... , .....

2- Methods of producing medicinal plants are divided into three methods ..... , ..... , .....

3- The appropriate time (the right time) to harvest medicinal plants can be known by.....

4- Physiological factors affecting the stored medicinal plants are....., ....., .....

5- In trade, there are no containers that are impermeable to air and moisture, so....., ....., ..... are used.

Q/ Give reasons for each of the following:

1-The flowers are often collected in the early morning.

2-Leaves are collected before the flowers open or the fruits ripen.

3-Do not keep plant extracts for more than one year.

4-Collecting the bark are often postponed (delayed) until the beginning of the spring.

5-After collecting the medicinal plants, they are dried in the shade.

6-Do not use iron containers to prepare or store essential oils.

7-Do not use the boiling extraction method to extract essential oils.

8-After drying, medicinal plants should not be exposed to air.

Q /Fill in the following blanks:

1-The large roots are often cut into small pieces before \_\_\_\_\_

2-The flowers are usually collected when they are \_\_\_\_\_

3-After collecting and washing the leaves, they are hung \_\_\_\_\_ to dry and spread in the \_\_\_\_\_

4-Homemade extracts can be stored for a period of \_\_\_\_\_

5-Essential oils can be extracted with a device \_\_\_\_\_

6-The appropriate humidity level for storing medicinal plants \_\_\_\_\_

7-The appropriate temperature for growing medicinal plants \_\_\_\_\_

8-The tea extraction ( hot water) method is used to extract the active substances from plant parts such as \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

9- Hot water extraction method is also called \_\_\_\_\_

Q Count the drying methods and define one of them.

Q Count (Ten) of the tools used in medicinal plant processing laboratories.

Q Count the ways to use plant extracts? Only ten

Q Count the physical and chemical factors that affect the storage of medicinal plants?

What laboratory work did you do while collecting rosemary leaves ( Lab 1 and Lab 2)?

What are the advantages of the Soxhlet device?

What are the problems with the Soxhlet device?

What is the laboratory work of the steam distillation device?

What is the laboratory work of the (Maceration) cold water extraction method?

What is the laboratory work of the (Digestion) hot water extraction method?

What is the laboratory work of the (Infusion) hot water extraction method?

What is the laboratory work of the (Decoction) boiling water extraction method?

count the ways to use plant extracts? Only ten

count the physical and chemical factors that affect the storage of medicinal plants?

**Extra notes:**

**External Evaluator**