

Spring 2020

IS 465-002: Advanced Information Systems

Xinyue Ye

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Course Number: IS 465
Course Title: Advanced Information Systems
Section: 002
Semester: Spring 2020
Date & Time: F 1:00 PM -3:50 PM
Location: CKB 310
Credits: 3

Delivery Mode: Face-to-Face

Instructor Information:

Name: Xinyue Ye
Email: xye@njit.edu

TA Information:

Name: Jiaxin Du
Email: jd688@njit.edu

Office Hours:

Friday: 9:15am – 12:10pm; 4pm-5:25pm
Office: 3420 GITC
And Email (Preferred)

Description

This course gives an introduction to data analysis, probability and statistics from an information systems perspective, including many of the techniques that are most relevant to the profession of Data Scientist for business, data and web analytics, as well as current research areas. The course emphasizes manipulation and analysis of relevant data sets. Course topics include the rudiments of probability and random variables, estimation, hypothesis testing, graphics and visualization, and data analytics algorithms. This course will also be featured with introductory cutting-edge methods/case studies from business intelligence, computational social science, deep learning, and urban computing in the hands-on environment.

At the end of this course, the student should be able to:

1. Build up a solid foundation of statistics and probability theories.
2. Apply statistical analysis to real world data sets.
3. Interactively visualize data sets.
4. Master data analytics techniques, and apply algorithms to real world data sets.

Prerequisites

Statistical GER (MATH 105, MATH 120, MATH 225, MATH 244, MATH 279, MATH 305, MATH 333, IE 331, ECE 321 or MNET 315), and (IS 265 or MIS 245) and IS 344, and (IS 331 or CS 431) or Waived by the Instructor.

Attendance / Participation

Attendance in face to face classes will be taken for class meeting randomly. One miss will lose two points. Students who miss 3 or more attendance calls will receive a 'F'. Please only talk when you are allowed to, in order to respect the instructor and other students in the classroom. One violation will lose two points, until losing all 10 points for Class Behavior (10% of the final grade, 10 points).

Readings

The weekly schedule of readings, topics, and assignments (if any) will be in the NJIT Canvas. Make sure you check NJIT Canvas every Monday – I post new materials by Sunday nights.

Assignments (Individual and Team)

There will be several individual and team assignments over the semester. Details on each assignment will be posted in NJIT Canvas. Each team cannot be more than three students.

READING ASSIGNMENTS:

During some weeks, each team will be assigned one paper to read. Teams are expected to develop a 5 – 7 page Powerpoint Slide set to summarize the assignment paper. The presentations should be posted to a google drive folder shared by the instructor. Student teams will present their findings / summary in class.

TECHNICAL ASSIGNMENTS:

There will also be technical homework assignments in this course. Some of them are individual assignments and some will be team-based. More details will be posted on NJIT Canvas regarding these assignments.

LABS:

There will be several labs **IN CLASS**. Your participation is expected for these labs, and absence during the lab results in 0 point for that lab.

Projects (In teams)

Objective: To demonstrate the ability to apply data analytics techniques to solve real world problems.

Summary: TWO projects will be assigned to teams throughout the semester.

PROJECT ONE: Visual Analytics

Teams are expected to find an interesting data set and visualize it. Each team will then present the visualization model in a 10-minute presentation to the class. This happens in the middle of this semester depending on our class progress.

PROJECT TWO: Data Mining

Teams are expected to work with a real-world organization to gather data set, analyze it, and try to extract insightful information / knowledge.

Late Assignments Policy

Each Homework, Lab, or Team Project will have specified deadlines. Unexcused late submission of homework receives a 20% penalty. This means that you start with 8 out of 10 points as the maximum.

Assignments submitted after graded assignments are returned or reviewed in class receive no credit.

Grading

NJIT Academic Policy has grades for courses assigned as follows:

GRADE	GPA	SIGNIFICANCE
A	4.0	Excellent
B+	3.5	Good
B	3.0	Acceptable
C+	2.5	Marginal Performance
C	2.0	Minimum Performance
F	0.0	Failure

Final grades will tentatively be assigned as follows. There may be slight modifications, depending on issues that arise during the semester.

Grading Category Weights

Two Team Projects: 30%

Homework: 30%

Labs: 20%

Class Behavior: 10%

Final Exam: 10%

Grading Scale

A: 90 - 100

B+: 85 - 89

B: 80 - 84

C+: 75 - 79

C: 60 - 74

F: 0 - 59

Excellent participation demonstrated by preparation for discussion and thoughtful contributions (email and in class) will have the effect of **raising** a final letter grade by one value (e.g. B to B+, or B+ to A). Likewise, poor participation demonstrated by consistent lack of preparation for discussion and little or no thoughtful contributions (on-line and in class) will have the effect of **lowering** a final letter grade by one value (e.g. A to B+, B to C+).

Honor Code

Any evidence of cheating in any form, including plagiarism, will be dealt with according to the honor code of NJIT (course failure and suspension or expulsion). Please note: There will be no warnings or chances with regard to cheating. Any discovered case of cheating will be immediately passed to the Dean of Students for further investigation. Cheating is not worth it.

You may not only fail this course but also be suspended from NJIT. The full text of the NJIT Honor Code is available for your review at <http://www.njit.edu/academics/honorcode.php>.

Spring 2020 Outline/Weekly Schedule – Subject to Minor Modification

Week	Topics
1 (1/24)	Introduction
2 (1/31)	Value of Data Analytics
3 (2/7)	Probability Theory & Statistics Basics (I)
4 (2/14)	Probability Theory & Statistics Basics (II)
5 (2/21)	Text Mining (I)
6 (2/28)	Text Mining (II)
7 (3/6)	Text Mining (III)
8 (3/13)	Space-Time Data Visualization (I)
9 (3/20)	Space-Time Data Visualization (II)
10 (3/27)	Exploratory Data Analysis
11 (4/3)	Regression and Modelling (I)
12 (4/10)	Good Friday (University Closed)
13 (4/17)	Regression and Modelling (II)
14 (4/24)	Network Analytics (I)
15 (5/1)	Network Analytics (II)
16 (5/5) Tuesday	Final Project Presentation
17 (5/8)	Final Exam