

COURSE DESCRIPTION

This is a first course in Statistics which introduces students to appreciating the importance of Statistics as used in various fields and scientific application of statistical methods and principles as to the collection, description, presentation, analysis and interpretation of data. Appreciation of the subject is enhanced with the use of real-world data, emphasis on statistical concepts, analysis, and interpretation over computation, and use of the statistical app, Jamovi. You are required to install the latest version of Jamovi in your device and familiarize yourself with the basic and essential features to ensure optimal learning in this course.

COURSE OBJECTIVES

At the end of the school year, the student must be able to:

1. Understand and apply the basic terminologies used in statistics.
2. Produce graphical displays and interpret what these do and do not reveal.
3. Utilize available statistical software to produce numerical summaries and properly interpret these values
4. Identify questions for which the problem-solving process in statistics would be useful and should be able to answer using the process.
5. Design a method on how data can be collected keeping in mind the concepts of randomness and reduction of bias.
6. Explain how statistical models are used.
7. Demonstrate an understanding of, and ability to use, basic ideas of statistical inference, both in estimation and hypothesis testing, in a variety of settings.
8. Interpret and draw conclusions from standard output from statistical software.
9. Create a narrative report that discusses the data or finding.

ASSESSMENT TASKS

To ensure students' learning throughout the course, several assessment tasks were designed so students can (1) demonstrate their understanding of the concepts, (2) apply the techniques they have learned into various laboratory exercises, and (3) apply the concepts in a context that is relevant to the student through a project.



FORMATIVE ASSESSMENTS

These are short assessment tasks, either done via Khub, or other modes see fit by the teacher. These are aimed at measuring the understanding of the concepts discussed for the week.

These exercises can be done in various forms: multiple choice, short answers, problem solving, etc.

In addition, the grade for the weekly quizzes/exercises is split to 2 components:

Quizzes (80%)

These will be given after the last lesson of the week to evaluate the understanding of the lessons.

Mini Tasks (20%)

These will be given in between sessions or after class to assess the understanding of the students at any point during the discussion.



LABORATORY ACTIVITIES

The lab activities are 1-2 exercises per quarter that aim to give the students a chance to demonstrate what they have learned through a guided activity.

These activities should utilize several lessons discussed in a quarter, so students can apply the lessons in a context provided by the teacher. Also, these may include activities that require students' use of available technology (Jamovi, MS Excel, Google Sheets, calculator, etc), which is an integral component of the course.

Thus, it is highly recommended that the student practice such techniques prior to the laboratory activities to facilitate in the performance of these laboratory activities.

COURSE OUTLINE

Each quarter is divided into six to eight weeks, with one major topic per week. The outline gives the topic/s to be discussed for that week. Learning guides are created based on the weekly topics listed below.

FIRST QUARTER

Describing Data

- Introduction to Statistics and variables - definition and classification
- Organizing qualitative and quantitative variables; describing distribution
- Summarizing data
- Creating a narrative
- Contingency tables, empirical probability and the addition rule for probability
- Independence and the multiplication rule for probability

SECOND QUARTER

Describing Data (cont.)

- Scatterplots, correlation and linear regression

Producing Data

- Sampling concepts and sampling methods
- Experimental designs

Probability and Random Variables

- Random variables and probability
- Binomial distribution
- Normal distribution and its application
- Sampling distribution of the sample proportion

THIRD QUARTER

- Sampling distribution of the sample proportion
- Sampling distribution of the sample mean; the Student's t distribution

Statistical Inference

- Introduction to inferential statistics, point and interval estimates
- Introduction to confidence intervals
- Confidence intervals for the proportion and for the mean
- Introduction to hypothesis testing, setting up hypotheses, the types of errors, and the level of significance

FOURTH QUARTER

- The p-value and the tests for one mean and two independent means (including their non-parametric equivalent)
- Tests for dependent groups, tests for proportions and Chi-square test
- Analysis of Variance (ANOVA), Kruskal-Wallis test, post-hoc tests, and regression

GUIDELINES ON ASSESSMENT DEADLINES



Students are expected to work on the course requirements in class (for the quizzes and lab activities) and during the designated time frame (for the project)

On FAs / Quizzes



Students only have a **single attempt** on the quizzes to be accomplished within the given time limit.



On Lab Activities

Lab Activities will be given on the double period of the specified week and must be accomplished **within a given time limit**. The protocol will be given on the day of the lab activity itself.

On Projects



The details of the project will be given no later than the 4th week of the quarter and is due **on or before the periodic exam week**. The last week of each quarter is dedicated for the project and milestones are given so there will be more than enough time to do it. Guidelines on deductions for late project submission will be posted along with the project protocol. Final grade on the project will vary based on the student's score in the peer evaluation.



On Missed Assessments and Consultation

In case of a missed assessment, the student must inform the teacher immediately via email. Upon return to school, the student should present an admission slip. Only the students with admission slip marked as "excused" will be allowed to take the make-up assessment and will be given deadline extension.

QUARTERLY PROJECT

The project is designed so students can demonstrate their understanding of the concepts discussed each quarter in a context that is relevant and relatable to the students. The project should apply concepts discussed in the quarter and builds up from the project from the previous quarter.

The specific details about the projects and the corresponding assessment rubrics will be released during designated points during the quarter. Please take note that the project should be done gradually throughout the quarter to give ample time for improvement of the project. Checkpoints will also be specified to assist the students in the conduct of the project.

1ST QUARTER

The student is tasked to search for a **data set** on a topic that is of interest to the student and make a **narrative** that describes the data set, while utilizing all the concepts learned.

Course objectives targeted: 1, 2, 3, 7, 9

Given the field of interest set from the previous quarter, the student is tasked to **identify a problem** that can be solved using the statistical problem-solving method. Then, the student should identify the pertinent details of the problem and devise a **method** appropriate in solving the problem.

Course objectives targeted: 1, 4, 5, 9

2ND QUARTER

3RD QUARTER

Building from the problem identified earlier, the student is tasked to **collect the relevant data** that will be used to answer the question. Then, the student must produce a **description** of the data.

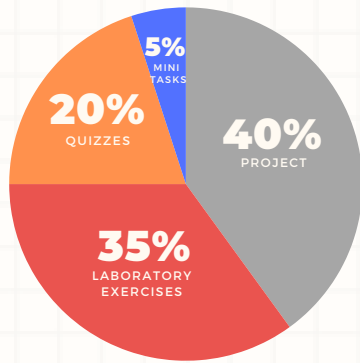
Course objectives targeted: 1, 2, 3, 5, 6, 7, 9

Based on the narrative generated from the previous quarter, the student is tasked to come up with a report that will **summarize** his/her findings. The student must utilize all the relevant concepts learned throughout the school year in creating the **final report** and present these findings through an **oral presentation**.

Course objectives targeted: 1, 2, 3, 7, 8, 9

4TH QUARTER

GRADING SYSTEM



GRADE POINT EQUIVALENT

%	GRADE	%	GRADE
96 - 100	1.00	60 - 65.99	2.50
90 - 95.99	1.25	55 - 59.99	2.75
84 - 89.99	1.50	50 - 54.99	3.00
78 - 83.99	1.75	40 - 49.99	4.00
72 - 77.99	2.00	BELOW 40	5.00
66 - 71.99	2.25		

LEARNING MATERIALS



PERSONAL
COMPUTER/
LAPTOP



UPDATED
VERSION OF
JAMOVI



STAT
NOTEBOOK



STAT
TEXTBOOK
INTRO STATS
BY DE VEAUX



STAT
LESSON
SLIDES

CLASSROOM RULES



PARTICIPATION IN CLASS DISCUSSIONS AND ACTIVITIES IS HIGHLY ENCOURAGED. ACTIVE PARTICIPATION IMPROVES CRITICAL AND HIGHER ORDER THINKING SKILLS.



RESPECT PRIVACY, DIVERSITY, AND THE OPINIONS OF OTHERS. COMMUNICATE TACTFULLY AND BASE DISAGREEMENTS ON SCHOLARLY IDEAS OR RESEARCH EVIDENCE.



IMPORTANT ANNOUNCEMENTS AND CLASS COMMUNICATION OUTSIDE THE CLASS WILL BE FACILITATED VIA DISCORD. EVERYONE IS REQUIRED TO JOIN THE SERVER FOR THEIR RESPECTIVE STAT CLASSES.



ATTEND REGULAR CONSULTATION TO ADDRESS DIFFICULTY IN THE LESSONS AND CONCERNS ABOUT THE PROJECT. LAST MINUTE CONSULTATIONS ARE DISCOURAGED.



GENERAL CLASSROOM GUIDELINES CAN BE FOUND ON A SEPARATE DOCUMENT. READ AND UNDERSTAND THESE AND SUBMIT THE RETURN SLIP ON OR BEFORE THE DEADLINE.

FOR QUESTIONS, CONSULTATION, AND OTHER CONCERNS, DO NOT HESITATE TO MESSAGE YOUR RESPECTIVE STAT 1 TEACHERS

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