

Summer 2020

## CS 634-850: Data Mining

Jason Wang

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# Syllabus

## Faculty Contact Information

**Instructor:** Dr. Jason Wang

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## Test Proctoring Requirements

The final exam will be conducted in the Respondus LockDown Browser+Webcam environment. Visit CS 634 Canvas and <https://ist.njit.edu/respondus/> ([Links to an external site.](#)) to get details of Respondus. There will be a sample quiz that helps students understand the proctoring, style and format of the final exam so as to prepare for the exam.

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## Prerequisite and Required Background

Fluency in a programming language (Python, Java) is required. Substantial coding and programming will be required in this course.

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## Course Description

This course covers the principles of data mining system design, development and implementation. It presents fundamental algorithms for association analysis, classification, regression, prediction and clustering. Other topics include graph, time series, text and web mining, as well as advanced data mining techniques.

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## Textbooks and Materials

**Textbooks (Optional):**

- Han, J., Kamber, M., Pei, J. (2011) Data Mining: Concepts and Techniques, 3rd Edition. Waltham, MA: Morgan Kaufmann, Elsevier. ISBN: 9780123814791
- Tan, P.N., Steinbach, M., Kumar, V., (2005) Introduction to Data Mining, 1st Edition. Addison-Wesley, Pearson. ISBN: 0-321-32136-7
- [Deep Learning \(Links to an external site.\)](#), Ian Goodfellow, Yoshua Bengio and Aaron Courville, MIT Press, 2016

**Other Editions of Textbooks (Optional):**

- Han, J., Kamber, M., Pei, J. (2005) Data Mining: Concepts and Techniques, 2nd Edition. Waltham, MA: Morgan Kaufmann, Elsevier. ISBN: 9781558609013

## Course Outcomes

1. Understand data mining concepts, principles and applications;
2. Use association rule mining algorithms to find associations among items in transactional databases;
3. Use classification algorithms to categorize records or make predictions, and evaluate the performance of these algorithms;
4. Use clustering algorithms to group data points in high dimensional space, and evaluate the performance of these algorithms;
5. Demonstrate the knowledge of building keyword-based and query-based web search systems, data warehouses, mediators, as well as graph, time series, text and web mining systems.
6. Understand new trends in data mining including deep learning algorithms and advanced data science applications.

## Grading Scale

Grade	Percentile	Percentage
A	4.0	93% and above
B+	3.5	86%-92.9%
B	3.0	78%-85.9%

C+	2.5	70%-77.9%
C	2.0	60%-69.9%
F	N/A	Below 60%

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## Grading Categories

Categories	Percentage
Midterm Project	25%
Final Term Project	30%
Final Term Paper (Deep Learning)	10%
Final Exam	35%

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## Course Structure

Module Number	Dates
1	5/18 - 5/24
2	5/18 - 5/24
3	5/25 - 5/31
4	5/25 - 5/31
5	6/1 - 6/7
6	6/1 - 6/7
7	6/8 - 6/14
8	6/8 - 6/14
9	6/15 - 6/21
10	6/15 - 6/21

11	6/15 - 6/21
12	6/22 - 6/28
13	6/22 - 6/28
14	6/29 - 7/5
15	6/29 - 7/5
16	6/29 - 7/5
17	7/6 - 7/12
18	7/6 - 7/12
19	7/6 - 7/12
20	7/13 - 7/19
21	7/13 - 7/19
22	7/13 - 7/19

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## Course Policies

When submitting projects, make sure to include source code of programs, complete documentation with screenshots.

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## Late Work and Make-Up Exams

No late work will be accepted.

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## Sharing Information

Students are free to discuss assignments with their peers. However, they should not take any written (electronic or otherwise) record away from the discussion. All submissions should be your own, original work.

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# Student Conduct

The NJIT University code on academic integrity will be followed in all courses.

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# Student with Disabilities Codes

NJIT adheres to section 504 of the Rehabilitation Act (ADA) of 1990. Appropriate accommodations are provided at no cost to the student. If you have any questions or would like additional information, please contact Dr. Phyllis Bolling, Center for Counseling and Psychological Services (C-CAPS), Campbell Hall, (entry level), room 205, (973) 596-3420.

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# Technical Support

For assistance with the following items, please contact NJIT IST Helpdesk at: 1-973-596-2900 or <http://ist.njit.edu/support/helpdesk.php> ([Links to an external site.](#))

- UCID
- Library database access
- Webmail by Google email system
- Sessions
- Password assistance\*

\*NJIT passwords may be changed using the [Global Password Change mechanism \(Links to an external site.\)](#). You will need to know your current UCID and UCID password. Questions can be referred to 1-973-596-2900.

Periodic changing of passwords and strategies for managing them are best practice for anyone using a computer. All members of the university community are encouraged to review [tips for password management \(Links to an external site.\)](#) and to change passwords regularly.

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# Software Requirements

Sometimes, you will be required to use Word processing and presentation software, such as MS Word and PowerPoint found in Microsoft Office. You will also need to be comfortable with various aspects of using the Internet such as:

- Search engines
- Newsgroups
- E-mail
- Ability to download files

To view certain media elements in this course, you will need to have several browser plug-ins such as Shockwave, Flash, and Adobe Acrobat on your computer.