University of Hawaii Maui College
MATH 85 - Pre-Statistics

1. **Course Alpha.**

   MATH

2. **Course Number.**

   85

3. **Course Title/Catalog Title.**

   Pre-Statistics

4. **Number of Credits.**

   4

5. **Contact Hours/Type.**

   - Hour lecture (4)

6. **Course Description.**

   Examines statistics, data analysis, and causal reasoning and prepares students for direct entry into MATH 115. This pathway is recommended for students whose program recognizes MATH 115 to fulfill the quantitative reasoning requirement. This is the first in a 2-course sequence ending with the equivalent of MATH 115.

7. **Pre-Requisites.**

   MATH 22 with grade C or better, or placement at MATH 82, or consent.

8. **Co-requisites.**

   None

9. **Recommended Preparation.**

   or placement at ENG 22

   ENG 19

10. **Is this a cross-listed course?**

    NO

11. **Reason for Proposal. Why is this course being proposed or modified? This question requires specific information as part of the explanation.**

    Many students are in a program which requires Statistics as its college level math course. These students do not need the same Algebra foundation as those whose programs require MATH 100 or MATH 103. Therefore, this course gives students their developmental mathematics through a statistics approach. I have taught this course as a 90V twice. As there continues to be demand, we will be offering the course as a 90V for a third time in Fall 2015. Therefore, it will be necessary for this course to be on the books by Spring 2015.

Students who take MATH 85 will only be eligible for their cohort's designated section of MATH 115.

12. Effective Semester and Year.

Spring 2016

13. Grading Method. What grading methods may be used for this course?

- Other, use next box (0)

A-F, N, W grades only

14. Is this course repeatable for credit? How often can this course be counted toward a degree or certificate?

NO

15. Course Student Learning Outcomes (SLOs).

Course SLO/Competency	A	B	C	D	E	F	G	H	I	J	K	L	M
Use statistical techniques to answer problems of a statistical nature.		☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Interpret the results of statistical graphs or calculations.	☑	☑		☑			☑		☑	☑	☑		
Demonstrate mathematical skills needed to successfully complete college level courses that require a statistical foundation.	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑

LEGEND

A. Explain the impact of statistics in various professional fields.
B. Describe the various methods of displaying and organizing data.
C. Define basic statistical terms.
D. Distinguish between qualitative and categorical data and quantitative (discrete and continuous) data.
E. Differentiate various sampling techniques.
F. Compute measures of central tendency and describe the impact of their numerical values on skew.
G. Interpret a frequency histogram, scatter plot, and box plot (stem and leaf) graphs.
H. Calculate the five number summary for a set of data.
I. Compute and interpret the values of the sum of squares, variance, and standard deviation for a set of data.
J. Interpret the magnitude/strength and direction of a linear correlation coefficient.
K. Give the equation of the least squares regression line and use it to make predictions.
L. Differentiate between various random sampling techniques.
M. Differentiate between random sampling/selection and random assignment.

Course SLO/PSLO	Demonstrate an understanding of theories, practices, histories, and key issues of a field of study using essential terminology and concepts of the discipline.	Use theories, concepts, and practices of a field of study to analyze evidence, artifacts, and/or texts and produce interpretations, hypotheses, evaluations, or conclusions.	Apply theories and/or methods of a field of study to perform practical, scholarly, and/or creative tasks that respond to social, cultural, environmental, or economic issues.
Use statistical techniques to answer problems of a statistical nature.	☑	☑	☑
Interpret the results of statistical graphs or calculations.		☑	
Demonstrate mathematical skills needed to successfully complete college level courses that require a statistical foundation.	☑	☑	☑

16. Course Competencies.

Competency
Explain the impact of statistics in various professional fields.
Describe the various methods of displaying and organizing data.
Define basic statistical terms.
Distinguish between qualitative and categorical data and quantitative (discrete and continuous) data.
Differentiate various sampling techniques.
Compute measures of central tendency and describe the impact of their numerical values on skew.
Interpret a frequency histogram, scatter plot, and box plot (stem and leaf) graphs.
Calculate the five number summary for a set of data.
Compute and interpret the values of the sum of squares, variance, and standard deviation for a set of data.
Interpret the magnitude/strength and direction of a linear correlation coefficient.
Give the equation of the least squares regression line and use it to make predictions.
Differentiate between various random sampling techniques.
Differentiate between random sampling/selection and random assignment.

17. Recommended Course Content and Timeline. The course content facilitates the course competencies. Course content may be organized by weeks, units, topics or the like.

Content
Mindset - 1 week
Types of Statistical Studies & Sampling Strategies - 4 weeks
Distributions of Quantitative Data - 4 weeks
Bivariate Relationships - 5 weeks
Two-Way Tables and Probability - 2 weeks

18. Program Learning Outcomes.

Program SLO
Demonstrate an understanding of theories, practices, histories, and key issues of a field of study using essential terminology and concepts of the discipline.
Use theories, concepts, and practices of a field of study to analyze evidence, artifacts, and/or texts and produce interpretations, hypotheses, evaluations, or conclusions.
Apply theories and/or methods of a field of study to perform practical, scholarly, and/or creative tasks that respond to social, cultural, environmental, or economic issues.

19. College-wide Academic Student Learning Outcomes (CASLOs

	Creativity - Able to express originality through a variety of forms.
☑	**Critical Thinking** - Apply critical thinking skills to effectively address the challenges and solve problems. ☑ Preparatory Level
	Information Retrieval and Technology - Access, evaluate, and utilize information effectively, ethically, and responsibly.
	Oral Communication - Practice ethical and responsible oral communications appropriately to a variety of audiences and purposes.
☑	**Quantitative Reasoning** - Synthesize and articulate information using appropriate mathematical methods to solve problems of quantative reasoning accurately and appropriately. ☑ Preparatory Level
	Written Communication - Write effectively to convey ideas that meet the needs of specific audiences and purposes.

20. Linking. CLICK ON CHAIN LINK ICON IN UPPER RIGHT HAND CORNER TO BEGIN LINKING.

21. Method(s) of delivery appropriate for this course.

- Classroom/Lab (0)
- Hybrid (0)

22. Text and Materials, Reference Materials, and Auxiliary Materials.

Custom Text

23. Maximum enrollment.

22

24. Particular room type requirement. Is this course restricted to particular room type?

YES
A room with movable furniture is necessary to sit students in groups.

25. Special scheduling considerations. Are there special scheduling considerations for this course?

NO

26. Are special or additional resources needed for this course?

None

27. Does this course require special fees to be paid for by students?

NO

28. Does this course change the number of required credit hours in a degree or certificate?

No.

29. Course designation(s) for the Liberal Arts A.A. degree and/or for the college's other associate degrees.

Degree	Program	Category
Associate in Arts:		
AS:		
AAS:		
BAS:		
Developmental/Remedial:	Developmental	

30. Course designation(s) for other colleges in the UH system.

MATH 32 at KapCC. We have chosen not to use this number because there are too many differences, namely that their course is a 6 credit course while ours is 4. Also, MATH 32 at KapCC includes Algebraic topics in their SLO's whereas UHMC's does not.

31. Indicate the year and page # of UHMC catalog referred to. For new or modified courses, please indicate the catalog pages that need to be modified and provide a sheet outlining those changes.

2014-2015: pg. 131 - MATH 85 needs to be added to the list of mathematics courses.
2014-2015: pg. 132 - The math routes for specific majors needs to be updated. Anywhere MATH 115 is acceptable, there needs to be an alternate path showing:
MATH 18 --> MATH 85 --> MATH 15

32. College-wide Academic Student Learner Outcomes (CASLOs).

Standard 1 - Written Communication Write effectively to convey ideas that meet the needs of specific audiences and purposes.	
Outcome 1.1 - Use writing to discover and articulate ideas.	1
Outcome 1.2 - Identify and analyze the audience and purpose for any intended communication.	1
Outcome 1.3 - Choose language, style, and organization appropriate to particular purposes and audiences.	0
Outcome 1.4 - Gather information and document sources appropriately.	0
Outcome 1.5 - Express a main idea as a thesis, hypothesis, or other appropriate statement.	0
Outcome 1.6 - Develop a main idea clearly and concisely with appropriate content.	0
Outcome 1.7 - Demonstrate a mastery of the conventions of writing, including grammar, spelling, and mechanics.	0
Outcome 1.8 - Demonstrate proficiency in revision and editing.	0
Outcome 1.9 - Develop a personal voice in written communication.	0
Standard 2 - Quantitative Reasoning Synthesize and articulate information using appropriate mathematical methods to solve problems of quantative reasoning accurately and appropriately.	
Outcome 2.1 - Apply numeric, graphic, and symbolic skills and other forms of quantitative reasoning accurately and appropriately.	3
Outcome 2.2 - Demonstrate mastery of mathematical concepts, skills, and applications, using technology when appropriate.	3
Outcome 2.3 - Communicate clearly and concisely the methods and results of quantitative problem solving.	3
Outcome 2.4 - Formulate and test hypotheses using numerical experimentation.	1
Outcome 2.5 - Define quantitative issues and problems, gather relevant information, analyze that information, and present results.	3
Outcome 2.6 - Assess the validity of statistical conclusions.	3
Standard 3 - Information Retrieval and Technology. Access, evaluate, and utilize information effectively, ethically, and responsibly.	
Outcome 3.1 - Use print and electronic information technology ethically and responsibly.	0
Outcome 3.2 - Demonstrate knowledge of basic vocabulary, concepts, and operations of information retrieval and technology.	0
Outcome 3.3 - Recognize, identify, and define an information need.	1
Outcome 3.4 - Access and retrieve information through print and electronic media, evaluating the accuracy and authenticity of that information.	0
Outcome 3.5 - Create, manage, organize, and communicate information through electronic media.	0
Outcome 3.6 - Recognize changing technologies and make informed choices about their appropriateness and use.	0
Standard 4 - Oral Communication Practice ethical and responsible oral communications appropriately to a variety of audiences and purposes.	
Outcome 4.1 - Identify and analyze the audience and purpose of any intended communication.	0
Outcome 4.2 - Gather, evaluate, select, and organize information for the communication.	0
Outcome 4.3 - Use language, techniques, and strategies appropriate to the audience and occasion.	0
Outcome 4.4 - Speak clearly and confidently, using the voice, volume, tone, and articulation appropriate to the audience and occasion.	0
Outcome 4.5 - Summarize, analyze, and evaluate oral communications and ask coherent questions as needed.	0

Outcome 4.6 - Use competent oral expression to initiate and sustain discussions.	0
Standard 5 - Critical Thinking Apply critical thinking skills to effectively address the challenges and solve problems.	
Outcome 5.1 - Identify and state problems, issues, arguments, and questions contained in a body of information.	3
Outcome 5.2 - Identify and analyze assumptions and underlying points of view relating to an issue or problem.	2
Outcome 5.3 - Formulate research questions that require descriptive and explanatory analyses.	1
Outcome 5.4 - Recognize and understand multiple modes of inquiry, including investigative methods based on observation and analysis.	0
Outcome 5.5 - Evaluate a problem, distinguishing between relevant and irrelevant facts, opinions, assumptions, issues, values, and biases through the use of appropriate evidence.	2
Outcome 5.6 - Apply problem-solving techniques and skills, including the rules of logic and logical sequence.	0
Outcome 5.7 - Synthesize information from various sources, drawing appropriate conclusions.	0
Outcome 5.8 - Communicate clearly and concisely the methods and results of logical reasoning.	0
Outcome 5.9 - Reflect upon and evaluate their thought processes, value system, and world views in comparison to those of others.	0
Standard 6 - Creativity Able to express originality through a variety of forms.	
Outcome 6.1: Generate responses to problems and challenges through intuition and non-linear thinking.	0
Outcome 6.2: Explore diverse approaches to solving a problem or addressing a challenge.	1
Outcome 6.3: Sustain engagement in activities without a preconceived purpose.	0
Outcome 6.4: Apply creative principles to discover and express new ideas.	0
Outcome 6.5: Demonstrate the ability to trust and follow one's instincts in the absence of external direction	0
Outcome 6.6: Build upon or adapt the ideas of others to create novel expressions or new solutions.	0

33. Additional Information

2014.89

CATALOG 2014-2015 CHANGES FOR MATH 85

1) MATH 85 will need to be placed on page 131 as per Catalog 2014-2015.

2) Pg. 132: Math Routes for Specific Majors

Business: ACC, BUS, BUSN, HOST

Add the following pathway:

Liberal Arts (non-calculus), Public Service: AJ, HSER, NURS

Add the following pathway: