CIDM6355 Section 70 Data Mining Methods  
Fall 2018  
Dr. Liang (Leon) Chen

Class Days/Times/Location or Other Format: This course is taught online.  
Office Location: Classroom Center 208-F  
Office Hours: Wednesdays 8:30AM-12:30PM, 3-5PM; Thursdays 8:30-11:30AM, or by appointment  
Office Phone: 806.651.2469 (Answered during office hours)  
Email: lchen@wtamu.edu (Best way to contact me for non-office hours. Check your buff email and WT class message regularly)  
Social Media: Keep up with the latest happenings of your COB on Facebook and Twitter, connect with us on LinkedIn, and check out COB videos on YouTube.

Terms of Use  
A student's continued enrollment in this course signifies acknowledgment of and agreement with the statements, disclaimers, policies, and procedures outlined within this syllabus and elsewhere in the WTClass environment. This Syllabus is a dynamic document. Elements of the course structure (e.g., dates and topics covered, but not policies) may be changed at the discretion of the professor.

WTAMU Paul and Virginia Engler College of Business Mission Statement  
The mission of the Paul and Virginia Engler College of Business is to provide high quality undergraduate and graduate business education with a global perspective and ethical awareness. We accomplish this through emphasis on excellence in teaching, which is strengthened by faculty scholarship and supported by professional service.

Learning Objectives of the WTAMU Paul and Virginia Engler College of Business Programs  
The Engler College of Business (COB) at West Texas A&M University (WTAMU) seeks to prepare students in the Bachelor of Business Administration (BBA), Master of Business Administration (MBA), Master of Professional Accounting (MPA), and the Master of Science, Finance and Economics (MSFE) degree programs for careers in business and to foster their professional growth and advancement via key learning goals and objectives.

Course Description  
Study and application of concepts and techniques related to management and usage of data, online analytical processing, and data mining concepts, tools and techniques. Principles of data analysis, classification, categorization, and sampling in support of business intelligence operations.
Course Objectives

This course is designed to:

- provide students with a comprehensive understanding of data mining concepts, theories, terminologies, and processes (knowledge);
- equip students with popular and useful data mining tools such as RapidMiner and R using lab assignments and group project (abilities);
- develop students’ data analytical thinking and skills such as problem identification, data identification, data preparation, data analysis, and data interpretation (skills);
- motivate students to learn more about data mining in various settings and offer them advanced and optional course materials (further development).

Upon completion of this course, students should be able to:

1. understand data analysis process and techniques;
2. understand data mining concepts, algorithms, theories, and processes;
3. use data mining tools that implement data mining algorithms such as RapidMiner and R to perform data mining analysis on large data sets;
4. apply data mining techniques to various business contexts such as marketing, sales, finance, healthcare, and customer relationship management.

Map from COB Learning Objectives to Specific Course Objectives

<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>Assessment Plan</th>
<th>Alignment with COB Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Understand data analysis process and techniques</td>
<td>Quiz, Homework and Exam</td>
<td>• Core Business Knowledge</td>
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<tr>
<td></td>
<td></td>
<td>• Communication</td>
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<tr>
<td>2. Understand data mining concepts, algorithms, theories, and processes</td>
<td>Quiz, Homework, Exam, and project</td>
<td>• Core Business Knowledge</td>
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<td>• Communication</td>
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<td></td>
<td>• Business Ethics</td>
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<td>3. Use data mining tools</td>
<td>Homework and Project</td>
<td>• Business integration</td>
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<td></td>
<td></td>
<td>• Communication</td>
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<tr>
<td>4. Apply data mining techniques to various business contexts</td>
<td>Online discussion, Homework and Project</td>
<td>• Core Business Knowledge</td>
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<td></td>
<td></td>
<td>• Critical Thinking</td>
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<td></td>
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<td>• Business integration</td>
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</tbody>
</table>

The Engler College of Business Learning Goals are related to the course objectives for CIDM6355, as follows:

1. Students will demonstrate competencies in writing, speaking, and technology communication via homework assignments, group project, individual exams, and online discussion forums.
2. Students will demonstrate their competencies in critical thinking via homework assignments, online discussion forums, individual exams, and group project.
3. Students will demonstrate their competencies in ethical decisions via homework assignments and group project.
4. Students will demonstrate their knowledge of diversity for effective problem-solving via homework assignments, individual exams, and group project.

5. Students will illustrate and explain theories and concepts related to data mining concepts via quizzes, individual exams, homework assignments, and group project.

Course Materials (Text, calculator, etc.)

Books

2. Recommended: “Data Mining for the Masses: with implementations in RapidMiner and R”, 2nd edition, Matthew A. North, ISBN-13: 978-1523321438, 2016 (N for abbreviation). Available at Amazon. Note: The first edition of this book continues to be available for download, free of charge as a PDF file, from the GlobalText online library (sign in and then search the book name) or RapidMiner Documentation via this link. The first edition uses an older version of RapidMiner, but it also includes practical cases and helpful instructions for data mining and RapidMiner.


Software
1. RapidMiner (available at https://rapidminer.com/ and then use your WT email address to upgrade it to an educational account to use the full function).

2. R (available at https://www.r-project.org/) or R Studio Desktop (available at https://www.rstudio.com/products/rstudio/download/)

3. Microsoft Excel 2010 or above

4. Any other software that may be used throughout this semester as complementary tools

Others
1. PPT Slides, videos, lab instructions, and any other materials, which will be posted on WT Class.

Course Grading Policies
Your performance in this course is evaluated by the following four components:

• Learning Activities (15%, 150 points)
• Homework (40%, 400 points)
• Two Exams (30%, 300 points)
• Group Project (15%, 150 points)

Your final letter grade will be assessed based on the following point accumulations:
• Letter grade of “A”: 90% (900 points) or higher
• Letter grade of “B”: 80% (800 points) up to, but lower than 90% (900 points)
• Letter grade of “C”: 70% (700 points) up to, but lower than 80% (800 points)
• Letter grade of “D”: 60% (600 points) up to, but lower than 70% (700 points)
• Letter grade of “F”: lower than 60% (600 points)

Attention: Discussion about grading is welcome within a week after the grade is published. After that, no argument will be accepted.

Course Assignment, Examination, and or Project Policies

Learning Activities
Learning activities include five online quizzes (25 points for each) and five online discussions or any other assigned learning activities such as attending a webinar (5 points for each).

Quizzes are used to check your understanding of course materials, including PPT slides and assigned readings, which are posted on WT Class in the beginning of each class. Five graded quizzes will be conducted throughout the semester every other week as a regular part of class. There will be no “make-up” opportunities for graded quizzes. It is your responsibility to check and complete online quizzes on time. If you miss the deadline of a quiz, you will receive a zero. You may take each quiz up to 2 times before the deadline and your grade is the higher one of the two attempts.

Online discussion is another important learning activity for this class. Students are expected to participate in online discussion on suggested topics. The following are examples of good contributions to class participations:
• Raising relevant questions, insightful questions, making comments that build on the ideas of others;
• Helping other students contribute their ideas;
• Offering your own ideas to help analyze cases to develop sound course of action;
• Sharing your own personal experiences in a way that adds to better understanding of topic being discussed;

Some other learning activities will be assigned throughout this semester.

Homework Assignments
Homework assignments will be essential for successful completion of the course and develop your data mining skills. Homework assignments will be announced weekly for this class, starting from Week 3. It is your responsibility to check homework assignments posted in WT class at least once every week. Copying someone else’s answers will not be allowed, nor having someone else do your assignments for you be allowed. It is important that every student must work on homework individually unless stated otherwise, and they must turn them in on time. I accept late assignments up to one calendar day late. Assignments submitted after the deadline but less than one day late will get a late penalty of 20%. Assignments that are more than one day late will NOT be accepted and a zero will be assigned for that assignment grade. Identical homework will not be
accepted and, as required by the university policy, the case will be reported to the university authority for necessary action. Please note that identical homework means identical algorithms or identical descriptions or identical solutions, etc. Copying solutions from any web site will be regarded as cheating and the case will be reported to the university authority. Submitted work must be presented in a **professional format**. If screenshots are required for some assignments, you must follow all the requirements to provide reliable screenshots; otherwise, a penalty of up to 50% of your grade on the particular homework will be applied.

**Exams**

Examinations are intended to gauge your understanding of the course material covered. There will be two examinations. In addition to the textbook reading assignments, the exams will cover any materials discussed in the class and any presentation made until that point in the class. No make-up exam is ordinary given. In case of emergency absence, notify the instructor before the exam.

Each exam has two parts: the first part is timed (including objective questions such as multiple-answer, multiple-choice questions), while the second part is not timed (case study questions or lab questions). **However, both parts must be completed within the exam week.** Each exam must be completed individually and students are **NOT** allowed to collaborate with anyone else. Discussion of anything related to the exam during the exam period is **NOT** allowed. Students violating these rules and the Student Code of Ethics in any exam will be reported to the Dean’s office and are subject to penalties described in the West Texas A&M University Code of Student Life, which may include suspension from the University.

**Group Project**

Group project is designed to get your hands "dirty" with real world data and tackle a problem of interest to you. In addition, it also develops your virtual collaboration and communication skills. Group project will be announced in Week 7, and each group will be formed with 4-6 students. You will need to make a presentation for your project and record the video. You will also be required to create a final report for your project. The report must contain an executive summary of your findings, as well as all other supporting materials. In order to make sure your group project is on the right track, you are required to submit your proposal in Week 9 and draft report in Week 11. Based on what you submit, I will provide you with feedback and suggestions. Detailed information about the project will be given in a separate handout later during the semester.

There are four important milestones:

- **Milestone 1:** by October 14th, form the project team. Students who do not find your teams will be **NOT** assigned into teams by the instructor and will receive zero point in the group project. Since then, please communicate project idea within your team.
- **Milestone 2:** by October 28th, submit a one-page proposal to describe your data with its source, problem, and project plan. Based on the proposal, the instructor will provide each team with feedback and suggestions. One submission for each group, no individual submission. Each group is encouraged to submit their group proposal earlier so that they can receive feedback earlier.
- **Milestone 3:** by November 11th, draft report with major analysis and results.
- **Milestone 4:** by November 21st, final report and presentation (video recording instruction will be provided later). Submit your evaluation of your peer teammates’ efforts in your group. Top teams may be invited to join a data analytics contest.
Your grade on group project will be based on the following components:
a) Your group presentation (a recorded video plus an MS PPT file; detailed instruction for recording a video will be posted along with the project instruction);
b) Your group final report (an MS WORD file);
c) Your teammates’ evaluation of your effort. This is very important to make every member contribute (almost) equally in the project. Students who fail to make an (almost) equal contribution to their group project may receive a penalty based on teammates’ evaluation.

### Course Topics - Tentative Calendar of Readings, Topics, and Due Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Start Date</th>
<th>End Date</th>
<th>Topics</th>
<th>Readings</th>
<th>Tasks to Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8-27</td>
<td>9-2</td>
<td>Introduction to Data Mining</td>
<td>Ch. 1 &amp; 3 in L&amp;B Ch. 1 in N, Ch. 2 in P&amp;F*</td>
<td>Online self-introduction</td>
</tr>
<tr>
<td>2</td>
<td>9-4</td>
<td>9-9</td>
<td>Data warehousing, OLAP, Data mart</td>
<td>Ch. 17 in L&amp;B Ch. 2 in N</td>
<td>Quiz 1, Install RapidMiner &amp; R (or R Studio)</td>
</tr>
<tr>
<td>3</td>
<td>9-10</td>
<td>9-16</td>
<td>Data Preparation</td>
<td>Ch. 3 in N Ch. 3 in P&amp;F*</td>
<td>HW1</td>
</tr>
<tr>
<td>4</td>
<td>9-17</td>
<td>9-23</td>
<td>Classification and Decision Tree</td>
<td>Ch. 7 in L&amp;B Ch. 10 in N</td>
<td>HW2, Quiz 2</td>
</tr>
<tr>
<td>5</td>
<td>9-24</td>
<td>9-30</td>
<td>Classification: Naïve Bayes</td>
<td>Ch. 7 in L&amp;B Ch. 5 in P&amp;F*</td>
<td>HW3</td>
</tr>
<tr>
<td>6</td>
<td>10-1</td>
<td>10-7</td>
<td>Classification: Neural Network Model Comparison</td>
<td>Ch. 8 in L&amp;B Ch. 11 in N</td>
<td>HW4, Quiz 3</td>
</tr>
<tr>
<td>7</td>
<td>10-8</td>
<td>10-14</td>
<td>Exam 1 &amp; Form your project team</td>
<td></td>
<td>Project introduction, team signup</td>
</tr>
<tr>
<td>8</td>
<td>10-15</td>
<td>10-21</td>
<td>Clustering and K-Means algorithm</td>
<td>Ch. 12 &amp; 13 in L&amp;B Ch. 6 in N, Ch. 6 in P&amp;F*</td>
<td>HW5</td>
</tr>
<tr>
<td>9</td>
<td>10-22</td>
<td>10-28</td>
<td>Advanced issues of Clustering</td>
<td>Ch. 14 in L&amp;B Ch. 6 in P&amp;F</td>
<td>HW6, Quiz 4, project proposal</td>
</tr>
<tr>
<td>10</td>
<td>10-29</td>
<td>11-4</td>
<td>Association Rule</td>
<td>Ch. 15 in L&amp;B Ch. 5 in N</td>
<td>HW7</td>
</tr>
<tr>
<td>11</td>
<td>11-5</td>
<td>11-11</td>
<td>Text Mining</td>
<td>Ch. 21 in L&amp;B Ch. 12 in N, Ch. 10 in P&amp;F*</td>
<td>HW8, Quiz 5, project draft report</td>
</tr>
<tr>
<td>12</td>
<td>11-12</td>
<td>11-18</td>
<td>Exam 2 &amp; Wrap up your project</td>
<td></td>
<td>Final report, presentation, peer evaluation</td>
</tr>
<tr>
<td>13</td>
<td>11-19</td>
<td>11-20</td>
<td>Submit all the project deliverables</td>
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</tbody>
</table>

Note: this tentative schedule is subject to changes, which will be announced in advance; Typically, each quiz, homework, and exam will be posted on the start date and due on the end date; In the column of Readings, please find the full name of each book in [Course Materials];

* indicates that the readings in P&F are optional.
WTAMU Paul and Virginia Engler COB Student Code of Ethics

Each student enrolled in COB courses accepts personal responsibility to uphold and defend academic integrity and to promote an atmosphere in which all individuals may flourish. The COB Student Code of Ethics strives to set a standard of honest behavior that reflects well on students, the COB and West Texas A&M University. All students enrolled in business courses are expected to follow the explicit behaviors detailed in the Student Code of Ethics.

Code of Ethics

- Do not use notes, texts, solution manuals, or other aids for a quiz or exam without instructor authorization.
- Do not copy the work of others and/or allow others to view your answers or copy your work during a quiz, exam, or on homework assignments.
- Do not allow other parties to assist in the completion of your quiz, exam, homework, paper, or project when not permitted.
- Do not work with other students on projects or assignments without authorization from the course instructor.
- Properly cite and specifically credit the source of text, graphic, and web materials in papers, projects, or other assignments.
- Do not forge the signature of an instructor, advisor, dean, or another student.
- Provide truthful information for class absences when asking faculty for excused absences or for a make-up for a quiz, exam, or homework.
- Provide truthful information on your resume including work history, academic performance, leadership activities, and membership in student organizations.
- Respect the property, personal rights, and learning environment of all members of the academic community.
- Live up to the highest ethical standards in all academic and professional endeavors.

Students violating the Student Code of Ethics will be reported to the Dean’s office and are subject to penalties described in the West Texas A&M University Code of Student Life, which may include suspension from the University. In addition, a violator of the Student Code of Ethics may become ineligible for participation in student organizations sponsored by the COB and for recognition for College academic honors, awards, and scholarships.

COB Student Resources Link
The COB has developed a Student Resources repository (e.g., APA writing style information, business core reviews, facilities, and other helpful supplements), which can be found on the COB Website. Additionally, WTAMU has developed an Academic Study Skills information site to assist students (e.g., study habits, supplemental instruction, tutoring, writing and math skills), which can be found on the WTAMU Website. For WTAMU Writing Center information (for students needing writing assistance, guidance, and feedback), please visit their website.
COB Communications Component
Students earning a BBA degree must complete at least one course with a communications component as part of the business core requirements. The COB communications component is a requirement in the following courses: ACCT 4373 (Accounting Communications), BUSI 1304 (Business Communication), BUSI 3320 (Digital Collaboration and Communication), BUSI 4333 (Cross-Cultural Issues in Business Communications), BUSI 4350 (Current Issues in Management Communications), BUSI 4375 (Healthcare Communication), BUSI 4380 (Conflict Resolution and Negotiation), BUSI 4382 (Emerging Media Law), CIDM 3320 (Digital Collaboration and Communication), ECON 4370 (Economics of Health Care), FIN 3350 (Personal Financial Planning), FIN 4320 (Investments), FIN 4321 (Portfolio Theory), MGT 3335 (Organizational Behavior), MGT 4380 (Conflict Resolution and Negotiation), or MKT 3342 (Consumer Behavior).

Students in a communications component course are explicitly required to demonstrate knowledge of communication skills. Specific objectives may include but are not limited to the following concepts put forth by the National Business Education Association: (1) ability to organize a written and an oral message coherently and effectively, (2) ability to use technology for communication, (3) ability to research a topic, prepare a report, and present the findings to all organizational levels, and (4) ability to demonstrate critical-thinking skills. Specific course requirements and the role of the communications component with respect to student grading policy are at the discretion of the course instructor of record.

Student Travel Opportunities
In multiple business courses, there may be opportunities for student travel supplemented by student fees. If you have an interest in such opportunities as they become available, please notify a faculty member.

Dropping/Repeating the Course
Should a student decide to drop the course, it is the student’s responsibility to be aware of the final drop dates and adhere to the WTAMU Add/Drop policy. Any student participating in the course after the WTAMU posted drop date will be considered active and a grade will be administered at the end of the course for that student. Students are charged a fee for any course attempted for a third or subsequent time at WTAMU other than a non-degree credit developmental course or exempted courses.

Scholastic Dishonesty
It is the responsibility of students and instructors to help maintain scholastic integrity at the University by refusing to participate in or tolerate scholastic dishonesty. Commission of any of the following acts shall constitute scholastic dishonesty. This listing is not exclusive of any other acts that may reasonably be said to constitute scholastic dishonesty: acquiring or providing information for any assigned work or examination from any unauthorized source; informing any person or persons of the contents of any examination prior to the time the examination is given in subsequent sections of the course or as a makeup; plagiarism; submission of a paper or project that is substantially the same for two courses unless expressly authorized by the instructor to do so; submission of a paper or project prepared by another student as your own. You are responsible for being familiar with the University’s Academic Integrity Code, as well as the COB Student Code of Ethics listed in this document.
Academic Integrity
All work must be completed individually unless otherwise stated. Commission of any of the following acts shall constitute scholastic dishonesty: acquiring or providing information for any assigned work or examination from any unauthorized source; informing any person or persons of the contents of any examination prior to the time the exam is given in any subsequent sections of the course or as a makeup; plagiarism; submission of a paper or project that is substantially the same for two courses unless expressly authorized by the instructor to do so. For more information, see the Code of Student Life.

Viewpoints/External Websites Disclaimer
The views expressed in this document, web-based course materials, and/or classroom presentations and discussions are those of the professor and do not necessarily represent the views of West Texas A&M University, its faculty and staff, or its students. Views expressed by students are likewise those of the person making such statements. It is understood and expected that each individual within this course will respect and allow individual difference of opinion.

Neither the professor, the COB, nor WTAMU are responsible for the content of external websites discussed in the classroom and/or linked to via online course materials, emails, message boards, or other means. Referred websites are for illustrative purposes only, and are neither warranted nor endorsed by the professor, COB, or WTAMU. Web pages change frequently, as does domain name ownership. While every effort is made to ensure proper referencing, it is possible that students may on occasion find materials to be objectionable for reasons beyond our control.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (Code of Student Life). Unacceptable or disruptive behavior will not be tolerated. Students engaging in unacceptable behavior may be instructed to leave the classroom. Inappropriate behavior may result in disciplinary action or referral to the University’s Behavioral Intervention Team. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc.

Technology Requirements
All technological requirements for the successful completion of this course are the responsibility of the student, including access to a working computer and or to a device with secure broadband Internet connection, data storage and retrieval, and state-of-the-art security. The student is responsible for all technological problems not related to WTAMU, including but not limited to equipment failures, power outages, and Internet breakdowns. Furthermore, students are responsible for all necessary technical and operational skills for completing this course, and for being familiar with WTClass (the Blackboard Learning System) both in a general sense and in a specific sense as pertaining to this course and any materials stored within. The professor is not responsible for any technical matters related to WTClass. Students must contact WTClass if they have problems accessing and/or using the WTClass environment.
Physical or Educational Access - ADA Statement
West Texas A&M University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to register with Student Disability Services (SDS) and to contact faculty members in a timely fashion to arrange for suitable accommodations. Contact Information: Student Success Center, CC 106; phone 806-651-2335.

Title IX Statement
West Texas A&M University is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free of sexual misconduct and discrimination. Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. Harassment is not acceptable. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here:

- WTAMU Title IX Coordinator Becky Lopez – Kilgore Research Center 147, or call 806.651.3199
- WTAMU Counseling Services – Classroom Center 116, or call 806.651.2340
- WTAMU Police Department – 806.651.2300, or dial 911
- 24-hour Crisis Hotline – 800.273.8255, or 806.359.6699, or 800.692.4039
- Visit the Notalone website
For more information, see the Code of Student Life.

WT Attendance Policy for Core Curriculum Classes
For the purposes of learning assessment and strategic planning, all students enrolled in Core Curriculum or developmental courses at West Texas A&M University must swipe their Buff Gold cards through the card reader installed in the classroom/lab for each class/lab meeting.

Evacuation Statement
If you receive notice to evacuate the building, please evacuate promptly but in an orderly manner. Evacuation routes are posted in various locations indicating all exits, outside assemble area, location of fire extinguishers, fire alarm pull stations and emergency telephone numbers (651.5000 or 911). In the event an evacuation is necessary; evacuate immediately do not use elevators; take all personal belongings with you; report to outside assembly area and wait for further information; students needing assistance in the evacuation process should bring this to the attention of the instructor at the beginning of the semester.

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* Syllabus template approved by COB Curriculum Committee May 2018. Annual review of the syllabus is a formal part of the COB continuous improvement process.