Syllabus Spring 2021

Mathematics 1040-301
Introduction to Statistics and Probability

Class time: TuTh 6:00pm-7:20pm
Classroom: UAC401

Math 1040 is a three credit course satisfying the QB Quantitative Reasoning Requirement. This course addresses the Essential Learning Outcomes: Inquiry and Analysis, Critical Thinking, Quantitative Literacy, and Foundations of Skills for Lifelong Learning.

Important to Note:

- **Print and bring the lecture notes posted on Canvas to the classroom.**
- **All the exams will be conducted in-person even if the classes are taught online.**

Instructor:

- Santosh Pathak, Office U844
- E-mail: s.pathak@utah.edu

Office hours: TuTh 5-6pm (Or by appointment)

Syllabus subject to change: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas.

Technical requirements: If the classes are taught online then

- quizzes will be taken in Zoom. For this, you will need in addition to the steady internet connection a connected camera (on a smartphone or laptop).

- quizzes will be submitted digitally on Canvas, so some form of digitizing technology will be needed. This could be a scanner, but there are excellent alternative scanning apps for smartphones.
- quizzes must be submitted as single PDF files. There are many scanning apps available for Android and IOS, some examples are: https://play.google.com/store/apps/details?id=com.adobe.scan.android&hl=en_US
  https://apps.apple.com/us/app/adobe-scan-digital-pdf-scanner/id1199564834

Textbook: Elementary Statistics: Picturing the World, by Ron Larson and Betsy Farber Seventh Edition.

Canvas: Quiz/exam solutions, grades, any solutions for the exam reviews, weekly schedule, and other handouts will be posted on Canvas. Any important announcements will be send through Canvas and to you by Umail. Please check Canvas page and your email frequently.

Important Dates:

- Midterm Exam 1: March 23
- Midterm Exam 2: April 27
- Midterm Exam 3: May 18
- Final Exam: TBA
- Last day to add without a permission code: February 26
- Last day to add, drop, audit, and elect CR/NR: March 5
- Last day to withdraw from classes: April 16

All important dates can be seen at: https://registrar.utah.edu/academic-calendars/asia20-21.php

Prerequisites: C or better in MATH 1010 (Intermediate Algebra) or University of Utah Placement score of 3, or Accuplacer CLM (College Level Math) score of 50 or better (Available through the Testing Center). This means that you should be able to manipulate variable expressions, graph functions, work with simple linear equations, fractions, exponents, radicals.

Course Objectives: Math 1040 will fulfill your Quantitative reasoning-Statistics/Logic (QB) requirement for graduation. This course addresses the following Essential Learning Outcomes: inquiry and analysis, critical thinking, oral communication, quantitative literacy/problem solving. Math 1040 is an introductory statistics and probability course. We will learn how data is collected, organized, analyzed and interpreted, how to determine the probability that an event will occur, how to create and use probability distributions, recognize normal (bell-shaped) distributions and use the properties of distributions in real-life applications. Statistics and probability are applicable to a wide variety of academic disciplines, from the natural and social sciences to the humanities, government and business.
This course is based on Chapters 1-5 and Sections 9.1 and 9.2. You are expected to read each section that we cover.

At the end of the course you should be able to

- Recognize different ways of collecting data and decide what method would be the best for a given situation.
- Distinguish between various sampling techniques and decide what sampling technique would work the best in a given situation.
- Use different tables and graphs to organize and analyze data.
- Calculate mean, median, mode, range, quartiles, interquartile range, outlier(s), find percentiles and interpret the results in variety of ways.
- Find the z-score (the standard score) and compare z-scores from different data sets.
- Find the mean, variance and standard deviation; interpret standard deviation using the Empirical Rule for the bell-shaped distribution; interpret standard deviation in connection with a distribution that is not bell-shaped or it is unknown using Chebychev's Theorem; find the standard deviation for grouped data.
- Determine the probability of an event using the Fundamental Counting Principle, conditional probability, the multiplication rule, and the addition rule.
- Create and use probability distributions; find the mean and standard deviation.
- Recognize binomial experiment and calculate the binomial distribution using the Binomial Probability Formula.
- Recognize normal (bell-shaped) distributions and standard normal distributions; calculate the areas/probabilities using the standard normal distributions table.

- Use the standard normal distribution table to find probabilities or values in connection with real-life applications.
- Explain the meaning of different values of the correlation coefficient and relate the concept to the strength/weakness of linear relationship between two variables when examining different scatter plots.
- Find the equation of the regression line (line of best fit) and predict values using the equation of the regression line.

Homework: Homework problems are assigned for each section. Homework will not be collected, but I strongly encourage that you try these problems. I will be answering homework question at the beginning of each class (whenever possible).

Quizzes: Short quizzes will be given occasionally for last few minutes or at the beginning of the lecture in every about two weeks. I will announce the quiz date at least two class periods before they take place. I will count 5 best quizzes towards your final grade. Some of the quizzes could be group quizzes where students are allowed to discuss with their friends and even with the instructor. No make-up quizzes will be given, but the lowest 2 quiz grades will be dropped at the end of the semester for all students.

Midterm Exams: You will have 3 mid-term exams (1 hour 20 minutes each). You must bring your ID to the exam. The lowest exam score (one score) will be dropped at the end of the semester. The final exam score cannot be dropped.

Final Exam: A cumulative comprehensive final exam will be given on the week of June 7-10. The date for the final exam will be announced later once the university determines it.

Excused Absence: Absence from an exam/quiz will be excused only if you can provide a verifiable and convincing evidence that you have a significant illness or serious personal or family crisis what will prevent you from attending. Except under extremely unusual circumstances, you must inform me at least few days in advance of the missed test, and you must take the make-up exam prior to the actual exam date. University excused absences are (band, debate, student government, intercollegiate athletics, etc.), military duty or religious obligations are excused with an official documentation addressing the reason for absence. You are expected to promptly make arrangements with me to make up the test. Vacation or work schedule are not considered to be excused absences.

Grading Policy: Your grade will be based on the following:

Quizzes	25%
Two midterm Exams (20% each)	40%
Final Exam	35%

Course Grades (Evaluation methods and criteria)
Your final letter grade will be determined by your overall percentage as follows:

A	93% and above	C	[73-77)
A-	[90-93)	C-	[70-73)
B+	[87-90)	D+	[65-70)
B	[83-87)	D	[60-65)
B-	[80-83)	D-	[55-60)
C+	[77-80)	E	Bellow 55%

COVID Related Absences: If you have COVID-19 symptoms, including fever or respiratory symptoms such as cough, phlegm, sore throat, and nasal congestion, you should notify your instructor immediately, call the KCDC for testing guidance, and stay home based on the KCDC's directive. You can return to class if you are clear from COVID-19 symptoms. In order to be excused from your courses, you will need an official medical certification. If you will be absent from an exam, you must email the Assistant Dean of Students at kevin.darco@utah.edu prior to the exam to get the approval for your absence.

Self-quarantine Statement: The University of Utah Asia Campus expects regular attendance at all class meetings. Given the current situation with COVID-19, we have created the following guidelines.

1. If a student has completed less than 50% of the course and is required to self-quarantine, we suggest that the student withdraw from the course. In this situation, all tuition will be refunded with appropriate medical documentation
2. If a student has completed 50-75% of the course and is required to self-quarantine, the Assistant Dean of Students Office will work with the

faculty and student to determine the best scenario. If the decision is to withdraw from a course, all tuition will be refunded with appropriate medical documentation.

3. If a student has completed over 75% of the course and is required to self-quarantine, the student and faculty will work together to ensure that the student is able to complete the course. If the student is unable to finish all coursework during the course, a student may receive the mark "I" (incomplete) and work to complete all remaining coursework in consultation with the instructor.

Zoom Session Statements:

If this course must host Zoom sessions, the University of Utah Asia Campus requires that all students turn on their cameras during the entire course and post their full name in English. We ask that students try to locate a quiet space which will allow for ample social distancing and that students not wear a mask if possible. If a student has financial difficulty obtaining the appropriate equipment for online courses, the UAC can help provide resources.

Student Support: Please speak with the instructor if there is any additional support you would like to discuss for this class. The University offers many support services – some are listed below. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu.

Plagiarism: Students must adhere to the standards of academic integrity for this course. In particular, assessments that are not specifically labelled as being group work should be completed without outside help. We encourage you to make use of other internet sources in the learning process and for assistance on homework, but online resources are not to be used during quizzes or exams. Incidences of academic dishonesty will result at a minimum of a zero grade for that particular assignment, or possible stricter sanctions in accordance with University policy (see below).

Language Policy: The University of Utah Asia campus is committed to providing and fostering an environment that is safe and free from prohibited discrimination. The following language policy applies to all academic and administrative units of the University and to all members of the University

community, including faculty, staff, and students. English is recognized as the official language of instruction, assessment, and curriculum. In addition, English is the official language for all administrative and business related matters of the University.

Academic Misconduct:
Academic misconduct includes cheating, plagiarizing, research misconduct, misrepresenting one's work, and inappropriately collaborating. Definitions of these and other terms can be found in the Student Code at http://www.regulations.utah.edu/academics/6-400.html. The Student Code (at section 6-400(V)) also specifies the required procedures that must be followed when disciplinary actions are taken in response to instances of academic misconduct. For students enrolled in degree programs in the College of Architecture + Planning, a second occurrence of academic misconduct will result in the student's dismissal from their academic program.

Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense 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, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's authority.

The Americans with Disabilities Act: The University of Utah Asia Campus seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the UAC Office of the Dean of Students, 804 Utah Building, 032-626-6002. The UAC Office of the Dean of Students will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the UAC Office of the Dean of Students.