# DERS TANITIM ve UYGULAMA BİLGİLERİ

| **Dersin Adı** | **Kodu** | **Yarıyıl** | **T+U+L (saat/hafta)** | **Türü (Z / S)** | **Yerel Kredi** | **AKTS** |
|---|---|---|---|---|---|---|
| Kimya II | CH 104 | Bahar | 03+00+02 | Zorunlu | 4 | 6 |
| Akademik Birim: | | | | | | |
| Öğrenim Türü: | Örgün eğitim | | | | | |
| Ön Koşullar | Yok. | | | | | |
| Öğrenim Dili: | İngilizce | | | | | |
| Dersin Düzeyi: | Lisans | | | | | |
| Dersin Koordinatörü: | Ebru BİLGET GÜVEN | | | | | |
| Dersin Amacı: | Atomlar arası etkileşimleri ifade eden bağlar, intermoleküler kuvvetler, moleküler şekil ve maddenin özellikleri arasındaki ilişki, kimyala kinetik, kimyasal tepkime hızı, mekanizması, kimyasal denge, asit ve bazlar, asit-baz dengesi, zayıf asit ve baz çözeltilerindeki iyon konsantrasyon hesapları, termodinamiğin en temel kavramları, entropi, serbest enerji. | | | | | |
| Dersin İçeriği: | Kimyasal Bağ I: Temel Kavramlar<br>Kimyasal Bağ II: Farklı Boyutlar<br>Intermoleküler Kuvetler: Sıvı ve Katı<br>Çözeltiler ve Fiziksel Özellikleri<br>Kimyasal Kinetik<br>Kimyasal Dengenin Temelleri<br>Asit ve Bazlar<br>Asit-Baz Dengesinin Farklı Boyutları<br>Çözünürlük ve Kompleks-İyon Dengesi<br>Spontan Değişim: Entropi ve Gibbs Enerjisi | | | | | |
| Dersin Öğrenme Çıktıları (ÖÇ): | • **1-** Understanding the characteristics of gases as chemical systems.<br>• **2-** Understanding how the composition and structure of a substance are related to its physical properties in the liquid or solid state by understanding the nature and strength of intermolecular forces.<br>• **3-** Comparing the physical properties of solutions with the properties of the components in their pure form.<br>• **4-** Understanding how to determine reaction rates and to consider the factors that control these rates.<br>• **5-** Recognizing and understanding the dynamic equilibria in chemical reactions.<br>• **6-** Taking a closer look at how acids and bases are identified and characterized and considering their behavior both in terms of their structure and and bonding and in terms of the chemical equilibria in which they participate.<br>• **7-** Understanding complex solutions by looking first at further applications of acid-base equilibria.<br>• **8-** Exploring the connection between energy and the extent of a reaction.<br>• **9-** Studying the relationships between electricity and chemical reactions. | | | | | |
| Dersin Öğrenme Yöntem ve Teknikleri | Projektör/Slaytlar | | | | | |

## HAFTALIK PROGRAM

| **Hafta** | **Konular** | **Ön Hazırlık** | **ÖÇ** |
|---|---|---|---|
| 1 | Chapter 10: Gases | Theoretical explanations, problem solving and lab applications | 1 |
| 2 | Chapter 10: Gases | Theoretical explanations, problem solving and lab applications | 1 |
| 3 | Chapter 11: Liquids and Intermolecular Forces | Theoretical explanations, problem solving and lab applications | 2 |
| 4 | Chapter 13: Properties of Solutions | Quiz #1, Theoretical explanations, problem solving | 3 |

| | | | |
|---|---|---|---|
| | | and lab applications | |
| 5 | Chapter 14: Chemical Kinetics | Theoretical explanations, problem solving and lab applications | 4 |
| 6 | Chapter 14: Chemical Kinetics | Theoretical explanations, problem solving and lab applications | 4 |
| 7 | Chapter 15: Chemical Equilibrium | Midterm #1, Theoretical explanations, problem solving and lab applications | 5 |
| 8 | Chapter 15: Chemical Equilibrium | Theoretical explanations, problem solving and lab applications | 5 |
| 9 | Chapter 16: Acid – Base Equilibria | Theoretical explanations, problem solving and lab applications | 6 |
| 10 | Chapter 17: Additional Aspects of Aqueous Equilibria | Quiz #2, Theoretical explanations, problem solving and lab applications | 7 |
| 11 | Chapter 19: Chemical Thermodynamics | Theoretical explanations, problem solving and lab applications | 8 |
| 12 | Chapter 19: Chemical Thermodynamics | Midterm #2, Theoretical explanations, problem solving and lab applications | 8 |
| 13 | Chapter 20: Electrochemistry | Theoretical explanations, problem solving and lab applications | 9 |
| 14 | Chapter 20: Electrochemistry | Quiz #3, Theoretical explanations, problem solving and lab applications | 9 |

Kadir Has Üniversitesi'nde bir dönem 14 haftadır, 15. ve 16. hafta sınav haftalarıdır.

## ZORUNLU ve ÖNERİLEN OKUMALAR

General Chemistry: Principles and Modern Applications by R. Petrucci, FG Herring, JD Madura and C Bissonnette, Pearson Prentice Hall, 10th edition, 2010.

## DİĞER KAYNAKLAR

General Chemistry by Linus Pauling, Dover Publications, 3rd edition, 1988.
General Chemistry by Raymond Chang, McGrawHill Publishing Company, 3rd edition, 2003.

## DEĞERLENDİRME SİSTEMİ

| **Yarıyıl İçi Çalışmaları** | **Sayı** | **Katkı Payı (%)** |
|---|---|---|
| Katılım | 14 | - |
| Laboratuvar | 10 | 15 |
| Ödev | 8 | 16 |

| | | |
|---|---|---|
| Ara Sınavlar/Sözlü Sınavlar/Kısa Sınavlar | 4 | 34 |
| Final Sınavı | 1 | 35 |
| **Total:** | **37** | **100** |

## İŞ YÜKÜ HESAPLAMASI

| Etkinlikler | Sayısı | Süresi (saat) | Toplam İş Yükü (saat) |
|---|---|---|---|
| Ders Saati | 14 | 3 | 42 |
| Laboratuvar | 10 | 3 | 30 |
| Ödev | 8 | 1 | 8 |
| Ara Sınavlar/Sözlü Sınavlar/Kısa Sınavlar | 5 | 8 | 40 |
| Final Sınavı | 1 | 30 | 30 |
| **Toplam İş Yükü (saat):** | | | **150** |

1 AKTS = 25 saatlik iş yükü

## PROGRAM YETERLİLİKLERİ (PY) ve ÖĞRENME ÇIKTILARI (ÖÇ) İLİŞKİSİ

| # | PY1 | PY2 | PY3 | PY4 | PY5 | PY6 | PY7 | PY8 | PY9 |
|---|---|---|---|---|---|---|---|---|---|
| OC1 | 2 | | | | | | | | 1 |
| OC2 | 2 | | | | | | | | 1 |
| OC3 | 2 | | | | | | | | 1 |
| OC4 | 2 | | | | | | | | 1 |
| OC5 | 2 | | | | | | | | 1 |
| OC6 | 2 | | | | | | | | 1 |
| OC7 | 2 | | | | | | | | 1 |
| OC8 | 2 | | | | | | | | 1 |
| OC9 | 2 | | | | | | | | 1 |

**Katkı Düzeyi:** 1 Düşük, 2 Orta, 3 Yüksek