 INFO 3130: FALL 2017

# INSTRUCTOR: Dr. Matt North

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# COURSE PREREQUISITES

Basic statistics course (STAT 2050 or MGMT 2340 or MATH 1040 or MATH 2040 or BESC 3010), and basic knowledge of Microsoft Excel, or Departmental Approval and University Advanced Standing.

# REQUIRED TEXTBOOKS

1. *Data Mining for the Masses*, 2nd Edition. North, Matthew (2016). Infinite Press. ISBN: 978-1523321438

**The book will be provided to you free of charge as a downloadable PDF in Canvas. If you would like a printed copy of the book, it can be purchased on Amazon.**

# COURSE DESCRIPTION

Intended for people who will be working with data analysts and data scientists, managing analytics projects, or investing in analytics ventures, and aspiring data scientists. Provides opportunities for students to gain skills in data-analytic thinking required to succeed in today's analytical and data-driven economy. Introduces the basics of data management and data analytics. Covers core analytic techniques: data exploration and visualization, pattern discovery (segmentation and association), predictive modeling (decision tree, logistic regression, neural network), and forecasting. Lab access fee of $35 for computers applies.

# LEARNING OBJECTIVES

1. Explain the general theoretical and practical aspects of data analytics.
2. Identify basic components of data analytics and define the roles of preprocessing, analytic techniques, and classification and prediction.
3. Demonstrate the ability to prepare and analyze a variety of data sets for specific purposes.
4. Determine which data analytic techniques are most suited to which organizational problems.

# GETTING STARTED IN THE COURSE

After reading this syllabus, you should take time to look around the Canvas course environment. Much of course content and communication tools for this semester are found here. The weekly course schedule is also included in the Syllabus.

The basic weekly framework as outlined in the schedule is implemented in the Canvas lesson modules. A lesson module has been created for each week in the semester. Each lesson module will contain a link to the following if applicable: chapter slideshow, weekly discussion topic, links to tutorials or screencasts, participation instructions, and quizzes.

Feedback for each graded assignment can be viewed in the Grades area.

# WEEKLY TIME ESTIMATES

The Northwest Accreditation Board that accredits Utah Valley University has recommended that students be expected to spend about 3 hours of work or study for every credit hour of a course per week. So if the course is 3 credits, that would be 9 hours per week of work for each week in the semester.

Excuses after the fact will not be a reason to delay due dates or extend the length of the semester. Incomplete grades are rarely given and only in accordance with UVU policy.

# GRADING PERCENTAGES

Your grade for this semester will be determined as follows:

Hybrid Activities (x12) 60 pts Assignments (x10) 100 pts Mid-term Exams (x2) 100 pts Final Exam 100 pts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total 360 pts

# GRADE SCALE (%):

94 - 100: A 90 - 93: A- 87 - 89: B+ 83 - 86: B 80 - 82: B- 77 - 79: C+ 73 - 76: C 70 - 72 C- 67- 69: D+ 63 - 66: D 60 - 62: D- < 60: F

# ASSIGNMENTS:

Your class participation will be a key component helping you in assimilating and understanding the terminology, ethical ramifications, problem solving, and current trends in the areas of Information Systems and Information Technology. You will submit your completed assignments using Canvas. Your instructor will make these assignments available throughout the semester. **Late assignments will not be accepted.** All assignments are individual assignments and must be completed independently. You will be tested on these concepts and skills during the Mid-Term Exams so make sure you do this work for yourself. See the section below on Academic Integrity for information about how cheating and plagiarism will be handled. Because this course is delivered as a hybrid of on-campus and online, you will also complete graded hybrid activities each week.

# Project:

To complete the project, you will form a group of two to three people and create an analytic model for a data set of your group’s choice. You will present this project to the class. The detailed requirements for the project will be placed in Canvas.

All group members will be required to participate in authoring, editing, and researching. Each team member must make a meaningful contribution to the project by the due date. No late work will be accepted for the project. **If a student does not contribute to their team’s project, they will receive an F grade for INFO 3130**.

# EXAMS:

Three times during the semester, you will take exams that tests your understanding of problem-solving using analytics.

These hands-on exams are worth a large percentage of your grade, so do not take these lightly. The best way to prepare for these exams is to complete the participation activities, review assigned tutorials, videos and other helpful resources. Make sure you get any unanswered questions addressed before you take the exams.

# MAKEUP/EARLY EXAMS:

Very rarely you may have extenuating circumstances that require taking an early exam or a makeup exam or quiz. You must gain prior approval from your instructor to take an exam early or make up an exam. Trying to gain dispensation after the fact will usually result in denial of your request.

Any make up exams or quizzes will be administered by the department and there will be a **proctor fee.**

It is university policy that students take final exams during finals week.

# SOFTWARE REQUIREMENTS

Work for this class will be completed primarily using Excel, Rapidminer and R. These are available on university computers through the virtual lab. The instructor may also introduce exercises in other analytics to help broaden your experience.

The lab fee you paid when you registered for the course allows you to use the computer labs in the CS building. Use your UVLink username and password to log into the computer labs. Contact your instructor if you are having problems.

# ABET Accreditation

The Information Systems and Information Technology programs at UVU are accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). According to ABET,

“accreditation is proof that a collegiate program has met certain standards necessary to produce graduates who are ready to enter their professions” (http://www.abet.org/why-accreditation-matters/).

The IS&T Department follows strict data collection, curriculum, and assessment standards to maintain ABET accreditation. To ensure both Information Systems and Information Technology programs strive to meet the standardized outcomes, ABET outcomes are regularly assessed in INFO and IT courses.

# PROHIBITION ON SOFTWARE COPYING

Copying of unlicensed software is illegal and punishable by fines if you or your place of business is audited. We strongly encourage you to support those who make their living developing software by purchasing your software.

# ACADEMIC INTEGRITY

Academic dishonesty will not be tolerated. The penalty for a first offense is a failing grade for the assignment, test, or quiz. The student will not be allowed to resubmit that assignment, test, or quiz for a grade. A second offense will result in a failing grade for the course. All violations of academic integrity will be reported to (a) the Information Systems & Technology Department Chair and (b) the Student Conduct Director. Multiple occurrences of academic integrity violations on record for a student will involve further sanctions, such as probation, suspension, expulsion, and revocation of admissions or degree. Please read Section D Academic Responsibilities and Section M Sanctions described at http://www.uvu.edu/catalog/current/policies-requirements/student-rights-and-responsibilities.html.

“Cheating is the act of using, attempting to use, or providing others with unauthorized information, materials, or study aids in academic work. Cheating includes, but is not limited to, passing examination answers to, or taking examinations for someone else, or preparing or copying others’ academic work.”

Cheating includes copying assignments and assessments from another student, taking screenshots of quizzes and tests, sharing copies of unauthorized screenshots, etc., or using a substantial portion of another student’s work as your own work. In other words, if it appears to the professor that the work of two or more students is substantially the same, sanctions will be imposed on all parties. Even after the course is completed, sanctions may be imposed. That is, if evidence surfaces indicating academic integrity violations occurred, you may receive a failing grade on a deliverable, failing course grade, or revocation of a degree.

# STUDENTS WITH DISABILITIES

Students who need accommodations because of a disability may contact the UVU Accessibility Services Department (ASD), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the ASD office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677. Accommodative testing must be prearranged.

# TEACHER/COURSE EVALUATIONS

UVU is dedicated to providing quality academic experiences for students. Help us identify areas where I can improve my teaching by participating in the Student Ratings of Instructor (SRI). Your confidentiality is assured. Your feedback is critical if we are to improve the teaching and learning at UVU.

# BACKUP NOTICE

You must keep backup copies of all your graded work until the end of the course; recording errors may occur, servers may crash, or your instructor may lose your scores due to some hardware failure or accident. It is your sole responsibility to prove you have completed all the required work at the end of the semester!

# Safe Zone

UVU Policy 165 defines protected classes as

“race, color, religion, national origin, sex, sexual orientation, gender identity, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, genetic information, or other bases protected by applicable federal, state, or local law.”

Most full-time IS&T faculty and staff have received Safe Zone training that states “regardless of gender identify, gender expression, or sexual orientation, you will be treated and respected as a human being.”

Bigotry and harassment will not be tolerated by the IS&T Department.

For other policies pertaining to students in this course, please visit: https://www.uvu.edu/ist/studentresources/syllabus.html

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| **WEEK #** | START  DATE | **TEXT TOPICS** | **GRADED ASSIGNMENT** |
| **1** | 21 Aug | Chapter 1: Introduction and CRISP-DM | Hybrid Activity: Outline CRISP-DM Assignment: Data Analysis in Excel |
| **2** | 28 Aug | Chapter 2: Business & Data Understanding  Chapter 3: Data Preparation | Hybrid Activity: Data Understanding DB Assignment: Chapter 3 Exercise |
| **3** | 4 Sep | Labor Day Holiday, No Class | Hybrid Activity: Outliers |
| **4** | 11 Sep | Chapter 4: Correlation | Hybrid Activity: Types of Correlation Assignment: Chapter 4 Exercise |
| **5** | 18 Sep | Chapter 5: Association Rules | Hybrid Activity: Hospitalization Assignment: Chapter 5 Exercise |
| **6** | 25 Sep | Chapter 6: Clustering | Hybrid Activity: Cluster Visualization  Assignment: Chapter 6 Exercise |
| **7** | 2 Oct | Midterm Exam #1 |  |
| **8** | 9 Oct | Chapter 7: Predicting Categories | Hybrid Activity: Is Clustering Profiling?  Assignment: Chapter 7 Exercise |
| **9** | 16 Oct | Chapter 8: Linear Regression | Hybrid Activity: Predicting Survival Assignment: Chapter 8 Exercise |
| **10** | 23 Oct | Chapter 9: Logistic Regression | Hybrid Activity: Predicting Renewals Assignment: Chapter 9 Exercise |
| **11** | 30 Oct | Chapter 10: Decision Trees | Hybrid Activity: Decision Tree Voodoo Assignment: Chapter 10 Exercise |
| **12** | 6 Nov | Chapter 11: Neural Networks | Hybrid Activity: Propagation DB Assignment: Chapter 11 Exercise |
| **13** | 13 Nov | Midterm Exam #2 |  |
| 14 | 20 Nov | Thanksgiving Week, No Class |  |
| 15 | 27 Nov | Chapter 12: Text Mining  Chapter 13: Cross-validation | Hybrid Activity: Prez sez what?!? |
| 16 | 4 Dec | Chapter 14: Ethics  Final Exam Review |  |
| 17 |  | Final Exam, Monday, December 11th, 3 PM | |