MATH 341: APPLIED STATISTICAL METHODS I

Winter 2018

INSTRUCTOR: DAN YAMASAKI

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CLASS LOCATION: L219

CLASS HOURS: MW 5:30-7:40 PM

ITEM: 3766/3768

SECTION: SHA/A1

**COURSE OVERVIEW AND OBJECTIVES**

This class covers probability theory and applications including trees and Venn diagrams, conditional probability, contingency tables, independence and Bayes theorem. It will cover random variables and sampling distributions (binomial, Poisson, normal, exponential, geometric and hypergeometric) and their use in confidence intervals and hypothesis testing such as t-tests, z-tests, one and two sample mean and proportions, chi-square, linear regression, and ANOVA. The focus will be on real world examples from a variety of sources and using statistical software such as Excel, Minitab, SAS or R. Students should expect to produce reports and presentations.

**Course Outcomes**

After completing this course, students should be able to:

  Formulate a real world problem into the appropriate statistical model

*   Calculate probabilities using the appropriate rule, table or diagram
*   Classify the sampling distributions and calculate probabilities
*   Choose appropriate calculations for a confidence interval or a hypothesis test
*   Perform calculations with and without technological tools
*   Perform appropriate ANOVA model
*   Interpret results and clearly state conclusions in reports and presentations with close attention to detail

**Topics covered will include:**

mean, median, mode

standard deviation, standard error, variance

probability

binomial Poisson, geometric, hypergeometric distribution

exponential, normal distribution, central limit theorem

student’s t distribution

hypothesis testing

confidence intervals

simple linear regression, multiple linear regression

correlation

chi square tests

analysis of variance

Additionally, we will be using Minitab 17 software package

**TEXTS**

* 1) An Introduction to Statistical Methods and Data Analytics 7th edition, by Ott and Longnecker, Cengage Learning 2015

**REQUIREMENTS AND ASSIGNMENTS**

There will be 800 points available in this course:

3 exams at 150 points each 450

5 Minitab projects at 30 points each 150

4 quizzes at 25 points each 100

10 Homework assignments at 10 points each 100

Total 800

There is a large amount of material to be covered. It is understood that a student may have to miss classes due to other commitments; although missing classes tend to be detrimental to the understanding of the material. Historically classroom attendance has been found to be very beneficial. Class notes are meant to supplement, not substitute for attendance.  **Students are held responsible for knowing what was said during class.**

Late homework and Minitab assignments will not be accepted, unless pre-approved by instructor

Laptop computers **cannot** be used during exams or quizzes

**GRADING POLICY**

In conjunction with the Bellevue Community College grading policy, the following grading system will be used in this course:

GRADE PERCENTAGE NO. OF POINTS

A 4.0 92-100 736- 800

A- 3.7 90-91.9 720- 735

B+ 3.3 88-89.9 704 - 719

B 3.0 82-87.9 656 - 703

B- 2.7 80-81.9 640 - 655

C+ 2.3 78-79.9 624 - 639

C 2.0 72-77.9 576 - 623

C- 1.7 70-71.9 560 - 575

D+ 1.3 68-69.9 544 - 559

D 1.0 62-67.9 496 - 543

F 0.0 BELOW 62 BELOW 496

Incomplete

If a student fails to complete all the required work for a course, an instructor may assign the grade of Incomplete (“I”). The student must complete the coursework by the end of the next quarter, or receive the assigned letter grade (usually an “F”).

F Grade

Students who fail a course will receive a letter grade of "F.”

Final Examination Schedule

The Data Analytics Program will adhere to the final examination schedule as stated in the BC Schedule. Final examinations will be held at the end of each quarter at fixed times. Instructors are not required o allow examinations in advance of the regular schedule.

A student who is absent from any examination held at any time during the quarter may forfeit the right to make up the examination. If, for illness or some other circumstance beyond the student's control, the student is unable to be present at any scheduled examination and has contacted the instructor on a timely basis, the student may be permitted to take such examination at a time designated by the instructor. Make-up Exams are on a case by case basis at the instructor’s discretion. Documentation supporting reason may be required. Students are responsible for making necessary arrangements with employers.

Withdrawal From Class

College policy states that students must formally withdraw from a class by the end of the seventh week of the quarter (Registration Office, B125). If a student has not withdrawn by that date, an appropriate letter grade will be assigned for the course.

Hardship Withdrawal

Instructors may assign the grade of “HW” (hardship withdrawal) at their discretion in the event that a student cannot complete the coursework due to extreme and exceptional circumstances. Students may also contact the Enrollment Services office BEFORE grades are assigned in cases of hardship.

Distribution of Grades

Grades will not be posted in the Division or in faculty offices, and secretaries will not give out grades. Students should access their grades through the BC Web site.

Return of Papers and Tests

Paper and/or Scantron score sheet returns will be arranged in the following ways ONLY: by mail, if student supplies the instructor with stamped, self-addressed envelope (with appropriate postage); or by the instructor designating a time and place whereby the student may retrieve his/her papers. Unclaimed papers and/or Scantron score sheets must be kept by the instructor for a minimum of sixty (60) instructional days following the end of the quarter.

**SPECIAL ACCOMMODATIONS**

Students with disabilities who have accommodation needs are encouraged to meet with the Disability Resource Centre (DRC) office located in B132 (telephone 425.564.2498 or TTY 425.564.4110), to establish their eligibility for accommodation.  The DRC office will provide each eligible student with an accommodation letter. Students who require accommodation in class should review the DRC accommodation letter with each instructor during the first week of the quarter.

Students with mobility challenges who may need assistance in case of an emergency situation or evacuation should register with Disability Resource Centre, and review those needs with the instructor as well.

**POLICY REGARDING PLAGIARISM, STEALING, AND CHEATING**

To be clear regarding plagiarism, stealing, and cheating, this course outline includes policy on these matters.

Cheating, stealing and plagiarizing (using the ideas or words of another as one’s own without crediting the source) and inappropriate/disruptive classroom behavior are violations of the Student Code of Conduct at Bellevue College. Examples of unacceptable behavior include, but are not limited to: talking out of turn, arriving late or leaving early without a valid reason, allowing cell phones/pagers to ring, and inappropriate behavior toward the instructor or classmates. The instructor can refer any violation of the Student Code of Conduct to the Dean of Student Services for possible probation or suspension from Bellevue College.

If you choose to cheat, steal, or plagiarize, the following actions will be taken:

1) First instance: you will receive a 0 score for the entire test/project regardless of the extent of the cheating. **Students who receive help and students who give help will be considered equally guilty.**

2) Second instance: you will receive a failing grade for the course and a report of the incident will be forwarded to the Dean of Students. He/she may file the report in your permanent record and/or take further disciplinary action.

If you are accused of cheating, stealing exams and/or plagiarism, there is a Bellevue College Student Discipline and Appeals Procedure (the right to due process) which you may pursue. Contact the office of Division Chair (D110), the Dean of Student Services (B231A) or the Associated Student Body (C212) for information regarding the appeals process.

CALENDAR

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WEEK 1: Reading – Jan 03: Chapter 3.1, 3.3-3.8;

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Jan 01: NO CLASS

Jan 03: Course Requirements, Overview (Lecture 1); Describing Data (Lecture 2)

WEEK 2: Reading – Jan 08: Chapter 4.1-4.5 Jan 10: Chapter 4.1-4.2, 4.4;

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Jan 08: Probability (Lecture 3)

Jan10: Probability Distributions (Lecture 4)

WEEK 3: Reading –

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Jan 15: NO CLASS

Jan 17: QUIZ 1; Continue Probability Distributions

WEEK 4: Reading – Jan 22: Chapter 4.10, 4.13 Jan 24: Chapter 4.11-4.12; Chapter 5.1-5.7; Chapter 10.1-10.2

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Jan 22: Normal Distribution and Normal Approximation to Binomial (Lecture 5); Central Limit Theorem (Lecture 6)

Jan 24: QUIZ 2; Inferences about Population Central Values - Confidence Intervals (Lecture 7)

WEEK 5: Reading–

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Jan 29: Inferences about Population Central Values - Hypothesis Tests (Lecture 8)

Jan 31: QUIZ 3; Review for EXAM 1

WEEK 6: Reading – Feb 07: Chapter 6.1-6.2, 6.4, 6.6, Chapter 10.3(to middle page 495)

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Feb 05: EXAM 1

Feb 07: Inferences Comparing Two Population Central Values - Confidence Intervals (Lecture 9)

WEEK 7: Reading – Feb 14: Chapter 7.1-7.3

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Feb 12: Inferences Comparing Two Population Central Values Hypothesis Tests (Lecture 10)

Feb 14: QUIZ 4; Inferences about Population Variances (Lecture 11)

WEEK 8: Reading –

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Feb 19: NO CLASS

Feb 21: Review for EXAM 2

WEEK 9: Reading – Mar 01: Chapters 8.1-8.2, 9.5, 15.2

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Feb 26: EXAM 2

Feb 28: Inferences about More than Two Population Central Values (Lecture 12)

WEEK 10: Reading – Mar 07: Chapter 10.4-10.5

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Mar 05: continue Inferences about More than Two Population Central Values

Mar 07: Categorical Data (Lecture 13)

WEEK 11: Reading – Mar 12: Chapter 11.1 (through page 559 scatterplot), 11.2- 11.6

Mar 14: Chapter 12.1- 12.4

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Mar 12: Simple Linear Regression (Lecture 14)

Mar 14: Multiple Linear Regression (continue Lecture 14)

WEEK 12: Reading –

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Mar 19: Review for FINAL EXAM

Mar 21: FINAL EXAM