**College of Micronesia-FSM Course Modification Request Form**

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| --- | --- | --- |
| Course title and code:MS 150 Statistics | Division:Natural Sciences and Mathematics | Initiator:Dana Lee Ling |
| New course objectives: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. |
| New course description: [No change]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.  |
| New textbook: [Edition change only]Lee Ling, Dana (2015). *Introduction to Statistics Using LibreOffice.org Calc, Apache OpenOffice.org Calc, and Gnumeric, Edition 5.3*, Pohnpei: College of Micronesia-FSM. Or subsequent editions.  |
| Justification for revising course:Inclusion of exploratory data analysis |
| Decision: | [ ] Approved[ ] Not approved  |
| Comment: |
| CAC chair signature: | Date: |
| Division chair signature:  | Date: |
| VPIA COM-FSM signature:  | Date: |

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| --- |
| *Official Use Only* |
| New Course Number and Title: |

**College of Micronesia-FSM**

**Course Outline**

**GENERAL INFORMATION:**

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| Course title: MS 150 Statistics |
| Campus: National | Initiator: Dana Lee Ling | Date: 24 May 2015 |
| Course descriptionA 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. |

**COURSE HOURS/CREDITS:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Hours per Week |  | No. of Weeks |  | Total Hours  |  | Semester Credits |
| Lecture |  |  3 | x | 16 | x | 48  | = | 3 |
| Laboratory  |  |   | x |  | x |  | = |  |
| Workshop  |  |  | x |  | x |  | = |  |
|  |  |  |  |   |  Total Semester  | Credits |  |   3 |

**PURPOSE OF COURSE:**

 [ X ] Degree requirement

 [ X ] Degree elective

 [ ] Certificate

 [ ] Other

**PREREQUISITES:** ESL 089 and passing any 100 level or higher mathematics course.

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

|  |  |
| --- | --- |
| 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** (Check all that apply)

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| --- | --- |
| [ ] | 1. **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. |
| [ ] | 2. **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. |
| [ ] | 3. **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. |
| [ ] | 4. **Problem solving**: capacity to design, evaluate, and implement a strategy to answer an open-ended question or achieve a desired goal. |
| [ ] | 5. **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. |
| [ ] | 6. **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. |
| [ ] | 7. **Foundations and skills for life-long learning**: purposeful learning activity, undertaken on an ongoing basis with the aim of improving knowledge, skills, and competence. |
| [X ] | 8. **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:**

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

**2. GE 3.2** Present and interpret numeric information in graphic forms.

**3) COURSE STUDENT LEARNING OUTCOMES (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.

**4) COURSE STUDENT LEARNING OUTCOMES (CSLOs) (Specific): The student will be**

 **able to:**

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| --- |
| **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) | ISLO | PSLO | Assessment Strategies |
| 1.1 Calculate basic statistical measures for the middle, spread of data including quartiles and relative standing | 8 | 3.1 | Quizzes and tests including analysis of performance on final examination. |
| 1.2 Generate box plot and histogram charts from data | 8 | 3.2 |
| 1.3 Calculate confidence intervals, perform hypothesis tests against a known value, test two samples for a difference of means, calculate effect size | 8 | 3.1 |
| **CSLO (General) 2:** Perform basic statistical calculations for paired correlated variables. |
| Student Learning Outcomes (specific) | ISLO | PSLO | Assessment Strategies |
| 2.1 Calculate the linear slope, intercept, nature and strength of the relationship for paired data | 8 | 3.1 | Quizzes and tests including analysis of performance on final examination. |
| 2.2 Generate scatter graphs for paired data | 8 | 3.2 | Assignments |
| 2.3 Predict values based on the regression function | 8 | 3.1 | Quizzes and tests including analysis of performance on final examination |
| **CSLO (General) 3:** Engage in data exploration and analysis using appropriate statistical techniques including numeric calculations, graphical approaches, and tests. |
| Student Learning Outcomes (specific) | ISLO | PSLO | Assessment Strategies |
| 3.1 Generate appropriate basic statistical measures of the data without specific guidance on which measures should be calculated | 8 | 3.1 | Assignments, analysis of open ended data analysis in final examination |
| 3.2 Generate appropriate charts and graphs for the data without specific guidance on which charts should be generated | 8 | 3.2 | Assignments |
| 3.3 Draw conclusions based on statistical analyses and tests, obtain answers to questions about the data, supported by appropriate statistics | 8 | 3.1 | Assignments, analysis of open ended data analysis in final examination |

**5) COURSE CONTENT:**

1. Populations and samples
2. Measures of middle and spread
3. Visualizing data
4. Paired data and scatter diagrams
5. Probability

6. Normal distribution
7. Standard error
8. Confidence intervals for the mean
9. Hypothesis testing against a known population mean
10. Hypothesis testing two sample means
11. Data exploration

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

[ X ] Lecture [ ] Cooperative learning groups

 [ ] Laboratory [ X ] In-class exercises

 [ ] Audio visual [ X ] Demonstrations

 [ ] Other

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

Lee Ling, Dana (2015). *Introduction to Statistics Using LibreOffice.org Calc, Apache OpenOffice.org Calc, and Gnumeric, Edition 5.3*, Pohnpei: College of Micronesia-FSM. Or subsequent editions.

**8) REFERENCE MATERIALS:**

None.

**9) INSTRUCTIONAL COSTS:**

None.

**10) EVALUATION:**

None.

**11) CREDIT BY EXAMINATION:**

None.