

**LEEWARD COMMUNITY COLLEGE**  
**Mathematics and Natural Sciences Division**  
**Course Syllabus – FALL 2012**  
**MATH 115 - STATISTICS (3.0 credits)**

**Class schedule:** CRN 51229 MWF 10:00 - 10:50 am in MS 202  
CRN 52109 TR 2:00 - 3:15 pm in MS 202

**Instructor:** Mr. Eric Matsuoka, Professor of Mathematics

**Contact Information:** phone (808)455-0315  
email [eric.matsuoka@hawaii.edu](mailto:eric.matsuoka@hawaii.edu) or [ematsuok@hawaii.edu](mailto:ematsuok@hawaii.edu)

**Office Location:** BS 201

**Office Hours:** MWF: 11:00 to 11:50 PM  
TR: 3:30 to 4:20 PM

**Note:** *Office hours are the times I expect to be in or near my office. Due to meetings, conferences, workshops, etc., I may not always be immediately available during scheduled office hours. Office hours will be held on a first-come, first-served basis so if a student is already in my office, I will not answer the phone and if I am on the phone with a student, I will not hang up to answer questions from a walk-in student. An appointment scheduled in advance will ensure that I will be available for consultation. Appointments may be possible at times other than the regularly-scheduled days and times. Office hours are held only on regular instructional days until the college-defined last day of instruction. After that, office consultation will be by appointment only.*

**Catalog Course Description:** MATH 115 is an introduction to statistics that covers descriptive statistics, elementary probability, and inferential statistics.

**Prerequisites:** Any one of the following, or articulated equivalent, completed within the past two years will qualify a student for MATH 115: C or better (or CR) in MATH 82, OR C or better in MATH 83 or equivalent, OR qualified placement test score (50 or greater in the COMPASS Algebra placement domain)

**Co-requisites and Recommended Preparations:** None

**REQUIRED COURSE MATERIALS**

- *Statistics Concepts and Controversies*, SIXTH edition, by David S. Moore and William I. Notz
- Calculator: A scientific calculator capable of two-variable statistics is REQUIRED. The relatively inexpensive and widely-available Texas Instruments TI-30xIIS (with two numerical display lines) is recommended. Keystroke directions will be given for this model but students with other models will be expected to look up the keystrokes needed to access statistical functions in their calculator manuals.

**STUDENT LEARNING OUTCOMES**

Students who successfully complete this course should be able to:

- Correctly classify data and variables.

- Create and interpret various graphs.
- Calculate and interpret descriptive statistics, including the mean, median, mode, and standard deviation of single-variable data and the correlation and regression coefficients of paired-variable data.
- Calculate and interpret probabilities for an event in a probability experiment.
- Construct and interpret point and interval estimates.
- Perform and interpret the results of statistical hypothesis tests.

### **COURSE GRADE CALCULATION AND CRITERIA**

A student's course letter grade will be assigned by comparing the student's total accumulated points to the following scale:

176.00 or more points earns an A  
 152.00 to 175.99 points earns a B  
 128.00 to 151.99 points earns a C  
 104.00 to 127.99 points earns a D  
 Less than 125.00 points earns an F

*Students should note that the minimum points needed for the passing letter grades (A, B, C, and D) are lower than the "traditional" 90-80-70-60 percent minimums for the corresponding grades. This course's cut scores already grant the higher letter grade to students who would have "just missed" by the customary standards. As such, students who "just miss" a letter grade by these more-generous standards will NOT be given another nudge up.*

- **Project and report:** Each student must either work on an individual or a group research project directly to the practice of statistics. Students opting for to perform a group project must assemble a group of no more than four members by inviting classmates. I will NOT involve myself in the formation of groups. Each individual or group must select a topic, establish a research hypothesis, decide on the division of the workload (in the case of a group), and submit a written report (including bibliography and self-evaluation). A student may author more than one project and/or participate in more than one group but only one project score will count toward each student's course grade.

- **Due dates:**

1. A list of the group members (or a statement that an individual project will be done) must be submitted by email on or before **Sunday, September 16, 2012**. Failure to submit the required list or statement, or any changes to the group membership after this date and not beyond the control of the (remaining) group members will incur a scoring penalty.
2. The project's overall topic must be submitted by email on or before **Sunday, September 30, 2012**. Changes to the project emphasis or methodology may be made without penalty; however a substantial change to the overall project topic will incur a scoring penalty.
3. Three progress reports that briefly summarizes the progress you or your group has made on the project are due by email on the following dates
  - **Sunday, October 21, 2012**
  - **Sunday, November 11, 2012**
  - **Sunday, November 25, 2012**
4. The final report can be submitted either printed on paper or electronically by email or file drop ([www.hawaii.edu/filedrop](http://www.hawaii.edu/filedrop)). Split submissions (some parts by email and

others in printed form) will NOT be accepted except in the case of the self-evaluation (#7 below), which is submitted by individuals rather than on behalf of the group. Printed submissions can be left for me in care of the Math & Sciences Division Office (BS 106a), or in care of the Math Lab (MS 204). The due date is the last scheduled day of instruction for the course::

- Wednesday, December 5, 2012 for CRN 51229 (MWF 10:00-10:50 AM)
- Thursday, December 6, 2012 for CRN 52109 (TR 2:00-3:15 PM)

Projects can be submitted any time before the due date but late projects will incur a penalty of 25 percentage points for each calendar day the project is overdue.

- Project scoring: Each group project can be worth up to 50 points. Every student in a group will receive the same score for factors #1 through #6 but the self-evaluations (#7) must be written by individual group members, can be submitted individually, and will be graded individually as well. There is no specified minimum or maximum quantity for the actual submission but students must keep in mind the following standards and scoring rubrics:
  1. Due dates and associated requirements: As a reminder, projects submitted after the due date above will incur a 25 percentage point penalty for each calendar day the project is overdue. Were the five Sunday due dates listed above met?
    - i. 1 point for meeting each of the due dates, for a total of 5 possible points.
    - ii. 1 point deduction for any changes to the group membership other than those beyond the control of the group (such as formal or informal withdrawal of one of the group members)
    - iii. 1 point deduction for a substantive change in the overall project topic.
  2. Relevance of the project to the course: Did the report evidence the project's focus on the theory behind and/or the practice of statistics? Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 10 points if the report clearly and directly focuses on the theory behind and/or the practice of statistics.
    - ii. 5 points if the report's focus is related to the theory behind and/or the practice of statistics but such focus is unclear or indirect.
    - iii. 0 points if the report makes at most tangential references to the practice of statistics.
  3. Depth of research or insight into the topic chosen: Did the depth of research, as evidenced by the project submission, appear appropriate for a semester-long project? Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 10 points: The report evidences findings and/or insight equivalent to a minimum of sixteen hours of research and contemplation/interpretation per individual. (note that eighteen hours is the equivalent of one hour per week per person of thought and/or activity)
    - ii. 5 points: The report evidences findings and/or insight equivalent to eight hours of research and contemplation/interpretation per individual. (note that eight hours is equivalent to half of an hour per week per person of thought and/or activity)
    - iii. 0 points: The report contains little or no evidence of research or contemplation/interpretation.
  4. Relationship of the research to the selected project topic: Was the research that was done appropriate to the chosen topic? Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 5 points: The research evidenced by the project submission is clearly and directly related to the selected topic and research hypothesis.

- ii. 3 points: The research evidenced by the report has some connection to the chosen topic and research hypothesis but some irrelevant distractions obscure this connection.
    - iii. 0 points: Distractions dominate the report. The reported research is barely if at all recognizable as being related to the project topic..
  - 5. Clarity, organization, and presentation of the written report: Was the research in general, and the points that supported or contradicted the research hypothesis in particular, clearly and obviously presented? Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 10 points: The report is written in a recognizable format with identifiable sections and labeled headers. The research is reported clearly and without substantial distractors. Any spelling or grammatical errors that may exist are minimal and do not detract from the points made in the report. The font is consistent and large enough to be readable. Tables and/or graphs were readable and placed in the appropriate sections of the report. Footnotes and endnotes are NOT required but a bibliography is included.
    - ii. 0 points: The report contains mostly rambling and pointless discussion, fragmented and disorganized sections, graphs and tables unrelated to the discussion, distractingly poor printing, and distractingly many spelling errors. Sources were obviously used but no bibliography is included.
  - 6. Consistency of any conclusions drawn: Were the results of the research interpreted in a scientifically and statistically reasonable way? Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 5 points: The conclusions that are drawn in the report are consistent with or supported by the research. Conclusions that are only partially supported by the research are identified as such and discussed. Difficulties caused by statistical error are recognized and discussed.
    - ii. 3 points: The report draws an unambiguous conclusion that was partially supported but partially contradicted by the research. Variables other than an independent variable that might have affected a dependent variable are simply ignored.
    - iii. 0 points: Research results imply at least one conclusion but no attempt is made in the report to draw a conclusion.
    - iv. 0 points: The report draws conclusions that are wholly contradicted by the research.
  - 7. Self-evaluation (5 points): Each member of the group must write their own quantitative and qualitative assessment of how the submitted project report meets (or fails to meet) each of the above scoring standards (#1 through #6 above). Note: When appropriate, intermediate points will be awarded for this standard.
    - i. 5 points: The self-evaluation is written in complete sentences, includes a thoughtful and complete analysis and rating of each of the scoring standards that is consistent with the provided rubrics.
    - ii. 3 points: The self-evaluation is fairly complete and consistent with the report, standards, and rubrics but is not written in complete sentences.
    - iii. 2 points: The self-evaluation is written in complete sentences and is consistent with the report but addresses only some of the listed standards.
    - iv. 0 points: The self-evaluation is inconsistent with the report.
    - v. 0 points: The self-evaluation ignores the standards completely.
- Exams: there are three multiple-choice exams that must be taken in the campus test center (below the library in the former Learning Resource Center location). Each exam consists of 25 questions

that are worth 2 points each for a total of 50 possible points per exam. Exam content and due dates are:

- Exam 1 covers part I (chapters 1 to 9) and is due by September 25, 2012
- Exam 2 covers part II (chapters 10 to 16) and is due by October 12, 2012
- Exam 3 covers parts III and IV (chapters 17 to 24) and is due by December 13, 2012
  
- Exam conditions
  1. Each exam may be attempted a total of two times by the due date. A student who takes the exam twice will receive the higher of the two scores for grade calculation purposes. A student who does not take advantage of a second opportunity to attempt an exam by the due date will forfeit the opportunity and must accept the score from the first attempt. A student who is unable to take an exam at all by its due date must document the circumstances beyond the student's control in order to be granted a late attempt. In such cases, only ONE late attempt will be allowed.
  2. Each exam is taken in the Tests & Quizzes tool of Lulima. Each exam must be proctored in an approved location, is password protected, and has a 90 minute time limit.
  3. Each exam allows and requires the use of a scientific or graphing calculator but does not permit a smartphone or other device with substantial text storage capability.
  4. Each exam is closed-book and closed-notes with the following exception: a student may take into the testing area ONE sheet of letter-sized paper (up to 8.5 by 11 inches) with notes on one or both sides of the sheet. Notes may be hand-written or computer printed but notes printed using tiny font sizes that require magnifying glasses to read will NOT be permitted. This sheet must be submitted to the testing center upon completion of the exam. Scratch paper, if desired, must be requested from the Testing Center. Due to this allowance of a "cheat sheet" on each exam, students must submit their cheat sheets and any scratch paper used at the end of the exam and will NOT be provided with the exam questions and answers for studying after the exam is taken.
  5. Exam problems will either test vocabulary/properties covered in the textbook narrative or be based on problems that students "should" have worked on and should be familiar with. In addition, a letter-sized "cheat sheet" represents a generous quantity of notes. Therefore, NO additional details regarding the exam will be provided and NO specific questions regarding the inclusion or exclusion of particular problem types will be answered.
  
- Bonus Points: There are NO provisions for student-initiated extra credit. An offer will be made in class but only students who learn of the opportunity in class are eligible. In addition, any terms or conditions attached to the opportunity will be not be subject to change, exception, or negotiation.

### **SOME STUDENT RESPONSIBILITIES**

- Attendance, absence, and participation: *Students are expected to attend all class sessions of the classes for which they are registered. It is the student's responsibility to contact instructors regarding any absence. The acceptance of an excuse for absence is at the discretion of the instructor.* Students are expected to have their textbooks, calculators, and note-taking equipment (writing instrument and paper) during each class session. The powerpoint handouts in the resources section of Lulima are also available for printing out and bringing to class to help in note-taking. A student who forgets to bring a calculator should go to the Math Lab (MS-204) to borrow one BEFORE class begins. Beyond being physically present in the

room students are expected to be alert and engaged in the lecture or discussion. Students will be responsible for all material, discussion, and assignments covered during any missed class session(s). Podcasts covering the textbook material are available in the resources section of Lulima so a student who misses class should view the podcast that covers the missed chapter(s).

- Consultation: Students who are having difficulties should see me as soon as possible. Some topics are prerequisite to later material so ignoring current difficulties will likely result in even more trouble later.
- Class time: The beginning of each class will be devoted to discussion on recent class topics, assignments, or applications of probability or statistics. Students should pay careful attention since these discussions could be used as the basis of the required semester project. Some class sessions will involve individual and group work in addition to lecture presentations..
- Studying and homework: Students should carefully read the relevant portion(s) of the textbook and handouts, and review their class notes BEFORE attempting any assigned homework problems. Some problems involve only routine computations. Others require reflection, thought, or experimentation on the student's part. I will expect each student to have at least attempted most of the assigned problems before the next class meeting. Homework assigned from your textbook will NOT be collected or scored but some of these problems are modified for use on your exams.
- Custody of projects: Semester projects submitted in written form will not be returned to students.

### ***STUDENT ASSESSMENT NOTIFICATION***

With the goal of continuing to improve the quality of educational services offered to students, Leeward CC conducts assessments of student achievement of course, program, and institutional learning outcomes. Student work is used anonymously as the basis of these assessments, and the work you do in this course may be used in these assessment efforts.

### ***STUDENT WITH DISABILITIES STATEMENT***

Leeward Community College abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, which stipulate that no student shall be denied the benefits of an education "solely by reason of a handicap." Students with documented disabilities who believe that they may need accommodations in this class are encouraged to contact the Coordinator of the KAKO'O 'IKE (KI) program as soon as possible to ensure that such accommodations are implemented in a timely fashion. The KI office is located in L-208, across from the elevator in the library building or call for information at 455-0421.

### ***Leeward Community College's Maka'ala Program***

It is desired that every student be successful at Leeward Community College. Therefore, if the instructor feels that you need extra support outside of the classroom in order to have a positive experience in class, the instructor will refer you to the College's Maka'ala Program to ensure that you have access to all of the resources you may need.

The Maka'ala Program is a campus-wide program that seeks to support to students early in the semester when they first begin experiencing difficulty in a class. If the instructor feels that you are having difficulty in class within the first 5 weeks of the semester, and working together to address your challenges shows that you would really benefit from being connected to resources outside of the classroom, the instructor will refer you to the program. Once referred, the Maka'ala Program will:

- Send an email to your **hawaii.edu** account to let you know about the referral; and
- Have a counselor follow up with you by phone or by email to find out what kinds of help you might need, to connect you with the necessary resources, and to help you devise a strategy for success.

The instructor will not refer you to the Maka'ala Program without telling you. However, if you are referred to the program, know that it has been done in an effort to connect you with all of the help you may need to do well this semester.

**Maka'ala** means “eyes that are awake,” and reminds us that it is the responsibility of everyone involved—*instructors, support services AND students—to be alert, watchful and vigilant and to attend to students’ success with “wide-open eyes.”*

**Table of podcasts and textbook homework**

Podcast Session	Textbook chapters)	Exercises starting page	Exercise numbers
2	Chapter 1	14	1, 3, 5, 7, 9, 11, 13, 15
	Chapter 2	28	1, 3, 5, 7, 9, 11, 13, 15, 17
3	Chapter 3	44	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27
4	Chapter 4	66	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 29
5	Chapter 5	87	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21
6	Chapter 6	108	1, 3, 5, 7, 9, 11, 15, 19
	Chapter 7	125	1, 5, 7, 9, 11, 13, 17, 21, 23
7	Chapter 8	147	1, 3, 5, 7, 9, 11, 15, 17, 19, 21, 23
	Chapter 9	163	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23
8	Chapter 10	193	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25
9	Chapter 11	215	1, 3, 5, 7, 9, 11, 13, 15, 17
10	Chapter 12	239	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 27
11	Chapter 13	261	1, 2, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27
12	Chapter 14	280	1, 3, 5, 7, 9*, 10*, 11, 13, 15, 17, 19, 21, 23*, 25* *Use your calculator to find r for the data sets in these problems.
13	Chapter 15	303	1, 3, 5, 7*, 9*, 11*, 13, 15, 17, 18*, 19, 21, 23, 25, 27, 29, 33* (table 15.1 is on p. 305) *Use your calculator to find the equation of the regression line in these problems.
14	Chapter 16	327	1, 3, 5, 7, 9, 11, 13, 17, 19, 23, 25* *Browse through the information available on Bureau of Labor Statistics web site to find the one(s) that give you the current CPI, historical CPI information, and regional and local CPI values.
15	Chapter 17	363	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23
16	Chapter 18	377	1, 3, 5, 7, 9, 11, 15, 17, 19
17	Chapter 19	393	1, 3, 5, 7, 9, 11, 13, 15, 21
18	Chapter 20	408	1, 3, 5, 7, 9, 11, 13, 17, 19
19	Chapter 21	440	1, 3, 5, 7, 9*, 11, 13, 15, 19, 21, 25, 27 *You already have the data; see problem 17.5.
20	Chapter 22	463	1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 27, 29 (use the 5% level of significance in each case)
21	Chapter 23	480	1, 3, 5, 7, 9, 11, 13, 15
22	Chapter 24	498	1, 3, 5, 7, 9, 11, 13, 15