

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

Course number and title: MS 150 Statistics	Division: Natural Sciences and Mathematics	Initiator: Dana Lee Ling	Date initiated: 16 May 2018
Suggested revision(s) and justification(s) for each: New course objectives to align with the American Statistical Association Guidelines for Assessment and Instruction in Statistics Education best practices (2016): 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.			
Course is not taught by other instructors nor on other campuses. Outline was shared with the instructional coordinator.			
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 (2018). <i>Introduction to Statistics Using Google Sheets™, Edition 6.0</i> , Pohnpei: College of Micronesia-FSM. Or subsequent editions.			
Justification for revising course: Inclusion of exploratory data analysis			
Instructional Coordinator/ Director signature:		Date Submitted:	
Decision reach by CC: <input type="checkbox"/> Approved <input type="checkbox"/> Not approved			
If not approved, reasons for disapproval:			
CC Chair signature:		Date submitted to VPIA:	
VPIA COM-FSM signature:		Date signed:	

College of Micronesia-FSM
Course Outline

GENERAL INFORMATION:

Course title: MS 150 Statistics		
Campus: National	Initiator: Dana Lee Ling	Date: 16 May 2018
<p>Course description</p> <p>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.</p>		

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:

- Degree requirement
- 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.

CC Chair signature: _____ **Date recommended:** _____

VPIA signature: _____ **Date approved:** _____

1) INSTITUTIONAL STUDENT LEARNING OUTCOMES (Check all that apply)

[]	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:

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): 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:

CSLO (General) 1: Perform basic statistical calculations for a single variable 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.	1,4,8 *	3.1	Students will be able to calculate basic statistical measures for the middle, spread of data including quartiles and relative standing as measured by assignments, tests, presentations. Presentations are marked using rubrics.
1.2 Generate box plot and histogram charts from data.	1,4,8	3.2	Students will be able to generate box plot and histogram charts from data as measured by assignments, tests, presentations. Presentations are marked using rubrics.
1.3 Calculate confidence intervals, perform hypothesis tests against a known value, test two samples for a difference of means, calculate effect size.	1,4,8	3.1	Students will be able to calculate confidence intervals, perform hypothesis tests against a known value, test two samples for a difference of means, calculate effect size as measured by assignments, tests, presentations. Presentations are marked using rubrics.
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.	1,4,8	3.1	Students will be able to calculate the linear slope, intercept, nature and strength of the relationship for paired data as measured by assignments, tests, presentations. Presentations are marked using rubrics.
2.2 Generate scatter graphs for paired data.	1,4,8	3.2	Students will be able to generate scatter graphs for paired data as measured by assignments, tests, presentations. Presentations are marked using rubrics.
2.3 Predict values based on the regression function.	1,4,8	3.1	Students will be able to predict values based on the regression function as

			measured by assignments, tests, presentations. Presentations are marked using rubrics.
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.	1,4,8	3.1	Students will be able to generate appropriate basic statistical measures of the data without specific guidance on which measures should be calculated. as measured by assignments, presentations using open data exploration, and guided data exploration. Presentations are marked using rubrics.
3.2 Generate appropriate charts and graphs for the data without specific guidance on which charts should be generated.	1,4,8	3.2	Students will be able to generate appropriate charts and graphs for the data without specific guidance on which charts should be generated as measured by assignments, presentations using open data exploration, and guided data exploration. Presentations are marked using rubrics.
3.3 Draw conclusions based on statistical analyses and tests, obtain answers to questions about the data, supported by appropriate statistics.	1,4,8	3.1	Students will be able to draw conclusions based on statistical analyses and tests, obtain answers to questions about the data, supported by appropriate statistics as measured by assignments, presentations using open data exploration, and guided data exploration. Presentations are marked using rubrics.

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:

- Lecture Cooperative learning groups
- Laboratory In-class exercises
- Audio visual Demonstrations
- Other

7) REQUIRED TEXT(S) AND COURSE MATERIALS:

Lee Ling, Dana (2018). *Introduction to Statistics Using Google Sheets™, Edition 6.0*, Pohnpei: College of Micronesia-FSM. Or subsequent editions.

8) REFERENCE MATERIALS:





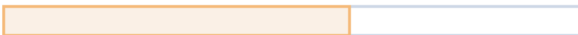
None.

9) INSTRUCTIONAL COSTS:

None.

10) EVALUATION:

Summative evaluation is accomplished by the marking of assignments, tests, presentations, and a final examination. Presentations are scored using rubrics contained within Schoology LMS. The course uses the following marking scale:

Letter Grade	Range	
A	89.5	
B	79.5	
C	69.5	
D	59.5	
F	0	

11) CREDIT BY EXAMINATION:

None.