

# PHYTOCHEMISTRY

<b>1</b>	Course Title:	PHYTOCHEMISTRY
<b>2</b>	Course Code:	KIM4064
<b>3</b>	Type of Course:	Optional
<b>4</b>	Level of Course:	First Cycle
<b>5</b>	Year of Study:	4
<b>6</b>	Semester:	8
<b>7</b>	ECTS Credits Allocated:	5.00
<b>8</b>	Theoretical (hour/week):	3.00
<b>9</b>	Practice (hour/week):	0.00
<b>10</b>	Laboratory (hour/week):	0
<b>11</b>	Prerequisites:	None
<b>12</b>	Language:	Turkish
<b>13</b>	Mode of Delivery:	Face to face
<b>14</b>	Course Coordinator:	Doç. Dr. ÜMRAN SEVEN ERDEMİR
<b>15</b>	Course Lecturers:	Prof. Dr. Belgin İZGİ
<b>16</b>	Contact information of the Course Coordinator:	useven@uludag.edu.tr Bursa Uludağ Üniversitesi Fen-Edebiyat Fakültesi Kimya Bölümü 16059 Görükle-Nilüfer/Bursa
<b>17</b>	Website:	
<b>18</b>	Objective of the Course:	The aim of the course is to provide understanding of the principles about plant metabolites and their metabolism within the scope of plant chemistry. Students will be understand about the phytochemicals, have knowledge about the extraction and enrichment of plant metabolites from the matrix with the assessment of the determination techniques. Also course will be helpful to discuss current approaches in plant metabolomics area by using the current literature.
<b>19</b>	Contribution of the Course to Professional Development:	
<b>20</b>	Learning Outcomes:	
	<b>1</b>	Learns basic concepts within phytochemistry and phytochemical terms.
	<b>2</b>	Learns plant metabolism, important metabolites, their functions and biosynthesis.
	<b>3</b>	Knows the methods of separation and enrichment techniques used for plant metabolites in the context of sample preparation.
	<b>4</b>	Gains knowledge about spectroscopic, chromatographic or coupled analytical techniques in the determination of plant metabolites.
	<b>5</b>	Learns the concept of "plant metabolomics" within the context of current topics in phytochemistry.
	<b>6</b>	Understands the importance of a multidisciplinary studies in chemistry.
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<b>21</b>	Course Content:		
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Week	Theoretical	Practice	
1	Introduction to phytochemistry, its importance and place in current literature		
2	Important biosynthesis in plants		
3	Introduction to plant metabolites: Primary and secondary metabolites		
4	Carbohydrates, lipids, proteins		
5	Enzymes and nucleic acids in biosynthesis of plant metabolites		
6	Biosynthesis of secondary metabolites and their importance in defence mechanisms in plants		
7	Midterm exam + Terpenes, phenolic compounds and nitrogen-containing secondary metabolites		
8	An example of a secondary metabolite: Biosynthesis and bioavailability of plant phenolics		
9	Definition and importance of phytochemicals, the place of phytochemicals in phytochemistry		
10	Extraction and enrichment techniques of primary and secondary metabolites		
11	Spectroscopic techniques and elemental distribution analysis in the determination of plant metabolites		
12	Chromatographic techniques in the determination of plant metabolites		
13	Capillary electrophoresis and other techniques in determining plant metabolites (coupled analytical techniques)		
14	Current approaches in phytochemistry: Metabolomics and analysis methods		
<b>22</b>	Textbooks, References and/or Other Materials:	<ul style="list-style-type: none"> <li>• Phytochemistry, Volume 1: Fundamentals, Modern Techniques, and Applications; Editors: Chukwuebuka Egbuna, Jonathan Chinenye Ifemeje, PhD, Stanley Chidi Udedi, PhD, Shashank Kumar, PhD, December 2018, CRC Press ISBN: 9781771887595, E-Book ISBN: 9780429426193</li> <li>• Phytochemicals, Plant Growth, and the Environment, David R Gang, Springer, 2012</li> <li>• Recent Advances in Phytochemistry, V. Runeckles, Springer, 2012</li> <li>• Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis, Jeffrey B. Harborne, Springer, 2012</li> </ul>	
<b>23</b>	Assesment		
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBER</b>	<b>WEIGHT</b>
Midterm Exam		1	40.00
Quiz		0	0.00
Home work-project		0	0.00
Final Exam		1	60.00
Total		2	100.00

Contribution of Term (Year) Learning Activities to Success Grade	40.00
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	

**24 ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	3.00	42.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	30.00	30.00
Others	0	0.00	0.00
Final Exams	1	40.00	40.00
Total Work Load			154.00
Total work load/ 30 hr			5.13
ECTS Credit of the Course			5.00

**25**

**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	1	3	2	3	1	1	2	1	1	1	2	4	3	0	0	0
ÖK2	1	3	3	4	2	1	2	2	1	2	3	4	3	0	0	0
ÖK3	2	4	4	4	4	1	5	1	1	3	3	4	3	0	0	0
ÖK4	1	4	4	4	4	2	5	1	1	3	4	5	4	0	0	0
ÖK5	1	3	3	3	3	3	4	1	1	3	3	4	4	0	0	0
ÖK6	1	1	1	1	1	1	1	1	1	3	4	4	0	0	0	0

**LO: Learning Objectives PQ: Program Qualifications**

<b>Contribution Level:</b>	<b>1 very low</b>	<b>2 low</b>	<b>3 Medium</b>	<b>4 High</b>	<b>5 Very High</b>
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