

## Module (Course Syllabus) Catalogue 2022-2023

College/ Institute	Khabat Technical Institute	
Department	Medicinal Plants Production - Evening	
Module Name	Phytochemistry	
Module Code	PHC203	
Degree	Technical Diploma <input checked="" type="checkbox"/>	Bachelor <input type="checkbox"/> High Diploma <input type="checkbox"/> Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	Second	
Qualification	Master	
Scientific Title	Lecturer	
ECTS (Credits)	7	
Module type	Prerequisite <input type="checkbox"/> Core <input checked="" type="checkbox"/>	Assist. <input type="checkbox"/>
Weekly hours		
Weekly hours (Theory)	(2) hr Class	(2) Total hrs Workload
Weekly hours (Practical)	(3) hr Class	(4.5) Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Bilal Ibrahim Muhammed	
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Lecturer (Practical)	Bilal Ibrahim Muhammed Zian Hamid Ahmed	
E-Mail & Mobile NO.	<a href="mailto:bilal.muhammed@epu.edu.iq">bilal.muhammed@epu.edu.iq</a> <a href="mailto:zhyan.ahmed@epu.edu.iq">zhyan.ahmed@epu.edu.iq</a>	07504699939 07504560299
Websites	<a href="https://epuit.net/cbook/portal/login.php">https://epuit.net/cbook/portal/login.php</a>	

# Course Book

<b>Course Description</b>	<p>The student will investigate the fundamental concepts of phytochemistry from a theoretical approach and participate in a laboratory program that demonstrates this theory. The course is for students studying agriculture.</p>
<b>Course objectives</b>	<p>A basic course introduction to chemical structural properties in medical plants, chemical binding, and states of matter, i.e., carbohydrate, lipid and protein. Also, to familiarize the student with the basic minerals, vitamin and enzymes, also laboratory techniques and scientific thinking.</p>
<b>Student's obligation</b>	<p>Students are asked to do mandatory the following duties during the 12 weeks of the semester:</p> <ol style="list-style-type: none"> <li>1- Quiz.</li> <li>2- Weekly practical report.</li> <li>3- Homework.</li> <li>4- Seminars.</li> <li>5- Semester report.</li> <li>6- Lab. activity.</li> </ol>
<b>Required Learning Materials</b>	<p>Several materials and instruments are required in learning this unit, including:</p> <ol style="list-style-type: none"> <li>1-Chemicals (Salts, acids, bases and solvents).</li> <li>2-pH meter.</li> <li>3- EC meter.</li> <li>4-Soxhlet.</li> </ol>
<b>Specific learning outcome:</b>	<ol style="list-style-type: none"> <li>1- In this course students will apply standard phytochemical tests to establish the chemical identity and evaluate the pharmaceutical potential of medicinal plant products.</li> <li>2- Students will be enabled to perform standardization and quality assessment of natural products of plant origin.</li> <li>3- Students will learn techniques of extraction, separation and isolation of plant constituents</li> </ol>

**Course References:**

- 1- Walton NJ, Mayer MJ, Narbad A. Molecules of Interest: Vanillin. Phytochemistry, 2003.
- 2- Harborne JB. An overview of antinutritional factors in higher plants. In: Secondary plants products. Antinutritional and beneficial actions in animal feeding Caygill JC and Mueller-Harvey I, eds. Nottingham Univ Press, UK, 1999.
- 3- Hasler CM, Blumberg JB. Symposium on Phytochemicals: Biochemistry and Physiology. Journal of Nutrition 1999.
- 4- Hamburger M, Hostettmann K. Bioactivity in Plants: The Link between Phytochemistry and Medicine. Phytochemistry, 1991.
- 5- Wang, S.; Shen, P.; Zhou, J.; Lu, Y. Diet Phytochemicals and Cutaneous Carcinoma Chemoprevention: A Review. Pharmacol. Res. 2017,

Course topics (Theory)	Week	Learning Outcome
Introduction to phytochemistry	1	
Classification of Phytochemicals	2	
Carbohydrates	3	
Lipids	4	
Amino acids and Protein	5	
Terpenoids and Essential oil	6	
Phenolics	7	
Carotenoids	8	
Steroids	9	

<b>Alkaloids</b>	<b>10</b>	
<b>Anthocyanins</b>	<b>11</b>	
<b>Antibiotics</b>	<b>12</b>	
<b>Practical Topics</b>	<b>Week</b>	<b>Learning Outcome</b>
<b>Photosynthesis process</b>	<b>1</b>	
<b>Glycolysis process</b>	<b>2</b>	
<b>Structure of Carbohydrates</b>	<b>3</b>	
<b>Structure of Lipids</b>	<b>4</b>	
<b>Structure of Amino acids and Protein</b>	<b>5</b>	
<b>Classification of Terpenoids</b>	<b>6</b>	
<b>Classification of Phenolics</b>	<b>7</b>	
<b>Structure of Carotenoids</b>	<b>8</b>	
<b>Structure of Steroids</b>	<b>9</b>	
<b>Classification of Alkaloids</b>	<b>10</b>	
<b>Functional of Anthocyanin's</b>	<b>11</b>	
<b>Functional of Antibiotics</b>	<b>12</b>	

## Questions Example Design

Q1/ Define the steroid, phenolic lipid and terpenoids .

Q2/ What are 10 steps of Glycolysis process?

Q3/ Write the different between Alkaloid and Anthocyanin.

Q4/ Why is it important to know the Antibiotics?

Q5/ Write the classification of carotenes.

### Extra notes:

### External Evaluator: