# ÇAĞ ÜNİVERSİTESİ
## ÇAĞ UNIVERSITY

## SYLLABUS
### Vocational School of Higher Education

| Course Code | Course Title | | Credits | ECTS Value |
|---|---|---|---|---|
| TDS-002 | Artificial Intelligence and Automation in Healthcare | | 2-0-2 | 5 |
| **Prerequisite Courses:** | None | | | |
| **Course Language:** | Turkish | **Course Delivery Mode:** | Online | |
| **Course Type and Level:** | **Elective / 2st Year / Spring Semester** | | | |

| Instructor's Title, Name, and Surname | Course Hours | Office Hours | Contact |
|---|---|---|---|
| Lecturer Adem BİLGİN | 2 | Monday 10:00-12:00 | adembilgin@cag.edu.tr |

| **Course Coordinator:** | Lecturer Adem BİLGİN |
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## Course Objectives

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|---|---|---|---|---|
| | Upon successful completion of this course, the student will be able to; | | Program Outcomes | Net Contribution |
| **Course Learning Outcomes** | 1 | Defines and explains the concepts of artificial intelligence and automation, as well as their applications in the healthcare sector. | 1&8 | **5 & 5** |
| | 2 | Compares different health technologies and automation systems and evaluates their performance. | 2&5&8 | **5 & 4** |
| | 3 | Applies and analyzes artificial intelligence and automation technologies using case studies and scenarios. | 2&5&6 | **5** |
| | 4 | Designs artificial intelligence and automation strategies aimed at improving healthcare processes and develops related recommendations. | 2&7 | **5 & 4** |
| | 5 | Interprets and evaluates the ethical, legal, and social impacts of artificial intelligence and automation applications in healthcare. | 3&9&10 | **5** |

| **Course Content:** | Within the scope of this course, students will be introduced to and able to explain the concepts of artificial intelligence and automation in the context of their applications in healthcare. They will apply and analyze clinical decision support systems and data analytics processes through practical examples. Additionally, students will interpret and evaluate the ethical, legal, and social dimensions of digitalization in healthcare. By comparing various digitalization applications and automation systems, they will develop the ability to synthesize information aimed at improving healthcare processes.. |
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## Course Schedule (Weekly Plan)

| Week | Topic | Preparation | Teaching and Learning Strategies |
|---|---|---|---|
| 1 | Course Introduction and Syllabus Overview | None | Lecture, Expectation Mapping (Padlet) |
| 2 | Introduction to Concepts of Artificial Intelligence and Automation | Research on the fundamental concepts of artificial intelligence and automation. | Lecture, Discussion, Brainstorming |
| 3 | Applications of Artificial Intelligence in the Healthcare Sector | Examination of examples of artificial intelligence applications in clinical, | Lecture, Case Study Review |

| | | | |
|---|---|---|---|
| | | administrative, and management settings. | |
| 4 | Automation Systems and Healthcare Processes | Reading and analysis of articles on the impact of automation on workflow processes. | Group Discussion, Case Solution |
| 5 | Clinical Decision Support Systems (CDSS) | Investigation of Clinical Decision Support Systems (CDSS) examples and their purposes. | Case Analysis, Presentation, Role-Playing |
| 6 | Data Analytics and Health Data Management | Short reading on health data and data analysis methods. | Hands-on Example, Data Analysis, Group Work |
| 7 | Artificial Intelligence Algorithms and Healthcare Applications | Research on the concepts of machine learning and deep learning. | Lecture, Practical Application, Discussion |
| 8 | Midterm Exam | | Written Exam |
| 9 | Midterm Exam | | Written Exam |
| 10 | Digital Health and E-Health Applications | Examination of E-Nabız and other digital health applications. | Presentation, Discussion, Hands-on Example |
| 11 | Improving Business Processes through Automation | Research on examples of automation in health management processes. | Case Analysis, Group Work |
| 12 | AI-Supported Diagnosis and Treatment Methods | Investigation of diagnosis and treatment applications supported by artificial intelligence. | Case Presentation, Discussion |
| 13 | Ethical, Legal, and Social Dimensions | Reading on ethical and legal regulations related to artificial intelligence and automation in healthcare. | Discussion, Role-Playing, Evaluation |
| 14 | Future Trends and Innovative Applications | Review of current articles and reports. | Presentation, Brainstorming, Group Discussion |
| 15 | Sector Presentation on Artificial Intelligence in Healthcare | Examination of E-Nabız and other digital health applications. | Industry Perspective Guest Speaker |
| 16 | General review | | Structured Lecture, Classroom Discussion |
| 17 | Final Exam | | Written exam |
| 18 | Final Exam | | Written exam |

## Course Resources

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| **Textbook:** | Yapay Zeka İle Sağlık – Sistemlerden Uygulamalara- Özel Sebetci 2023 Sağlıkta Yapay Zeka ve Dijital Hastaneler - Fırat Seyhan ve Sezer Korkmaz'ın 2024 |
| **Recommended References:** | Sağlıkta Dijital Yaklaşımlar -Doç. Dr. Özlem Özer ve Doç. Dr. Okan Özkan |

## Course Assessment and Evaluation

| Activities | Number | Percentile | | Notes |
|---|---|---|---|---|

| Midterm Exam | 1 | %40 | |
|---|---|---|---|
| Final | 1 | %60 | |

| ECTS Table | | | |
|---|---|---|---|
| **Content** | **Number** | **Hours** | **Total** |
| Course Duration | **14** | **2** | 28 |
| Out-of-Class Study | **14** | **3** | 42 |
| Midterm Exam (Midterm Exam Duration + Midterm Exam Preparation) | **1** | **30** | 30 |
| Final Exam (Final Exam Duration + Final Exam Preparation) | **1** | **40** | 40 |
| | | **Total:** | 140 |
| | | **Total / 30:** | 140÷30=4,6 |
| | | **ECTS Credit:** | 5 |