

Instructor: Dr. Ching-yu (Austin) Huang

Email: [chuang@kean.edu](mailto:chuang@kean.edu)Website: <http://www.kean.edu/~chuang>Office Hours: <https://huang.youcanbook.me/> Tue, Thur: 10:00–11:00 am; Mon, Wed: 12:30 – 2:00 pm

Class: Monday, Wednesday (11:00 - 12:15), GLAB 306

Prerequisites: **CPS 3740 or TECH 3740. Students without prerequisite(s) must withdraw from the class.**

Unit	Date	Topic	Reading	Assignment	Day
	1/15/24 Mon	<b>Martin Luther King Holiday</b>		<b>School closed</b>	
1	1/17/24 Wed	Overview		<b>HW 1 start</b>	1
	1/22/24 Mon	Introduction, projects	Ch 1	<b>Research start</b>	2
2	1/24/24 Wed	Correlation, visualization	Ch 1		3
	1/29/24 Mon	Getting to know your data, SQL	Ch 2		4
3	1/31/24 Wed	SQL, aggregation and report, similarity	Ch 2		5
	2/5/24 Mon	Data Processing - text and image	Ch 3		6
4	2/7/24 Wed	Continue, review for midterm #1	Ch 3		7
	2/12/24 Mon	<b>Midterm #1</b>			8
	2/14/24 Wed	Database vs Data Warehouse	Ch 4		9
5	2/19/24 Mon	<b>President's Day Holiday (No class)</b>		<b>School closed</b>	
	2/21/24 Wed	Data Warehouse and OLAP	Ch 4	<b>HW 1 due, HW2 start</b>	10
6	2/26/24 Mon	Associations and Correlations			11
	2/28/24 Wed	Mining Frequent Pattern	Ch 6		12
7	3/4/24 Mon	Basic concepts of Image classification			13
	3/6/24 Wed	Image classification - Google TensorFlow			14
8	3/11/24 Mon	<b>Spring break 3/11 -17 (No class)</b>			
	3/13/24 Wed	<b>Spring break 3/11 -17 (No class)</b>			
9	3/18/24 Mon	Text mining and text similarity	Ch 8		15
	3/20/24 Wed	Search engine and Web crawling	Ch 8	<b>HW 2 due, HW 3 start</b>	16
10	3/25/24 Mon	Classification: impurity, gain, decision tree	Ch 9		17
	3/27/24 Wed	Classification: Linear regression and SVM	Ch 9		18
11	4/1/24 Mon	SNP clustering and cluster analysis			19
	4/1/24 Mon	<b>Last day to withdraw with a 'W' grade</b>		<b>0% refund</b>	
	4/3/24 Wed	<b>Midterm 2</b>		<b>Midterm 2</b>	20
12	4/8/24 Mon	Review midterm 2 answers, K-Means	Ch 10		21
	4/10/24 Wed	Hierarchical cluster analysis	Ch 10		22
13	4/15/24 Mon	Outlier detection	Ch 12		23
	4/17/24 Wed	Continue outlier Detection	Ch 12		24
14	4/22/24 Mon	Data mining trends and impacts,	Ch 13	<b>HW 3 due</b>	25
	4/24/24 Wed	<b>Research presentation, Kean Research Days</b>			26
15	4/29/24 Mon	<b>Research presentation</b>			27
	5/1/24 Wed	Review for Final		<b>Monday schedule</b>	28
16	5/6/24 Mon	<b>Final exam</b>			29
	5/8/24 Wed	Review final exam answers			30

**Late revision: 1/7/2024.** For important dates, please consult the Academic Calendar via the following link:<https://www.kean.edu/offices/registrars-office/academic-calendar>

**Content:** This course provides the basic principles, methods, and applications of data mining. Students will gain a knowledge of how data mining techniques work, how they can be applied across different domains by using data mining methods in real world and impacts on society.

**Course Student Learning Outcomes:** Upon completion of this course, the student will be able to:

- A. Demonstrate an understanding of what data mining is
- B. Summarize the social impact of data mining
- C. Illustrate the differences between data mining and information access/retrieval
- D. Analyze data mining processes, concepts, techniques and methods
- E. Understand data mining applications

### **Instructional Method**

For more information about this course and for course materials, go to <http://blackboard.kean.edu>

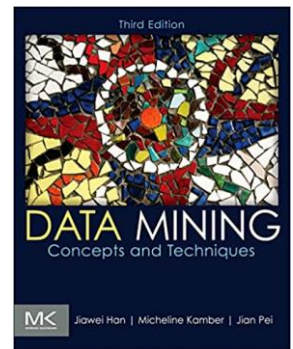
### **Textbook & Materials**

Data Mining: Concepts and Techniques, 4th Edition, 2022.

Author: Jiawei Han, Jian Pei, Hanghang Tong

ISBN-13: 978-0128117606

Publisher: Morgan Kaufmann



### **Require hardware and Software**

- **This is a hands-on course. Students are required to bring personal laptop every class.**
- Database related free software: MySQL Workbench, XAMPP, MySQL
- Other free software: Putty.exe (Win), terminal (Mac), FileZilla, Sublime
- **Assignments should be implemented on the instructor's application and MySQL database servers that are announced on the first day of the class.**

### **Open Educational Resources**

For more information, please see the Nancy Thompson Library Learning Commons:

<http://libguides.kean.edu/OER>

### **Assessment and course grading**

The course includes Exams, Labs, Homework and Project, a **total of 1000 points**.

- 3 exams, midterm 1 (160 pts), midterm 2 (160 pts), final (180 pts),
- 3 Homework (3x100 pts),
- 1 Research and presentation (200 pts)

### **Grading Policy**

**A:**  $\geq 940$ ,  
**A-:** 939 - 890,  
**B+:** 889 - 840,  
**B:** 839 - 800,  
**B-:** 799 - 760,  
**C+:** 759 - 720,  
**C:** 719 - 680,  
**D:** 679 - 640,  
**F:** below 640

**C or better is needed for CS/IT Program**

**Technical Requirements:**

1. In order for your Blackboard course to function correctly, you will need to disable pop-ups on your Internet browser.
2. Make sure you have Microsoft Office installed on your computer. You may be eligible for a free MS Office Software Student Edition. You are required to create an account and provide a valid Kean University ID to obtain access to the software applications. To start the application process, go to the [Office 365 Education website](#).

**Academic Early Alert** information will be provided to students by the instructor via KeanWise. Please see the 2021-2022 Undergraduate or Graduate Catalog for more information.

**Class Policies:**

- **Posting of course materials:** **Public posting of course materials from this class is prohibited.** Materials presented in the class are for the personal use of registered students during the semester only. Homework, programs, and other classwork should not be shared, distributed or publicized in any way, for the protection of other students and in respect of the intellectual property rights of the faculty and copyright owners. Kean University's Academic Integrity Policy can be found here: <https://www.kean.edu/media/academic-integrity-policy>.
- It is students' responsibilities to verify all the scores posted on **the class website** that is announced on the first day of the class.
- **No late work** will be accepted without permission in advance from the instructor. Late work is penalized.
- **No make-up exams** are provided without documentation of medical or family emergency. Please arrange your schedule for the next 16 weeks to arrive in class on time and prepared.
- **Attendance** and participation are required.
- **All work turned in under your name must be your own.** **No credit will be given for an assignment or homework that is copied – in part or in total – from another person.**
- **Exam policy:** During class examinations, if a student leaves the classroom for any reason during the exam time, **the exam must be turned in before the student departs, concluding the exam for that student.** The student cannot resume the exam on return later. You may not make or take a phone call, text or access the internet during class or a test.
- **Classes may not be audio or digitally captured**, unless permission has been granted by the instructor for that specific class.

**Privacy Statement**

Assuring privacy among faculty and students engaged in instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered.

**Important University Policies and Information**

- All students and faculty should familiarize themselves with the **Cougar Restart Guide** which includes important virtual resources for students by Kean University via the following link:  
<https://www.kean.edu/coronavirus-information/resources-current-prospective-students>
- Students are responsible to review and understand the *University Academic Integrity Policy* available via the following link: <https://www.kean.edu/academic-integrity>
- *Instructors must indicate on the syllabus and/or individual assignment if the use of Kean University academic support services ([Tutoring and/or Writing Center](#)) is permitted for take home assignments/exams.*
- Students should review the *Student Code of Conduct*, as it discusses expectations of appropriate conduct in the classroom:  
<https://www.kean.edu/offices/community-standards-and-student-conduct/student-code-conduct>
- Students are strongly encouraged to register for the University's emergency notification system (<http://www.kean.edu/campusalert>) in order to be informed of campus emergencies, weather notices, and other announcements. Kean Ocean students would sign up via the following link:  
<https://ocean.sendwordnow.com/LicensePage.aspx>
- All students must have a valid Kean email account. For those who do not already have one, forms are available on-line at <https://www.kean.edu/offices/computer-and-information-services/ocis-forms>  
click on E-mail Account Request Form.

**Diversity & Non-Discrimination Statement**

Kean University is committed to establishing and maintaining a diverse campus community through inclusive excellence and equal opportunity. Kean's commitment to access and equity is designed to prepare each graduate to not only thrive, but climb higher in a diverse world. As an affirmative action, equal opportunity institution we work to support a campus-wide agenda to foster a community that both values and promotes the diversity and equity of all students, faculty, staff, administrators, and beyond. Kean adheres to the [New Jersey State Policy Prohibiting Discrimination in the Workplace](#); for more information on Kean's non-discrimination policy and procedures, and protected categories under the policy, please visit:  
<https://www.kean.edu/offices/affirmative-action>.

**Americans with Disabilities Statement**

Students with documented disabilities who may need instructional accommodations or special arrangements in the event of an evacuation should notify the instructor as soon as possible and no later than the second week of the term. Students may also contact The Office of Accessibility Services by phone at (908) 291-3137 or email [accessibilityservices@kean.edu](mailto:accessibilityservices@kean.edu) to discuss special needs, accommodations and arrangements.

**Title IX**

Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination on the basis of sex in education programs or activities. Sexual harassment in any form will not be tolerated at Kean University. Sexual harassment by students should be reported to the Office of Affirmative Action Programs, Office of the Vice President for Student Affairs or the Office of Community Standards and Student Conduct immediately. Information about the University's Sexual Misconduct Policy may be found at the following: <https://www.kean.edu/offices/policies/sexual-misconduct-policy>.

**Syllabus Updates:**

**Instructor reserve the right to change the syllabus at any time throughout the semester.** All changes will be announced in class and a new syllabus will be electronically available to all students. If you are enrolled in this class past the add/drop date you are subjected to all rules in this syllabus.