

INSTRUMENTAL ANALYSIS

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| 1 | Course Title: | INSTRUMENTAL ANALYSIS | |
| 2 | Course Code: | GMD2212 | |
| 3 | Type of Course: | Compulsory | |
| 4 | Level of Course: | First Cycle | |
| 5 | Year of Study: | 2 | |
| 6 | Semester: | 4 | |
| 7 | ECTS Credits Allocated: | 2.00 | |
| 8 | Theoretical (hour/week): | 0.00 | |
| 9 | Practice (hour/week): | 0.00 | |
| 10 | Laboratory (hour/week): | 2 | |
| 11 | Prerequisites: | GMD 2217 Food Analysis | |
| 12 | Language: | Turkish | |
| 13 | Mode of Delivery: | Face to face | |
| 14 | Course Coordinator: | Doç.Dr. ARZU AKPINAR BAYİZİT | |
| 15 | Course Lecturers: | Yok | |
| 16 | Contact information of the Course Coordinator: | Uludağ Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü 16059 Görükle/Bursa Tel: 0224 2941496 Fax: 0224 2941402 e-posta: abayizit@uludag.edu.tr | |
| 17 | Website: | | |
| 18 | Objective of the Course: | The aim of the course is to inform about the developed instrumental analysis methods and their applicability in order to determine physical and chemical properties of various foods. Electrochemical methods, potentiometry, spectroscopic methods, absorption spectroscopy, chromatographic methods, and electrophoretic methods will be taught. | |
| 19 | Contribution of the Course to Professional Development: | | |
| 20 | Learning Outcomes: | | |
| | | 1 | To understand the importance of instrumental analysis among chemical analysis methods |
| | | 2 | To be acquainted with instrumental analysis equipments and to comprehend operation principles |
| | | 3 | To be informed about application areas of instrumental analysis in food industry |
| | | 4 | To classify method and equipment of instrumental analysis for the component of consideration |
| | | 5 | To understand and compare the advantages and disadvantages of any method to another |
| | | 6 | To apply instrumental analysis methods to various foods |
| | | 7 | To evaluate, comment and prepare a report on the results of instrumental analysis |
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| 21 | Course Content: | | | |
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| Week | Theoretical | Practice | | |
| 1 | | Definition and Basic Principles of Instrumental Analysis | | |
| 2 | | Spectroscopic Techniques and Basic Principles | | |
| 3 | | Spectroscopic Techniques and Basic Principles | | |
| 4 | | Spectroscopic Techniques and Basic Principles | | |
| 5 | | Atomic Spectroscopy | | |
| 6 | | Nucleic Magnetic Resonance (NMR) Spectroscopy Mass Spectroscopy (MS) | | |
| 7 | | Chromatography Techniques Column, Paper and Thin Layer Chromatography | | |
| 8 | | Class Discussion and Mid-term Exam | | |
| 9 | | Gas Chromatography Liquid Chromatography | | |
| 10 | | Electrophoretic Methods | | |
| 11 | | TUBITAK BUTAL Technical/Field Trip | | |
| 12 | | TUBITAK BUTAL Technical/Field Trip | | |
| 13 | | Bursa Food and Feed Control Central Research Institute Technical/Field Trip | | |
| 14 | | Bursa Food and Feed Control Central Research Institute | | |
| Activites | | Number | Duration (hour) | Total Work Load (hour) |
| Theoretical | Materials. (Assist. Prof. Dr. Ali Zafer KARADAĞ, unpublished lecture notes) | 0 | 0.00 | 0.00 |
| Practicals/Labs | | 14 | 2.00 | 28.00 |
| Self study and preperation | | 1357 s. | 0.50 | 7.00 |
| Homeworks | | 2 | 2.00 | 4.00 |
| Projects | | 3 | 0.00 | 0.00 |
| Field Studies | | 0 | 0.00 | 0.00 |
| Midterm exams | | Analizleri, Erciyes Üniversitesi Yayınları, 286 s. | 10.00 | 10.00 |
| Others | | 0 | 0.00 | 0.00 |
| Final Exams | | 6 | 15.00 | 90.00 |
| Total Work Load | | | | 74.00 |
| Total work load/ 30 hr | | Principles of Instrumental Analyses. Brooks/Cole Publ., 1999 | | |
| ECTS Credit of the Course | | | | 2.00 |
| | | Undergraduate Instrumental Analysis, CRC Press, 1080 p. | | |
| 23 | Assesment | | | |
| TERM LEARNING ACTIVITIES | | NUMBER | WEIGHT | |
| Midterm Exam | | 1 | 30.00 | |
| Quiz | | 0 | 0.00 | |
| Home work-project | | 2 | 10.00 | |
| Final Exam | | 1 | 60.00 | |
| Total | | 4 | 100.00 | |
| Contribution of Term (Year) Learning Activities to Success Grade | | 40.00 | | |

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| 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 |

| 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 | 5 | 5 | 3 | 4 | 5 | 3 | 2 | 4 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK2 | 5 | 2 | 2 | 5 | 5 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| ÖK3 | 5 | 4 | 5 | 5 | 5 | 3 | 2 | 4 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK4 | 5 | 4 | 5 | 5 | 5 | 3 | 2 | 4 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK5 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 4 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK6 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 4 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK7 | 5 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| LO: Learning Objectives PQ: Program Qualifications | | | | | | | | | | | | | | | | |
| Contribution Level: | 1 very low | | 2 low | | | 3 Medium | | | 4 High | | | 5 Very High | | | | |