# AYDIN ADNAN MENDERES UNIVERSITY
# COURSE INFORMATION FORM

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Course Title | Seperation Methods in Chemistry | | | | | | | | |
| Course Code | KİM510 | | Couse Level | Second Cycle (Master's Degree) | | | | | |
| ECTS Credit | 9 | Workload | 221 *(Hours)* | Theory | 3 | Practice | 0 | Laboratory | 0 |
| Objectives of the Course | The main objective of this course is to give fundamental principles of separation science, with special emphasis on chromatography. | | | | | | | | |
| Course Content | Counter current extraction or other partition processes will be dealt with in their relation to chromatography. Afterwards, the basic principles and instrumentation of each chromatographic technique will be discussed. Hyphenated methods will also be thought. | | | | | | | | |
| Work Placement | N/A | | | | | | | | |
| Planned Learning Activities and Teaching Methods | Explanation (Presentation), Individual Study, Problem Solving | | | | | | | | |
| Name of Lecturer(s) | Prof. Cem ESEN | | | | | | | | |

| Assessment Methods and Criteria | | |
|---|---|---|
| Method | Quantity | Percentage (%) |
| Midterm Examination | 1 | 20 |
| Final Examination | 1 | 35 |
| Assignment | 3 | 45 |

| Recommended or Required Reading | |
|---|---|
| 1 | Chromatography and Separation Science. S. Ahuja. Academic Press, 2003 |
| 2 | Introduction to Separation Science.B.L. Karger, R.L. Snyder, C. Horvath. John Wiley & Sons, 1973 |
| 3 | Analytical Chemistry. A Modern Approach to Analytical Science. Editörler: R. Kellner, J.M. Mermet, M. Otto, M. Valcarcel, H.M. Widmer. Wiley-VCH, 2004. |

| Week | Weekly Detailed Course Contents | |
|---|---|---|
| 1 | Theoretical | Simple separation methods |
| 2 | Theoretical | Equilibrium processes and molecular basis in separation |
| 3 | Theoretical | Mass transport and separation |
| 4 | Theoretical | Liquid-liquid extraction |
| 5 | Theoretical | Chromatographic Theory. Quiz |
| 6 | Theoretical | Qualitative and quantitative analysis |
| 7 | Theoretical | Gas chromatography |
| 8 | Theoretical | Capillary column gas chromatography |
| 9 | Theoretical | Student presentations. Discussion |
| 10 | Theoretical | Liquid chromatography. Quiz-2 |
| 11 | Theoretical | Liquid chromatography instrumentation |
| 12 | Theoretical | Paper and thin layer chromatography |
| 13 | Theoretical | Hyphenated methods |
| 14 | Theoretical | Electrophoresis |
| 15 | Theoretical | Student presentations. Discussion |
| 16 | Final Exam | Final exam |

| Workload Calculation | | | | |
|---|---|---|---|---|
| Activity | Quantity | Preparation | Duration | Total Workload |
| Lecture - Theory | 14 | 0 | 3 | 42 |
| Assignment | 5 | 0 | 15 | 75 |
| Midterm Examination | 1 | 50 | 2 | 52 |

| | | | | |
|---|---|---|---|---|
| Final Examination | 1 | 50 | 2 | 52 |
| | | | Total Workload (Hours) | 221 |
| | | | [Total Workload (Hours) / 25*] = **ECTS** | 9 |
| **25 hour workload is accepted as 1 ECTS* | | | | |

| **Learning Outcomes** | |
|---|---|
| 1 | to be able to recognize different approches for the calssification of various seperation processes. |
| 2 | to be able to find out the basics of equilibrium and mass transfer processes in defining seperations. |
| 3 | to be able to recognize chromatografic theory. |
| 4 | to be able to recognize and compare operational aspects of gas and liquid chromatografies and electrophoresis. |
| 5 | to be able to examine and discuss the works published in the literature concerning analysis by chromatografic |

| **Programme Outcomes** *(Chemistry Master)* | |
|---|---|
| 1 | To be able to gain proficiency in depths and analysis by statistical methods in the same or a related area depending on the undergraduate competence,. |
| 2 | To be able to use the knowledge of his/her field and the skills to solve problems and/or applications in interdisciplinary research. |
| 3 | To be able to adopt to evaluate the information and skill his/her field by critical approach. |
| 4 | To be able to evaluate the effect of important persons, case and fact on his/her field applications. |
| 5 | To be able to gain the ability to discuss write and orally present to a group of literate listener. |
| 6 | To be able to communicate orally and written in a foreign language at least at European language B2 level. |
| 7 | To be able to use computer programs related to his/her field and have skills for informatics communication. |
| 8 | To be able to be careful in protecting social, scientific and cultural ethics in collection data, application and presentation. |
| 9 | To be able to develop strategic, political and application plans in his/her field and may evaluate the outcomes in quality periods. |

**Contribution of Learning Outcomes to Programme Outcomes** *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

| | L1 | L2 | L3 | L4 | L5 |
|---|---|---|---|---|---|
| P1 | 4 | 4 | 4 | 4 | 4 |
| P2 | 3 | 3 | 3 | 3 | 3 |
| P3 | 3 | 3 | 3 | 3 | 3 |