



**YOZGAT BOZOK UNIVERSITY FACULTY OF ARTS AND SCIENCES**  
**CHEMISTRY DEPARTMENT COURSE PLAN**

| Course Code | Course Title                  | Semester | Course Type (C/E) | T+A+L (Time/Week) | Credit | ECTS | Course Language |
|-------------|-------------------------------|----------|-------------------|-------------------|--------|------|-----------------|
| KİM364      | PHYSIOCHEMISTRY LABORATORY II | SPRING   | C                 | 0+0+4             |        | 4    | Turkish         |

**COURSE INFORMATION**

|   |  |
|---|--|
| <b>Course Catalog Description (Content)</b> | Solubility determination by conductivity measurement, refractive index, determination of vaporization enthalpy of a pure liquid, determination of temperature coefficient, electrochemical determination of $\Delta H$ , $\Delta S$ and $\Delta G$ , partial molar properties, effect of temperature on reaction rate, determination of combustion heat, determination of transport numbers by Hittorf method, Equivalent conductivity of $MgSO_4$ . |
| <b>The Aim of the Course</b>                | Application of basic concepts and laws learned in Physical Chemistry II course in laboratory environment and gaining practice in these subjects.   |
| <b>Course Level</b>                         | Bachelor degree  |
| <b>Course Language</b>                      | Turkish  |
| <b>Teaching method</b>                      | (X) Formal ( ) Online ( ) Mixed/Hybrid   |
| <b>Teaching Staff of the Course</b>         | Prof. Dr. Dr. Ramazan COŞKUN,<br>Prof. Dr. Ali DELİBAŞ,<br>Asst. Prof. Dr. Hatice ARI  |
| <b>Prerequisite Course(s) of the Course</b> | -  |
| <b>Learning Outcomes from the Course</b>    | 1- They can reinforce the subjects they have learned in Physical Chemistry II course.<br>2- Will be able to set up the relevant experimental setups.<br>3- Gain the ability to interpret the data obtained.<br>4- He can prepare a report.<br>5- Be able to acquire working principles in laboratories.  |

**COURSE CONTENT**

| Week | Theory | Practice/Laboratory   |
|------|--------|---|
| 1    |        | Physical Chemistry Lab. II Introducing                                  |
| 2    |        | Determination of solubility by conductivity measurement                 |
| 3    |        | Refractive index  |
| 4    |        | Determination of the enthalpy of vaporization of a pure liquid          |
| 5    |        | Determination of temperature coefficient                                |
| 6    |        | Electrochemical determination of $\Delta H$ , $\Delta S$ and $\Delta G$ |
| 7    |        | Partial molar characteristics   |
| 8    |        | Effect of temperature on reaction rate                                  |
| 9    |        | Determination of heat of combustion                                     |
| 10   |        | Determination of transport numbers by Hittorf method                    |
| 11   |        | Equivalent conductivity of $MgSO_4$                                     |
| 12   |        | Compensation  |
| 13   |        | Compensation  |
| 14   |        | Compensation  |

|    |            |
|----|------------|
| 15 | Final Exam |
|----|------------|

### Course Learning Resources

1. Yozgat Bozok Üniversitesi-Fizikokimya Laboratuvarı I Föyü, 2022.
2. Fizikokimya, P.W. ATKINS (Trans.Salih Yıldız, Hamza Yılmaz, Esmâ Kılıç), Bilim Publishing House, 1st Edition, 2001.
3. Fizikokimya, Yüksel SARIKAYA, Gazi Publishing House, 5. Print, Ankara, 2004.

### ASSESSMENT CRITERIA

| Work Activities During the Semester               | Number | Contribution |
|---|--------|--------------|
| Homework  | 10     | 40           |
| Practice  |        |              |
| Forum/ Discussion Application                     |        |              |
| Short Exam (Quiz)                                 | 2      | 60           |
| Ratio Of Semester Studies To Semester Success (%) |        | %40          |
| Ratio of Final to Success (%)                     | 1      | %60          |
| Total   |        | %100         |

### COURSE WORKLOAD TABLE

| Activity   | Total Weeks | Duration (Weekly Hours) | Total Workload |
|--|-------------|-------------------------|----------------|
| Theory   |             |                         |                |
| Laboratory   | 14          | 4                       | 56             |
| Forum/ Discussion Application  |             |                         |                |
| Reading  | 14          | 1                       | 14             |
| Internet Scanning, Library Study   | 14          | 1                       | 14             |
| Material Design, Application   |             |                         |                |
| Report Preparation   | 14          | 1                       | 14             |
| Presentation Preparation   |             |                         |                |
| Presentation   |             |                         |                |
| Final Exam   | 1           | 1                       | 1              |
| Preparation for the Final Exam   | 1           | 5                       | 5              |
| Other(s) (Specify: ... ..)   |             |                         |                |
| Total Workload   |             |                         | 104            |
| Total Workload / 25 (s)  |             |                         | 104/25         |
| ECTS Credits of the Course   |             |                         | ≅4             |
| Note: The workload of the course will be determined by the instructor on a per-course basis. |             |                         |                |

### PROGRAM LEARNING OUTPUTS CONTRIBUTION LEVELS

| No | Program Learning Outputs  | 1 | 2 | 3 | 4 | 5 |
|----|---|---|---|---|---|---|
| 1  | Gains extensive knowledge about the basic chemical properties of matter and uses this knowledge in daily life, industrial scale, and practical chemistry and shares them with the society.              |   |   |   | x |   |
| 2  | Performs experiments, collects data, interprets, evaluates results, defines problems parallel to current technological developments, produces solutions against problems encountered in the laboratory. |   |   |   |   | x |
| 3  | Calculates and processes chemical information and data.   |   |   |   |   | x |
| 4  | Applies her/his knowledge and understanding of chemistry to the solution of unconventional qualitative and quantitative problems.   |   |   |   |   | x |

|    |  |  |  |  |  |   |   |
|----|--|--|--|--|--|---|---|
| 5  | Defines and comprehends chemical concepts and theories in Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Biochemistry.                                    |  |  |  |  | x |   |
| 6  | Can conduct research in the light of scientific data on any subject in the field of chemistry.   |  |  |  |  |   | x |
| 7  | Writes, presents, discusses scientific material, and presents it orally to a knowledgeable audience.   |  |  |  |  |   | x |
| 8  | Brings a chemical approach to the solution of environmental problems, makes environmental analyzes and reports.  |  |  |  |  | x |   |
| 9  | Knows a foreign language at a level to read and understand the basic terms and processes of the chemist profession.  |  |  |  |  | x |   |
| 10 | Can use computer software and information and communication technologies at the level required by the field.   |  |  |  |  | x |   |
| 11 | Adapts and transfers the knowledge gained in the field to secondary education.   |  |  |  |  |   | x |
| 12 | Apart from the field of chemistry, she/he gains knowledge in different branches of science that she feels close to.  |  |  |  |  |   | x |
| 13 | Carries out a study independently, makes group work and gains the awareness of taking responsibility.  |  |  |  |  |   | x |
| 14 | They can develop a positive attitude towards lifelong learning and constantly renew their professional knowledge and skills.   |  |  |  |  | x |   |
| 15 | Have sufficient awareness of the universality of social rights, social justice, quality culture and protection of cultural values, environmental protection, occupational health and safety. |  |  |  |  | x |   |

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