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3140 Waialae Avenue
Honolulu, Hawai'i 96816-1578

1. FACULTY CONTACT INFORMATION

MA-331-01_1 Intro to Probabilities & Statistics

Pearson portal myLab Statistics, **ID = brownlow08798**

Class Schedule:

Dates:	August 21, 2023 – December 08, 2023
Department Name:	Natural Science & Mathematics (NSM)
Course Credits:	Three (3)
Class Meeting Hours:	M W F @11:30 AM – 12: 20 PM
Location:	SULV201
Instructor:	Maria Brownlow, Ph.D. Management Science, Business Strategy, Business Analytics/Informatics, Computer Information Systems (CIS)
Contact Info:	808-739-8337 (office)

CHAMINADE UNIVERSITY MISSION STATEMENT

Chaminade University offers its students an education in a collaborative learning environment that prepares them for life, service, and successful careers. Guided by its Catholic, Marianist and liberal arts educational traditions, Chaminade encourages the development of moral character, personal competencies, and a commitment to build a just and peaceful society. The university offers both the civic and church communities of the Pacific region its academic and intellectual resources in the pursuit of common aims.

DARE TO LEARN. DARE TO CHANGE.

"The future is no longer stable; it has become moving target. No single "right" projection can be deducted from the past behavior. The better approach, I believe, is to accept uncertainty, try to understand it, and make it part of our reasoning. Uncertainty today is not just occasional, temporary deviation from a reasonable predictability; it is a basic structural feature of the business environment."

2. COURSE INTRODUCTION AND OVERVIEW

University Catalog https://catalog.chaminade.edu/

Catalog Course Description

MA 331 Introduction to Probability and Statistics (3)

Samples space, random variables, classical distributions, central limit theorem, and estimation, testing of hypotheses for parameters, the first and second kinds of errors, correlations, regressions, and analysis of variance. Offered annually. Prerequisites: MA 110, equivalent, or placement.

Statistics is used every day in our lives – from purchasing a car (blue book review) to a new cancer treatment that became available passing medical trial. We make our investment decisions based on the technical analysis of the company stock over period. Statistics influences and shapes the world around us. It is statistics using Excel illustrates the relationship between statistics and our world with a variety of decisions we made daily even we do not realize this fact.

Using every day simple tool like Excel, an abstract theory becomes reality. Additional tools such as DDXL and STATDISK enhance students' learning.

Intro to Probability and Statistics course is designed to understand statistical tools in research and practice. This course places strong emphasis on understanding concepts of statistics. Topics are presented with illustrative examples, identification of required assumptions, and underlying theory is discussed during interactive lecture and videos.

Excel is used for calculations as a technology tool and instructions are provided along with typical displays of results. Results are reviewed and concluding with interpretation. In some cases, such as examples involving formulas and graphs—detailed instructions are presented so that Excel can be used effectively in all applications, instead of those relating only to statistics. Students enter professional careers with a solid knowledge and skills that are required.

The objective of this course is to present the fundamental concepts in a consistent and straightforward way so that students understand the need to master them. Achieving statistical thinking skills has always been an important challenge of mastering statistics. This course puts strong emphasis on understanding concepts of statistics and explaining and interpreting results. Without this skill the knowledge of numbers is useless – and it would be right to ask a question "So what?" Instead of blindly accepting and using formulas, we better have some understanding why and how they work, what does it mean?

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This course is a building step to acquire knowledge and skills to conduct data modeling. Such vast data analysis is further used in business intelligence to make smart and effective decisions. We live in projects-oriented economy where strategic modeling to predict behavior leads to efficient use of limited resources, including funds.

What is a critical thinking in statistics so that we avoid "GIGO" (garbage in, garbage out) results? Instead of blindly using formulas and procedures, students must think carefully about the context of the data, the source of the data, the method used in data collection, the conclusions reached, and the practical implications. Common sense to think critically about data and statistics and do not misuse them is one of the goals of this course.

The course topics are organized into five parts, as described in this textbook:

1. **Chapter 1 - 3:** Introduces statistics and describe, explore, and compare data. Summarizing and graphing data correctly "speaks better than words" allowing students to identify bad graphs that might be technically correct but misleading. It is important to understand how graphs misleading. These chapters explain some fundamental tools used in the statistical methods.

2. **Chapter 4 - 6:** Introduces and describes concept of probability and probability distributions. Sound understanding concept of probability values constitute the underlying foundation on which the methods of inferential statistics are built.

Major activities of inferential statistics are:

- use sample data to estimate values of population parameters such as a population proportion or population mean, and
- test hypotheses or claims made about population parameters

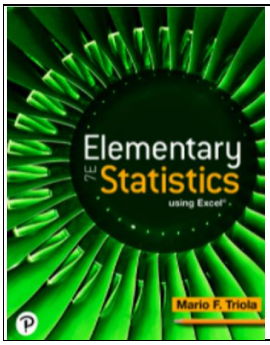
3. **Chapter 7 - 9:** These chapters focus on the use of sample data to estimate a population parameter and introduce the basic methods for testing claims or hypotheses that have been made about a population parameter.

4. **Chapter 10:** In this chapter students learn methods for determining whether correlation or association between two variables exists and whether the correlation is linear. For linear correlations, students identify an equation that best fits the data and use that equation to predict the value of one variable given the value of the other variable.

   In this chapter, methods for analyzing differences between predicted values and actual values are presented. In addition, methods for identifying linear equations for correlations among three or more variables are discussed. In conclusion, some basic methods for developing a mathematical model that can be used to describe nonlinear correlations between two variables, is presented.

Chapter 14: Students will learn that important characteristic of data is a changing pattern over time. Statistical process control deals with this issue. The main objective of this chapter is to learn how to construct and interpret control charts that can be used to monitor changing characteristics of data over time. That knowledge will better prepare students for work with businesses trying to improve the quality of their goods and services.

Use of technology for developing conceptual understanding and analyzing data throughout the course is extensive. All assignments are paperless through use of myLab Statistics giving students ability to learn the subjects as they do their assignments (homework, quizzes, tests, and exams) via help tools included in myLab Statistics.[1]



Textbook: **Mario F. Triola "Elementary Statistics using Excel,"** *Seventh Edition*, Pearson, Prentice Hall, Inc., **Textbook ONLY,** (Unbound (Saleable)
ISBN-13: **9780136937432**

Minimum Requirements:
MyLab Statistics with Pearson eText – 18 weeks Standalone Access Card -- for Elementary Statistics Using Excel, 6th Edition; Format: Access Code Card
ISBN-13: **9780136961888**

3. INSTITUTIONAL LEARNING OUTCOME

1. Written communication
2. Oral communication
3. Critical thinking
4. Information literacy
5. Quantitative reasoning

4. DATA SCIENCE PROGRAM LEARNING OUTCOMES (PLO)

Upon completion of the undergraduate B.S. program in Data Science, Analytics & Visualization, students will be able to:

1. Source, describe and curate large data sets (Big Data) that may not be amenable to traditional hardware and software, and conventional statistical analysis including domain and file specific metadata and the tools built around alternatives to tabular relations that allow the use of multimodal data

2. Identify, describe, and apply foundational mathematical and statistical concepts and operations, including the application of tools such as R, SQL, and Python languages, which underlie data sourcing, management, analysis, and interpretation

[1] Textbook: Mario F. Triola "Elementary Statistics using Excel"

3. Develop and implement approaches for effective data translation, dissemination and communication between domains, stakeholders, and the public

4. Identify and apply basic data modeling, predictive models, and visualizations to support decision-making

5. Integrate an awareness of ethical issues and collective standards to positively influence the application of data science to service, justice, and peace in working towards solutions for societal problems

6. Explain, plan, and execute data science tasks within multidisciplinary teams

7. Execute a domain-specific capstone project addressing a stakeholder-generated use case

5. COURSE LEARNING OUTCOMES (CLO).

At the conclusion of the course, students will be able to:

1. Employ statistical knowledge and soft skills to support management decision-making process in real business cases (analysis).

2. Demonstrate statistical literacy and develop statistical thinking skills to use in practice and research (application).

3. Apply statistical expertise how to use statistical knowledge in business and in research through conceptual understanding the science of statistics (analysis).

4. Choose statistical knowledge to understand big data, interpret it scientifically and deduce it for the public through use of real data and its interpretation (evaluation).

Alignment of Learning Outcomes: PLO, CLO with Marianist, and Hawaiian Values

	CLO 1	CLO 2	CLO 3	CLO4
Marianist Values	2	2	5	4
Native Hawaiian Values	2	3	5	3
Program Learning Outcomes (PLO)	PLO4	PLO2	PLO5	PLO3

6. MARIANIST VALUES

An education in the *Marianist Tradition* in marked by five principles and students should take every opportunity possible to reflect upon the role of these characteristics in the education and own development.

Source: Characteristics of Marianist Universities: Chaminade University of Honolulu, St. Mary's University, University of Dayton, A Resource Paper, published in 1999, Republished in 2006.

1. Educate for formation in faith

"As higher educational institutions, Marianist universities have kept, along with education in the disciplines, a commitment to the development of the whole person, which includes the dimension of religious faith and its personal appropriation and practice."

2. Provide an integral quality education

"In the Marianist approach to education, "excellence" includes the whole person, not just the technician or rhetorician. It also includes people with their curricular and extra-curricular experiences, their intellectual and spiritual development, understood and supported best in and through community."

3. Educate in family spirit

"Marianist educational experience fosters the development of a community characterized by a sense of family spirit that accepts each person with loving respect and draws everyone in the university into the challenge of building community. Community support for scholarship, friendship among faculty, staff and students, and participation in university governance characterize the Marianist University."

4. Educate for service, justice, and peace

"The Marianist approach to higher education is deeply committed to the common good. The intellectual life itself is undertaken as a form of service in the interest of justice and peace, and the university curriculum is designed to connect the classroom with the wider world. In addition, Marianist universities extend a special concern for the poor and marginalized and promote the dignity, rights, and responsibilities of all peoples."

5. Educate for adaptation and change

"In the midst of rapid social and technological change, Marianist universities readily adapt and change their methods and structures so that the wisdom of their educational philosophy and spirituality may be transmitted even more fully."

7. Native Hawaiian Values

Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the ʻOlelo Noʼeau (Hawaiian proverbs) and Marianist core beliefs:

1. **Educate for Formation in Faith (Mana)** E ola au i ke akua (ʻŌlelo Noʻeau 364) May I live by God.

2. **Provide an Integral, Quality Education (Na'auao)** Lawe i ka maʻalea a kūʻonoʻono (ʻŌlelo Noʻeau 1957) Acquire skills and make it deep.

3. **Educate in Family Spirit (ʻOhana)** ʻIke aku, ʻike mai, kōkua aku kōkua mai; pela iho la ka nohana ʻohana (ʻŌlelo Noʻeau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship.

4. **Educate for Service, Justice, and Peace (Aloha)** Ka lama kū o ka noʻeau (ʻŌlelo Noʻeau 1430) Education is the standing torch of wisdom and using it has no boundaries.

5. **Educate for Adaptation and Change (Aina)** ʻAʻohe pau ka ʻike i ka hālau hoʻokahi (ʻŌlelo Noʻeau 203) All knowledge is not taught in the same school.

8. Assessment and Grading

Grades will be based on the following assessment tools to improve and evaluate student learning outcomes through:

1. Homework, quizzes, tests, and exams, and projects as assigned.

2. Flow Cart Animation, ending with questions to evaluate comprehension of concepts and definitions.

3. End of Chapter review questions.

Tentative Schedule

Course schedule will be provided during a Day One kick-off meeting. Schedule is subject to change at the discretion of the instructor based on students' progress. Syllabus and Course Schedule is posted on the Pearson myLAB Statistics in the Document Sharing folder.

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GRADING

Grading will be based on the following table:

GRADING YOUR ACCOMPLISHMENTS:	GRADE SCALE:
Homework assignments Quizzes & tests Exams Staying on schedule with assignments and class participation → Priceless	A = 90% – 100% B = 80% – 89% C = 70% – 79% D = 60% – 69% F* = 50% – 99% IF*= Incomplete F gives student 30-day to work on missing assignments. Needs a strong justification. Rarely used. Individually decided by instructor, Program Director, and student.

Letter grades are given in all courses except those conducted on a credit/no credit basis. Grades are calculated from the student's assignments, class participation, quizzes, tests, term papers, reports, and exams. They are interpreted as follows:

A	Outstanding scholarship and an unusual degree of intellectual initiative.
B	Superior work done in a consistent and intellectual manner.
C	Average grade indicating a competent grasp of subject matter.
D	Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work.
F*	Failed to grasp the minimum subject matter, no credit given.
W	Withdrawal before published deadline.
I*	The issuance of an "I" grade is not automatic. At the discretion of the faculty member, a grade of "I" may be assigned to a student who completed a few assignments, but unable finished the homework due to unforeseen circumstances.
IP	In progress, primarily used for thesis completion or practicum completion.
AU	Audit.

Learning is never ending process. We learn every day by observing, solving problems, making mistakes and try not to repeat them. Student responsibility is discovering your own style of learning. Educators' responsibility is to crate learning environment that student flourish.

What students need to know about my pedagogy, how to succeed in such environment?

1. Maintain open an honest communication.
2. You have a question, just ask me, or send me email to maria.brownlow@chaminade.edu

3. This Statistics course resides on the Pearson myLab Statistics portal specifically developed for the textbook.
4. You grade yourself by submitting assignments into myLAB Statistics.
5. If you obtained a grade that you did not expect and you want to review incorrect answers and re-do them, you are welcome to do this within next two weeks. Practice is learning.
6. I do not deduct points.
7. Exams are scheduled during the semester when a section of the logical material is completed.
8. Exams cannot be repeated and must be completed within assigned dates. If unusual circumstances had occurred, and you notify me before the date of the exam, exam will be rescheduled. Each request to re-do exam will be considered individually.

9. TITLE IX COMPLIANCE

Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

8. CREDIT HOUR POLICY

The unit of semester credit is defined as university-level credit that is awarded for the completion of coursework. One credit hour reflects the amount of work represented in the intended learning outcomes and verified by evidence of student achievement for those learning outcomes. Each credit hour earned at Chaminade University should result in a minimum of 45 hours of engagement, regardless of varying credits, duration, modality, or degree level. This equates to one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester. Terms that have alternative lengths, such as 15-weeks terms, should have an equivalent amount of faculty instruction and out-of-class student work to meet each credit hour. Direct instructor engagement and out-of-class work result in total student engagement time of 45 hours for one credit. The number of engagement hours may be higher, as needed to meet specific learning outcomes.

Specific Credit Situations

The minimum 45 hours of engagement per credit hour can be satisfied in fully online, internship, or other specialized courses through several means, including:

a. **regular online instruction** or interaction with the faculty member and fellow students and

b. **academic engagement** through extensive reading, research, online discussion, online quizzes or exams; instruction, collaborative group work, internships, laboratory work, practice, studio work, and preparation of papers, presentations, or other forms of assessment.

This policy is in accordance with federal regulations and regional accrediting agencies.

Assuming a three-credit hour course requires key assessments (there is no essay in this quantitative), mid-term exam, and final exam, the time calculation would be as follows:

- Seat Time:
  - 50 minutes MWF = 150min weekly x 15 weeks = 2,250 minutes or **37.5 hours**
- Time Spent on Key Assessments:
  - **Assignments** in myLab Statistics type homework, quizzes, tests, interactive videos, and simulations is 3-times per week X 1.2 hrs. of study X 15 weeks = **54 hours**
  - **Exams** = 8 exams scheduled over the semester period X 3 hrs. studying = **20 hours**
  - **Additional time** for volunteering to participate in the community projects = **5 hours** per semester participating in community projects as assigned (reading, researching, compiling data, participating in community initiatives
- Sub-Total = 37.5 hrs. + 54 hrs. + 20 hrs. + 5 hrs. = 116.5 hours (seat time + key assessments)
- Total required engagement 135 hours - 116.5 hours = **18.5 hours** remaining to fill as contingency
- The 18.5 hrs. divided by 15 weeks = 1 hours of additional time each week (reading, studying, working on homework, volunteering community projects)

This is a three-credit hour course requiring 135 clock hours of student engagement, per the official CUH Credit Hour Policy. Students enrolled in this course anticipated to spend **37.5 hours** in class, **63 hours** on past due assignments and grades improvements, **24** studying for 8 exams and additional **5** hours on community service projects. There will be an additional 18.5 hours of work required beyond what is listed here (course readings, homework assignments, etc.), averaging 1.23 hours each week.