## Course Syllabus

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| **Code - Course Title** | **ECZ124 - Pharmaceutical Microbiology II** |
| **Course Type** | II. SEMESTER |
| **Laboratory + Practice** | 4+1 |
| **ECTS** | **5.0** |
| **Language of Instruction** | Türkçe |
| **Course Type** | Required Courses |
| **Course Instructor(s)** | PROF. DR. MİRİŞ DİKMEN, DOÇ. DR. MUSTAFA ESER |

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| **Mode of Delivery** | The mode of delivery of this course is Face to face. |
| **Prerequisites** | There is no prerequisite or co-requisite for this course. |
| **Courses Recomended** | There is no recommended optional programme component for this course. |
| **Work Placement** | It continues with the laboratory course. |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| **Week - 1** | | Microbial Isolation Diagnosis and Counting Methods: Isolation of Microorganisms Laboratory:Introduction to Pharmaceutical Microbiology Laboratory | |
| **Week - 2** | | Microbial Isolation Diagnosis and Counting Methods: Detection of microorganisms Laboratory Media Preparation -Sterilisation and Disinfection | |
| **Week - 3** | | Microbial Control: Measurement and Counting Methods of Microbial Growth, Sterilisation Laboratory: Streaking Techniques | |
| **Week - 4** | | Microbial Control: Disinfection Laboratory: Macroscopic Examination of Microorganisms Microbial Preparation, Staining and Examination (Bacteria, Yeast, Mould) | |
| **Week - 5** | | Pharmaceutical Industry and Microbiology: Microbiological Control in Pharmaceutical Manufacturing Process, Sterile working areas and working conditions Laboratory: DNA Isolation | |
| **Week - 6** | | Pharmaceutical Industry and Microbiology: Control of Sterile Products, Control of Microbial Protective Activity in Drugs Laboratory: Microbial Metabolism Tests (Carbohydrate Metabolism) | |
| **Week - 7** | | Microbiological Control in Foods: Microflora of Foods and Microbial Spoilage, Determination of Microorganism Levels in Foods Laboratory: Microbial Metabolism Tests (Protein Metabolism) | |
| **Week - 8** | | Microbiological Control in Cosmetic Products: Microbiological Control Tests in Cosmetic Products Laboratory: Imaging Methods in Microbiology | |
| **Week - 9** | | Obtaining Biotechnology Pharmaceutical Products: Production of Pharmaceutical Products by Genetic Engineering Techniques Laboratory: Colony Count in Petri Colony Count in Microscope | |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| Week - 10 | | Chemotherapeutic agents and their effects on microorganisms: Antimicrobial Drugs Classification and General Definitions Laboratory: Microbiological Analysis in Work Areas, Microbial Analysis of Lab Air, Counter Surface Microbiological Control in Sterile Products | |
| Week - 11 | | Chemotherapeutic agents and their effects on microorganisms: Mechanism of Action of Antibiotics, Antifungals and Antivirals Laboratory: Microbiological Control in Foods | |
| Week - 12 | | Chemotherapeutic agents and their effects on microorganisms: Mechanism of microbial resistance Laboratory Microbiological Control in Cosmetic Products | |
| Week - 13 | | Chemotherapeutic agents and their effects on microorganisms: Antibiotic Susceptibility Tests Laboratory: Antimicrobial Mechanisms of Action | |
| Week - 14 | | Chemotherapeutic Agents and Their Effects on Microorganisms: Antibiotic Susceptibility Tests Laboratory: Antimicrobial Mechanisms of Action | |

## Learning Outcomes

| # | Learning Outcome |
|---|---|
| 1 | Will be able to list the isolation methods of microorganisms. |
| 2 | Will be able to explain the detection methods of microorganisms. |
| 3 | Will be able to define the measurement and counting methods of microbial growth. |
| 4 | Will be able to explain sterilisation. |
| 5 | Will be able to explain disinfection. |
| 6 | Explain the microbiological control methods in the pharmaceutical production process. |
| 7 | Will be able to explain sterile working areas and working conditions. |
| 8 | Will be able to explain the control methods in sterile products. |
| 9 | Will be able to explain the methods of control of microbial protective activity in drugs. |
| 10 | Will be able to explain microflora of foods and microbial spoilage. |
| 11 | Will be able to explain the determination of microorganism levels in foods. |
| 12 | Explain Microbiological Control Tests in Cosmetic Products. |
| 13 | Will be able to explain the processes of pharmaceutical products. |
| 14 | Will be able to explain the processes of obtaining pharmaceutical products with genetic engineering techniques. |
| 15 | Explain the classification and general definitions of antimicrobial drugs. |
| 16 | Explains the Mechanisms of Action of Antibiotics, Antifungals and Antivirals. |
| 17 | Will be able to explain the mechanisms of microbial resistance. |
| 18 | Will be able to explain antibiotic susceptibility tests. |
| 19 | Laboratory: Will be able to explain the rules to be considered in microbiological laboratory studies. |
| 20 | Laboratory: Explain microscopy. |
| 21 | Laboratory: Will be able to explain the equipment used in microorganism cultivation. |

## Learning Outcomes

| # | Learning Outcome |
|---|---|
| 22 | Laboratory: Explain Glass Materials. |
| 23 | Laboratory: Will be able to explain sterilisation techniques. |
| 24 | Laboratory: Will be able to explain disinfection techniques. |
| 25 | Laboratory: Explain Sterilisation Control of Media Prepared in Petri Plates. |
| 26 | Laboratory: Explain hand disinfection. |
| 27 | Laboratory: Explain the preparation of the medium. |
| 28 | Laboratory: Explain the preparation of solid and liquid media. |
| 29 | Laboratory Explain sterilisation practices. |
| 30 | Laboratory: Explain the application of different sowing techniques. |
| 31 | Laboratory: Explain the application of examination techniques in solid and liquid culture. |
| 32 | Laboratory: Explain the preparation and examination of bacterial preparation. |
| 33 | Laboratory: Explain microscopic examination of mould and yeast. |
| 34 | Laboratory: Will be able to explain DNA Isolation. |
| 35 | Laboratory: Will be able to explain carbohydrate metabolism. |
| 36 | Laboratory: Explain Protein Metabolism. |
| 37 | Laboratory:Will be able to explain the open Petri method. |
| 38 | Laboratory:Will be able to explain the swap method. |
| 39 | Laboratory: Explain the microbiological analysis of lotion. |
| 40 | Laboratory: Explain Antimicrobial Substances and Their Activities. |

## Sustainable Development Goals

*No content has been provided.*

## Course Theme

*No content has been provided.*

## AKTS Workload

| Activity | Duration (Hour) | Count | Workload |
|---|---|---|---|
| Teorik Derse Katılım | 0 | 0 | 0 |
| Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı) | 0 | 0 | 0 |
| Ödevler | 0 | 0 | 0 |
| Proje - Rapor - Sunum Hazırlama | 0 | 0 | 0 |
| Ara Sınav Hazırlığı (sınav süresi dahil) | 0 | 0 | 0 |
| Final Sınavı Hazırlığı (sınav süresi dahil) | 0 | 0 | 0 |
| Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.) | 0 | 0 | 0 |
| Staj Uygulaması | 0 | 0 | 0 |
| | | **Calculated ECTS** | **0** |

## Assessment Method and Passing Requirements

*No content has been provided.*