**College of Micronesia-FSM**

**Course Outline**

**1) GENERAL INFORMATION:**

COM-FSM address: COM-FSM, PO BOX 159, Kolonia, Pohnpei FM 96941

 Course title: MS 150 Statistics

 Campus: National Initiator: Dana Lee Ling Date: September 08, 2014

 Course description:

A one semester course designed as an introduction to the basic ideas of data presentation, descriptive statistics, linear regression, and inferential statistics including confidence intervals and hypothesis testing. Basic concepts are studied using applications from health, education, business, social science, and the natural sciences. The course uses spreadsheet software for both data analysis and presentation. The course includes a focus on the use of computing technologies for statistical problem solving.

**2) Course hours:**

Lecture: 3

 Laboratory:

 Workshop:

 TOTAL: 3

 Purpose of course: [ x ] Degree requirement

 [ x ] Degree elective

 [ ] Certificate

 [ ] Other

**3) Prerequisites:** ESL 089 and passing any 100 level or higher mathematics course.

**4) PSLOS OF OTHER PROGRAMS THIS COURSE MEETS:**

[*Why doesn’t the cover page also specify the PSLOs met in the program that “owns” the course? The owning program is not listed on this cover page, only the non-owning programs*]

|  |  |
| --- | --- |
| PSLO# |  Program |
| GE 3.1 | Demonstrate understanding and apply mathematical concepts in problem solving and in day to day activities.  |
| GE 3.2 | Present and interpret numeric information in graphic forms.  |

**CAC chair signature: Date recommended:**

**VPIA, signature: Date approved:**

**(1) INSTITUTIONAL STUDENT LEARNING OUTCOMES (ISLOs):**

**ISLO# ISLO ISLO Definition**

ISLO 1 [ ] Effective oral communication. Effective oral communication: capacity to deliver prepared, purposeful presentations designed to increase knowledge, to foster understanding, or to promote change in the listeners’ attitudes, values, beliefs, or behaviors.

ISLO 2 [ ] Effective written communication. Effective written communication: development and expression of ideas in writing through work in many genres and styles, utilizing different writing technologies, and mixing texts, data, and images through iterative experiences across the curriculum.

ISLO 3 [ ] Critical thinking. Critical thinking: a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

ISLO 4 [ ] Problem solving. Problem solving: capacity to design, evaluate, and implement a strategy to answer an open-ended question or achieve a desired goal.

ISLO 5 [ ] Intercultural knowledge and competence. Intercultural knowledge and competence: a set of cognitive, affective, and behavioral skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts.

ISLO 6 [ ] Informational literacy. Information literacy: the ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively and responsibly use and share that information for the problem at hand.

ISLO 7 [ ] Foundations and skills for life-long learning. Foundations and skills for life-long learning: purposeful learning activity, undertaken on an ongoing basis with the aim of improving knowledge, skills, and competence.

ISLO 8 [ ] Quantitative reasoning. Quantitative Reasoning: ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations; comprehends and can create sophisticated arguments supported by quantitative evidence and can clearly communicate those arguments in a variety of formats.

**(2) PROGRAM STUDENT LEARNING OUTCOMES (PSLOs): The student will be able to:**

GE 3.1 Demonstrate understanding and apply mathematical concepts in problem solving and in day to day activities.

GE 3.2 Present and interpret numeric information in graphic forms.

**(3) COURSE STUDENT LEARNING OUTCOMES (CSLOs) (General) AND ISLOs**

**MATRIX**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CLOs(Gen.) | ISLO1 | ISLO2 | ISLO3 | ISLO4 | ISLO5 | ISLO6 | ISLO7 | ISLO8 |
| 1 |  |  |  |  |  |  |  | x |
| 2 |  |  |  |  |  |  |  | x |
| 3 |  |  |  | x |  |  |  | x |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

[*Shouldn’t the CLOs flow “through the PLOs and then a matrix maps PLOs to iSLOs? What happens when a CLO maps to an ILO in the above grid, but that same CLO maps to PLOs that do not map to the same ILO? There is a chain of assessment from CLO to PLO to ILO, the above short circuits that flow*]

[*Separately there is a sequencing awkwardness to the table: the CLOs are listed by number but the CLO descriptors do not appear until sections four. A reader has no idea what the numbers mean in the matrix above.]*

**(4) CSLOs (General): The student will be able to:**

1. Perform basic statistical calculations for a single variable up to and including graphical analysis, confidence intervals, hypothesis testing against an expected value, and testing two samples for a difference of means.

2. Perform basic statistical calculations for paired correlated variables.

3. Engage in data exploration and analysis using appropriate statistical techniques including numeric calculations, graphical approaches, and tests.

**(5) PSLOs AND CSLOs (General) MATRIX**

**I = introduced**

**D = demonstrated**

**M = mastered**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CSLO (Gen)** | **PSLO1 [GE 3.1]** | **PSLO2 [GE 3.2]** | **PSLO3** | **PSLO4** |
| **1** | D | D |  |  |
| **2** | D | D |  |  |
| **3** | D | D |  |  |
| **4** |  |  |  |  |
|  |  |  |  |  |

**(6) COURSE STUDENT LEARNING OUTCOMES (CSLOs) SPECIFIC: The student will be able to:**

[Note that the assessment strategies are designed to “live” at the CSLO level hence the repetition at the specific student learning outcome level. ]

|  |
| --- |
| **CSLO (General)** 1: Perform basic statistical calculations for a single variable up to and including graphical analysis, confidence intervals, hypothesis testing against an expected value, and testing two samples for a difference of means. |
| Student Learning Outcome (specific) | Assessment Strategies |
| 1.1 Identify levels of measurement, variables, and appropriate statistical measures for a given level of measurement | Homework, quizzes, tests |
| 1.2 Calculate basic statistical measures for the middle, spread, quartiles, and relative standing | Homework, quizzes, tests |
| 1.3 Determine frequencies and relative frequencies, create histograms and identify their shape visually | Homework, quizzes, tests |
| 1.4 Calculate confidence intervals for the mean | Homework, quizzes, tests |
| 1.5 Calculate the standard error of the mean | Homework, quizzes, tests |
| 1.6 Calculate the margin of error for the mean using tcritical | Homework, quizzes, tests |
| 1.7 Generate the confidence interval for the mean of a sample using the t-distribution | Homework, quizzes, tests |
| 1.8 Perform hypothesis tests against a known population mean using both confidence intervals and formal hypothesis testing | Homework, quizzes, tests |
| 1.9 Perform t-tests for paired and independent samples using both confidence intervals and p-values | Homework, quizzes, tests |
| **CSLO (General) 2:** Perform basic statistical calculations for paired correlated variables. |
| Student Learning Outcome (specific) | Assessment Strategies |
| 2.1 Calculate the linear slope and intercept for a set of data | Homework, quizzes, tests |
| 2.2 Calculate the correlation coefficient r | Homework, quizzes, tests |
| 2.3 Generate predicted values based on the regression | Homework, quizzes, tests |
| **CSLO (General) 3:** Engage in data exploration and analysis using appropriate statistical techniques including numeric calculations, graphical approaches, and tests. |
| 3.1 Explore statistically and graphically represent data sets using appropriate statistics and graphics for that data set | In class data exploration exercises, homework, exam |
| 3.2 Make inferences supported by appropriate statistical operations | In class data exploration exercises, homework, exam |
| 3.3 Answer questions about data sets with statistically correct responses | In class data exploration exercises, homework, exam |

**(7) COURSE CONTENT:**

[S was missing above]

1. Populations and samples
2. Measures of middle and spread
3. Visualizing data
4. Paired data and scatter diagrams
5. Probability
6. Standard error
7. Confidence intervals for the mean
8. Hypothesis testing against a known population mean
9. Hypothesis testing two sample means
10. Data exploration

**(8) METHOD(S) OF INSTRUCTION:**

[ x ] Lecture [ ] Cooperative learning groups

 [ ] Laboratory [ x ] In-class exercises

 [ ] Audio visual [ x ] Demonstrations

 [ ] Other

**(9) REQUIRED TEXT(S) AND COURSE MATERIALS:**

Lee Ling, Dana (2013). *Introduction to Statistics Using LibreOffice.org Calc, OpenOffice.org Calc, and Gnumeric, Edition 5.2*, Pohnpei: College of Micronesia-FSM. Or subsequent editions.
scientific calculator.

**(10) REFERENCE MATERIALS:**

None.

**(11) INSTRUCTIONAL COSTS:**

None.

**(12) EVALUATION:**

None.

**(13) CREDIT BY EXAMINATION:**

 None.