



COURSE SYLLABUS

COURSE TITLE: Data Science and Big Data

TERM & YEAR: Fall 2021

COURSE & SECTION NUMBER: IS 5213 OL1 FA-2021

TIME & PLACE: Online

NUMBER OF CREDIT HOURS: 3

OFFICE LOCATION: Online

COURSE DESCRIPTION: This course introduces the latest data analytics tools and platforms, explores the rapidly developing field of Data Science. You will learn how best to gain actionable insights from big data, as well as to develop data solutions and data transformation road maps for businesses of varying sizes and complexity levels. The goal of this course is to maximize the utilization of available data and optimize the efficiency of decision-making. Previous experience with Hadoop, Spark or distributed computing is not required.

PREREQUISITES:

REQUIRED TEXT: Udacity.com materials

REFERENCES: Big Data Now (PDF provided)

OTHER MATERIALS:

Holmes, A. (2014). Hadoop in practice, second edition. Manning Publications.

LEARNING OUTCOMES: Upon completion of this course, the student should be able to:

1. Hands on experience with data science tools and real-world case studies
2. Deploy a structured lifecycle approach to data analytics problems
3. Exposure to the nature, potential, and tools for processing Big Data
4. Apply appropriate analytic techniques and tools to analyzing big data
5. Develop best practices for instituting data transformation
6. Gain understanding of the MapReduce paradigm and Hadoop ecosystem
7. Study distributed machine-learning algorithms

COURSE REQUIREMENTS:

ATTENDANCE/PARTICIPATION: All students are expected to abide by the attendance policy set forth by the instructor in each class. Attendance may be registered at the beginning, end of class or on return from break; and may be deducted for tardiness. Lack of attendance may impact course grades and Academic standing. Should more than two (2) unexcused absences accumulate the student will be academically dropped from the course. When possible, students must provide advance notice of absences, as well as relevant documentation regarding absences, to the instructor as soon as possible following the illness or event that led to the absence. Any arrangement to make up work because of class absence is the responsibility of the student. The instructor, who will explain the evaluation (grading) statement at the beginning of the term, determines the effect of absences upon grades.

Students enrolled in hybrid/seated classes that require only one meeting day per semester/term are required to attend the entire day scheduled for the seated component of the course. Students who are absent from this scheduled meeting for any portion of the day will be administratively withdrawn from the course.

DUE DATE REQUIREMENTS:

Trine University's academic philosophy is to provide each adult student with an opportunity to actively learn and

demonstrate competencies needed in today's high-performance workplace. Just as in the workplace, ***it is expected that you will complete ALL assignments and assessments by the due date in order to receive full credit.*** The due date for all postings and assignments is **11:55 P.M. EST (Indianapolis Time)**, on the date listed in the course Submission Schedule.

Late assignments **WILL NOT BE ACCEPTED**; please plan accordingly.

If timely submission of an assignment becomes challenging for a student due to a legitimate reason, an advance notice must be sent to the Instructor with the reason for the delay and documentation when appropriate. The grading of these assignments will be at the Instructor's discretion.

ACADEMIC MISCONDUCT

The University prohibits all forms of academic misconduct. Academic misconduct refers to dishonesty in examinations (cheating), presenting the ideas or the writing of someone else as one's own (plagiarism) or knowingly furnishing false information to the University by forgery, alteration, or misuse of University documents, records, or identification. Academic dishonesty includes, but is not limited to, the following examples: permitting another student to plagiarize or cheat from one's own work, submitting an academic exercise (written work, printing, design, computer program) that has been prepared totally or in part by another, acquiring improper knowledge of the contents of an exam, using unauthorized material during an exam, submitting the same paper in two different courses without knowledge and consent of professors, or submitting a forged grade change slip or computer tampering. The faculty member has the authority to grant a failing grade in cases of academic misconduct as well as referring the case to Student Life.

PLAGIARISM

You are expected to submit your own work and to identify any portion of work that has been borrowed from others in any form. An ignorant act of plagiarism on final versions and minor projects, such as attributing or citing inadequately, will be considered a failure to master an essential course skill and will result in an F for that assignment. A deliberate act of plagiarism, such as having someone else do your work, or submitting someone else's work as your own (e.g., from the Internet, fraternity file, etc., including homework and in-class exercises), will at least result in an F for that assignment and could result in an F for the course.

ELECTRONIC DEVICES:

Use of electronic devices including smart watches and cell phones is prohibited during exams or quizzes unless directly allowed by the instructor.

GRADING/EVALUATION:

Performance Evaluation

Course grades will be determined as follows:

	<u>%</u>	<u>Points</u>
1) Lesson 1-9 Hands on and Quizzes -	80%	800 pts
2) Final Project described in Week 8 100 points	10%	100 pts
3) Technical annotation of the book 100 points	10%	100 pts

Total: 100% 1,000 pts

NOTE: *All written assignments must conform to the guidelines set forth by the American Psychological Association.*

Adjustments to Assignments, Schedule, and Syllabus

Any adjustments will be communicated to students in class and on Moodle with as much advance notice as possible.

TRINE GRADUATE GRADING SCALE:

Grade	Percentage	Quality Points	Meaning of Grade
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A	93-100	4.0	Excellent
B+	87-92	3.5	Very Good
B	81-86	3.0	Good
C+	75-80	2.5	Above Average
C	70-74	2.0	Average (lowest passing grade)
F	00-69	0.0	Failure
I	Incomplete	Not figured into GPA	
IP	In Progress (grade deferred)	Not figured into GPA	
W	Withdrawal	Withdrawal before completion of 80% of semester	
WP	Withdrawal	Withdrawal after completion of 80% of semester issued only under special circumstances and with approval of the department chair/director	

COURSE CALENDAR/SCHEDULE:

Weeks	Readings	Activities	Due
Week 1 08-23-2021	Lesson 1 - Introduction to Data Science from Udacity  Big Data Now textbook in PDF File	<input type="checkbox"/> Lesson 1 - Introduction to Data Science from Udacity  Big Data Now textbook in PDF File	ALL DUE Sunday 08/29 11:55pm
Week 2 08-30-2021	Week 2 - Lesson 2 Titanic Survivor Data Project 1 and Data Wrangling Lesson 3	Week 2 - Lesson 2 Titanic Survivor Data Project 1 and Data Wrangling Lesson 3	ALL DUE Sunday 09/05 11:55pm
Week 3 09-06-2021	Week 3 - Lesson 4 Problem Set 2: Wrangling Subway Data	Week 3 - Lesson 4 Problem Set 2: Wrangling Subway Data	ALL DUE Sunday 09/12 11:55pm
Week 4 09-13-2021	Week 4 - Lesson 5 - Data Analysis	Week 4 - Lesson 5 - Data Analysis	ALL DUE Sunday 09/19 11:55pm
Week 5 09-20-2021	Week 5 Lesson 6 - Problem Set Project 3: Analyzing Subway Data	Week 5 Lesson 6 - Problem Set Project 3: Analyzing Subway Data	ALL DUE Sunday 09/26 11:55pm
Week 6 09-27-2021	Week 6 Lesson 7 - Data Visualization	Week 6 Lesson 7 - Data Visualization	ALL DUE Sunday 10/03 11:55pm
Week 7 10-04-2021	Week 7 Project 4 Lesson 8 Visualizing Subway Data and Lesson 9 - MapReduce	Week 7 Project 4 Lesson 8 Visualizing Subway Data and Lesson 9 - MapReduce	ALL DUE Sunday 10/10 11:55pm
Week 8 10-11-2020	Week 8 - Final Project (Big) Practicing MapReduce on Subway Data	Week 8 - Final Project (Big) Practicing MapReduce on Subway Data	ALL DUE Saturday 10-16-2020 11:55pm

Trine Online Academic Calendar

<https://www.trine.edu/online/about/academic-calendar.aspx>

Fall 2020

Date	Information
August 23	Term 1 begins
August 30	Last day to drop a course at 100% refund
October 6	Last day to drop a course - no refund
October 16	Term 1 ends
October 18-22	Fall Break (no classes)
October 25	Term 2 begins
November 1	Last day to drop a course at 100% refund
November 25-26	Thanksgiving Break (TrineOnline offices closed)
December 8	Last day to drop a course - no refund
December 18	Term 2 ends