# PHOTOCHEMICALS IN FRUIT AND VEGETABLES

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| 1 | Course Title: | PHOTOCHEMICALS IN FRUIT AND VEGETABLES | |
| 2 | Course Code: | BAH4114 | |
| 3 | Type of Course: | Optional | |
| 4 | Level of Course: | First Cycle | |
| 5 | Year of Study: | 1 | |
| 6 | Semester: | 1 | |
| 7 | ECTS Credits Allocated: | 3.00 | |
| 8 | Theoretical (hour/week): | 1.00 | |
| 9 | Practice (hour/week): | 0.00 | |
| 10 | Laboratory (hour/week): | 0 | |
| 11 | Prerequisites: | None | |
| 12 | Language: | Turkish | |
| 13 | Mode of Delivery: | Face to face | |
| 14 | Course Coordinator: | Prof. Dr. CEVRİYE MERT | |
| 15 | Course Lecturers: | Doç.Dr. Asuman CANSEV | |
| 16 | Contact information of the Course Coordinator: | Prof.Dr. Cevriye Mert<br>Bursa Uludağ Üniversitesi,<br>Ziraat Fakültesi, Bahçe Bitkileri Bölümü<br>B Blok 16059, Görükle Kampüsü BURSA<br>Tel: 0 224 2941542<br>e-posta: cevmert@uludag.edu.tr<br>0224 2941542 | |
| 17 | Website: | | |
| 18 | Objective of the Course: | To give basic information about the classification, structural features, biosynthesis and functions of phytochemicals (secondary metabolites) found in fruits and vegetables. | |
| 19 | Contribution of the Course to Professional Development: | To ensure understanding of their importance and functions in terms of human and plant health. | |
| 20 | Learning Outcomes: | | |
| | | **1** | Acquires basic knowledge on the structures, occurrence, biosynthesis, properties and functional role of the major secondary metabolites in horticultural plants. |
| | | **2** | Gains information about fruits, vegetables and ornamental plants and comprehends the effects of important secondary metabolites in these plants on human health. |
| | | **3** | Communicates with other parts of society at professional level and transfers information to stakeholders. |
| | | **4** | Gains the capacity to assess and examine problems with an interdisciplinary understanding. Knows how important multidisciplinary research is. |
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| 21 | Course Content: | | |
| | **Course Content:** | | |

| Week | Theoretical | Practice |
|---|---|---|
| **1** | Introduction to Phytochemicals: Historical and contemporary perspective with definitions and concepts | |
| **2** | Classification of phytochemicals and phenolic compounds | |
| **3** | Terpenes and nitrogen compounds | |
| **4** | Synthesis and activity of phytochemicals in plants | |
| **5** | The significance of phytochemicals and their roles in plant physiology | |
| **6** | Colors and Phytochemistry | |
| **7** | Bioactive compounds in pome and stone fruits and their importance for human health | |
| **8** | Bioactive compounds in nuts and their importance for human health | |
| **9** | Bioactive compounds in berries and their importance for human health | |
| **10** | Bioactive compounds in vegetables (Solanaceae, Cucurbitaceae, Apiaceae, Fabaceae) and their importance for human health | |
| **11** | Bioactive compounds in vegetables (Brassicaceae, Alliaceae, Chenopodiaceae, Asteraceae) and their importance for human health | |
| **12** | Bioactive compounds in tea plants and their importance for human health | |
| **13** | Bioactive compounds in ornamental plants and their importance for human health | |
| **14** | Extraction methods and uses of phytochemicals from fruits and vegetables | |

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| **22** | Textbooks, References and/or Other Materials: | Fruit and Vegetable Phytochemicals: Chemistry, Nutritional Value and Stability (Laura A. de la Rosa, Emilio Alvarez-Parrilla, Gustavo A. Gonzalez-Aguilar) Wiley-Blackwell, ISBN: 978-0-8138-0320-3 (2009)<br><br>Phytochemicals as Bioactive Agents (Wayne R. Bidlack, Stanley T. Omaye, Mark S. Meskin, Debra K.W. Topham) CRC Press, ISBN-10: 1566767881 (2000)<br><br>Phytochemicals: Mechanisms of Action (Mark S. Meskin), CRC Press, ISBN 0849316723 (2004)<br><br>Taiz, L. and Zeiger, E., 2008. Bitki Fizyolojisi. Üçüncü baskıdan çeviri, Çev. Ed. Prof. Dr. İsmail Türkan, Palme yayıncılık, Ankara, 690s.<br><br>Seçkin, T. (2014). İşlevsel Bitki Kimyası. İstanbul: Nobel Yayınları. ISBN: 9786051337630 |
| **23** | Assesment | |

| **TERM LEARNING ACTIVITIES** | **NUMBER** | **WEIGHT** |
|---|---|---|
| Midterm Exam | 1 | 40.00 |
| Quiz | 0 | 0.00 |
| Home work-project | 0 | 0.00 |
| Final Exam | 1 | 60.00 |
| Total | 2 | 100.00 |

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| 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 | Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Associate Degree and Undergraduate Education and Training Regulation. |

## 24 ECTS / WORK LOAD TABLE

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Theoretical | 14 | 1.00 | 14.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Self study and preperation | 14 | 4.00 | 56.00 |
| Homeworks | 0 | 0.00 | 0.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 10.00 | 10.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams | 1 | 10.00 | 10.00 |
| Total Work Load | | | 90.00 |
| Total work load/ 30 hr | | | 3.00 |
| ECTS Credit of the Course | | | 3.00 |

## 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 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 0 |
| **ÖK2** | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 0 |
| **ÖK3** | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 2 | 1 | 1 | 3 | 3 | 1 | 2 | 0 |
| **ÖK4** | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 2 | 1 | 1 | 3 | 4 | 1 | 2 | 0 |

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

| Contribution Level: | 1 very low | 2 low | 3 Medium | 4 High | 5 Very High |
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