

Instructor

Office: Applied AI Lab and Big Data Research Center

Bahçeşehir University

Faculty of Engineering and Natural Sciences

Department of Artificial Intelligence Engineering

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Office Hours: Friday: 9:30-10:30

CV: <https://www.linkedin.com/in/fatih-kahraman-phd-073a435><https://www.linkedin.com/in/binnur-kurt/>**Course Information¹**

Term : 2023-2024 Spring

Time (Section 1):

(Section 2):

(Section 3):

Course Credit/ECTS : 2 + 2

Classroom (Section 1) :

(Section 2) :

(Section 2) :

Course Type : Face to Face

Course Objective and Learning Objectives

The aim of the course is to give students theoretical knowledge and application skills in the field of data science. For this purpose, basic techniques used in data science and basic data science problems will be introduced. Students will be able to develop solutions to data science problems and evaluate the success of the solutions they develop by applying these techniques.

At the end of the course, you will:

- 1) To be able to define data science problems
- 2) To be able to apply data collection, cleaning and preparation techniques used in data science
- 3) To be able to perform explanatory data analysis and visualization on datasets
- 4) To be able to apply the necessary methods for extracting and selecting features on datasets
- 5) To recognize the basic problem types in data science and to be able to choose the methods used for their solutions
- 6) To evaluate the success and performance of data science solutions

Course Structure

The theoretical lectures for the course will be carried out in-class face-to-face conventional lectures.

Students are responsible for attending face-to-face sessions throughout the semester. Students who have questions can have either an online or a face-to-face meeting with the instructor during the office hours. Face-to-face and online appointments will be reserved upon approval.

Work Load (Estimated)

The course will involve **extensive computer-based work** in addition to the readings. The time required for out-of-class work to be on average 6 hours per week.

Online Office Hours

¹ It is essential that the syllabus announced at the beginning of the term is not changed except when necessary. When a requirement occurs, the curriculum can be changed by the lecturer of the course by notifying this situation in writing or verbally beforehand. It is the student's responsibility to follow the current program.

To book a reservation for MS Teams call or face-to-face meeting, please contact me before 48 hours via the Itslearning messaging system.

Course Policy

Communication Channels and Methods:

You must use the messaging system of Itslearning for your questions outside the class hours. You must follow the announcements published on Itslearning.

Usage of Digital Tools:

The asynchronous learning materials are uploaded to the Itslearning system. The materials are chapter slides including detailed course notes, syllabus and project details. All the in-term activities including quizzes, and homework are given on the Itslearning system. Exam results will also be announced on Itslearning. You must install the Itslearning application to your mobile devices and use the Itslearning website (<https://buei.itslearning.com>) on your computer.

Assignments and Project Deadline:

You have to follow the instructions and deadlines given in the project details file published on Itslearning. All submissions must be done on time. You have to upload your project report and presentation using the assignment link on Itslearning. **Please do not send your project report and presentation via e-mail.** Reports sent directly to me via e-mail or Itslearning messaging system will not be accepted.

Attendance:

Every student must attend at least 70% of the classes.

Disabled Student Support:

You can contact me directly regarding the issues that may be an obstacle for you (vision, hearing, etc.). In addition to this, there is a Disabled Student Unit in order to minimize the difficulties that our disabled students will encounter due to their disabilities and to eliminate the obstacles. You should contact this unit regarding your situation.

Oral and Written Communication Ethics:

Since you are training to become a professional Engineer, we always expect you to express yourself respectfully and cordially in your communication with your friends and with course instructor.

Privacy and Copyright:

In accordance with the Personal Data Protection Law, the courses will be recorded on the online platform within the scope of your approval and knowledge.

Note that you do not need to switch on your camera during a course.

It is forbidden to register participants (students and instructors) during the course.

Course Resources

The course resources are uploaded to the Itslearning system.

Textbook: Introduction to Data Mining by Pang-Ning Tan, Michael Steinbach and Vipin Kumar

Reference Book: Introduction to Machine Learning by Ethem Alpaydın, The MIT Press

Grading and Evaluation

The following grading system will be applied for this course.

Assignment	Description	Scoring	Weight (%)
Quizzes	Each quiz will cover the topics of that week and previous weeks. There are 6 quizzes throughout the semester. The quizzes will be held from its learning during lecture hours. You can use your mobile device to attend the quiz in the class. There will be no make-up for a missing quiz.	100	10
Homework	There are 4 Homework . There will be no make-up for a missing Homework.	100	20
Midterm Exam	You will have a midterm exam covering the first six weeks. The midterm exam will be given in Week#7. The exact date will be announced later. Midterm will be given face-to-face in the classroom.	100	20
Coursera	https://www.coursera.org/programs/faculty-program-x96ys/professional-certificates/ibm-data-science	100	10
Final Exam	You will have a final exam covering all chapters. Final exam will be given face-to-face in the classroom.	100	40
TOTAL		100	100

Course Calendar

Week/Place	Course Topic	Assignments & Deadline
W1	Introduction to Data Science	
W2	Fundamentals	
W3	Data	
W4	Data Pre-Processing, Cleaning, Preparation	Homework 1
W5	Dimensionality Reduction: Feature Extraction	
W6	Dimensionality Reduction: Feature Selection	Homework 2
W7		Midterm Exam
W8	Supervised Learning: Model Selection and Generalization	
W9	Supervised Learning Algorithms	Homework 3

W10	Unsupervised Learning (Clustering)	
W11	Unsupervised Learning (Clustering)	Homework 4
W12	Text Mining	
W13	Anomaly Detection	
W14	Data Science on Cloud	

Matters Needing Attention

- Make sure that you read all weekly course materials.
- Problems sets and their solutions will be provided.
- Participate positively in classroom activities and discussions.
- Attend the classes actively every week.
- If you have a health issue or any personal problem before or during any online exam, then you must send an Itslearning message or an email to the instructor not more than 30 minutes after the completion time of the exam.
- If you have a technical problem before or during any online exam, then you must send an Itslearning message or an email to the instructor not more than 30 minutes after the completion time of the exam.
- There will be a make-up exam for the midterm and final exams for the students with valid excuses according to BAU regulations.
- The relative grading system is used to give the proper letter grade to each student. The grades are given based on the student's score compared to the others in the class.

Academic Integrity, Cheating and Plagiarism

Hexham (2005) defines plagiarism as a planned deliberate action to deceive the reader by pretending to be someone's word or words. Academic plagiarism is also in the form of an author's use of more than four words in his own research, without using quotation marks from a written source, without a precise reference to the original source published before, or in the form of similar fraudulent behavior in scholarship-application forms he wrote to contribute to his research.

- Actions that can be defined as contrary to publication ethics in the scientific community are defined as follows.
 - plagiarism, - cheating, - paraphrasing, - fabrication and falsification of data,
 - to help copying and plagiarism, - to prevent others from accessing a source or data,
 - appearing as a writer in joint studies without contributing,
 - use of widely known / anonymous information, - no regular attribution, - self plagiarism etc.
- Not everything on the Internet is public and cannot be obtained without permission or reference.
- Studies conducted without proper reference are graded with a score of zero.
- Large amounts of manuscripts copied without being quoted will be considered plagiarism and you will be responsible.
- Please be aware that the penalties for plagiarism can range from grading homework to dropping you out of class.

- If you copied, plagiarized, or copied / pasted, do not expect the instructor of the course to write you a reference letter or to be your advisor.
 - Cheating on your exams or assignments is a serious offence and can lead to disciplinary action (see ARTICLE 25 below).
 - Cheating on your exams or assignments is a bad habit; it is important that engineers form good habits and character, and act ethically.
 - Cheating on your exams or assignments unfairly provides you with a grade above your classmates who have worked hard for their grades; this generates social tension between classmates and brings a bad reputation to the BAU family.
 - Cheating on your exams or assignments negates the goal of the course which is to prepare you to be a competent engineer.
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- ***How is plagiarism penalized?***

If it is discovered that you have committed plagiarism during the course, the instructor of the course will refer to the program coordinator. Depending on the seriousness of the situation, the Program Coordinator will decide with a committee the appropriate penalty (from giving a grade of 0 to the activity, to expelling the student from the course). In any case, the student has the right to appeal.

ARTICLE 25 – (1) *In case it is found that a student has cheated or attempted to cheat, committed plagiarism or similar violations defined in the applicable disciplinary regulation in any exam, assignment or other assessment activities, a disciplinary proceeding will be brought against the student. The assessment activity in question is not assessed during the proceedings. A student who is found guilty is assigned zero points in addition to the disciplinary punishment. If the student is found innocent as a result of the disciplinary proceedings, the activity will be assessment or a make-up exam or other activity will be provided.*

[You can access Bahçeşehir University and Higher Education Institution Regulations by clicking this sentence.](#)

