

I. CATALOG INFORMATIONA. Discipline: MATHEMATICSB. Subject Code and Number: MATH M08C. Course Title: Pathway to Statistics

D. Credit Course units:

Units: 6Lecture Hours per week: 6Lab Hours per week : 0Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 105 - 105

Laboratory/Activity Hours:

Laboratory/Activity Hours 0 - 0**Total Combined Hours** in a 17.5 week term: 105 - 105

F. Non-Credit Course hours per week _____

G. May be taken a total of: 1 2 3 4 time(s) for creditH. Is the course co-designated (same as) another course: No Yes

If YES, designate course Subject Code & Number: _____

I. Course Description:

Prepares students for transfer-level statistics by covering core concepts from elementary algebra, intermediate algebra, and descriptive statistics. Provides algebraic and statistical problem solving techniques. Uses technology to analyze data sets.

J. Entrance Skills

*Prerequisite: No Yes Course(s)

1 year of high school pre-algebra or MATH M09 or MATH M09C or equivalent with grade of C or better or placement as measured by the college assessment process

*Corequisite: No Yes Course(s)

Limitation on Enrollment: No Yes

Recommended Preparation: No Yes Course(s)

Other: No Yes

K. Other Catalog Information:

This course is not intended for students who plan to take courses in science, computer science, engineering, math, as well as business and other non-STEM majors.

Does NOT meet the Math competency for the associate degree.

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	work with variables, constants, expressions, inequalities, absolute values, fractions, proportions, ratios, percents, exponents, square roots, order of operations, converting units, and scientific notation.	Graded work and exams.
2	distinguish between populations and samples as well as qualitative (categorical) and quantitative (numeric) data, to include discrete and continuous; and identify the standard methods of obtaining data (e.g., simple random, systematic, stratified, and cluster sampling) and the advantages and disadvantages of each.	Graded work and exams.
3	summarize data graphically by displaying data using methods from descriptive statistics, interpreting data in tables graphically by using bar graphs, two-way tables, histograms, and frequency and relative frequency distributions.	Graded work and exams.
4	find measures of central tendency for data sets: mean, median, and mode; discuss skewness in relation to the mean and median; find measures of spread for data sets: standard deviation, variance, and range; and the five number summary and boxplots.	Graded work and exams.
5	find simple probabilities and probabilities of compound events and compute probabilities using the complement, the addition rules, the multiplication rules, the conditional probability rule, and Bayes' Theorem.	Graded work and exams.
6	demonstrate the difference between discrete and continuous probability distributions; relation between a normal curve and a density histogram; standardize a normally distributed random variable, use the normal distribution to find probabilities for normally distributed random variables.	Graded work and exams.
7	use scatter plots and model linear associations; determine the characteristics of the association between explanatory and response variables (shape and strength).	Graded work and exams.
8	graph equations of lines (slope-intercept and point-slope forms) and linear models; slope of a line and rate of change; functions (domain, range, function notation, applications of linear functions).	Graded work and exams.
9	simplify expressions, solve linear equations and inequalities in one variable, solve linear equations and inequalities to make predictions, solve formulas for a particular variable, and basic function theory.	Graded work and exams.

10	simplify and manipulate integer exponents, rational exponents; evaluate and graph exponential and logarithmic functions.	Graded work and exams.
11	solve linear, exponential, and logarithmic equations and use these functions in regression models.	Graded work and exams.

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
5.00%	A. Performing Operations and Evaluating Expressions with Real Numbers 1. Variables, constants, and expressions 2. Inequalities and absolute values 3. Fractions, proportions, ratios, percents 4. Exponents and square roots 5. Order of operations, converting units, and scientific notation	1
5.00%	B. Data 1. Distinguish between populations and samples as well as qualitative (categorical) and quantitative (numeric) data, to include discrete and continuous 2. Identify the standard methods of obtaining data (e.g., simple random, systematic, stratified, and cluster sampling) and the advantages and disadvantages of each	2
5.00%	C. Graphical and Tabular Displays of Data; Descriptive Statistics 1. Summarize data graphically by displaying data using methods from descriptive statistics 2. Interpreting data in tables graphically by using bar graphs, two-way tables, histograms, and frequency and relative frequency distributions 3. Descriptive statistics: measures of central tendency and spread 4. Numeric and graphical (i.e., boxplot) representation of the five number summary	3, 4
10.00%	D. Probability 1. Find simple probabilities 2. Find probabilities of compound events and compute probabilities using the complement 3. Find probabilities using the addition rules 4. Find probabilities using the multiplication rules 5. Find probabilities using the conditional probability rule and Bayes' Theorem	5
5.00%	E. Sampling Distributions 1. Discrete and continuous random variables 2. Discrete and continuous probability distributions 3. Normal curve and density histogram 4. Standard normal distribution and z-scores	6
15.00%	F. Scatter Plots and Linear Associations 1. Scatter plots and modeling linear associations 2. Determining the characteristics of the association between explanatory 3. Response variables (shape and strength)	7
15.00%	G. Graphing Lines 1. Graphing equations of lines (slope-intercept and point-slope forms) and linear models	8

	2. Slope of a line and rate of change 3. Definition of functions and their domain and range. 4. Applications of linear functions	
20.00%	H. Expressions, Equations, and Functions 1. Integer and rational exponents 2. Linear equations 3. Linear inequalities 4. Functions 5. Exponential functions 6. Logarithmic functions	9, 10
20.00%	I. Regression 1. Least-squares linear regression 2. Exponential regression 3. Logarithmic regression	11

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	homework problems selected from the statistics textbook where answers require a written explanation of the solution, such as find the regression line.
2	graded assignments: in-class and/or homework assignments requiring complete solutions using both written English and symbolic mathematical language.
3	short answer problems on exams such as describing what type of regression to use (linear, exponential, or logarithmic).
4	projects such as performing a probability experiment with a deck of cards, dice or coins.

B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:	
1	completing assigned reading material and homework problems from the statistics textbook.
2	gathering real life data and analyzing the data set by finding the mean, median, mode, standard deviation, and variance.
3	finding statistical examples in the media and interpreting the results.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	applying analytic techniques for solving mathematical and application problems such as finding probabilities of events.
2	comparing and contrasting methods of solution to mathematical problems such as when to use an appropriate probability distribution.
3	comparing and contrasting methods of solution to mathematical problems such as when to use an appropriate type of regression (linear, exponential, or logarithmic).

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

Distance Education – When any portion of class contact hours is replaced by

distance education delivery mode (Complete DE Addendum, Section XV)

Lecture/Discussion

Laboratory/Activity

Other (Specify)

Introductory lectures to new concepts; review material from previous topics as related to the current topic; provide detailed step-by-step examples; provide practice problems to develop proper mathematical skills and techniques; provide student interaction for questions and answers; use projects and/or group work to enhance students' understanding of the concepts; and discuss application problems.

Optional Field Trips

Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

- | | | |
|----------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Essay Exam | <input checked="" type="checkbox"/> Classroom Discussion | <input type="checkbox"/> Skill Demonstration |
| <input checked="" type="checkbox"/> Problem Solving Exam | <input type="checkbox"/> Reports/Papers/Journals | <input type="checkbox"/> Participation |
| <input checked="" type="checkbox"/> Objective Exams | <input checked="" type="checkbox"/> Projects | <input checked="" type="checkbox"/> Other (specify) |

Problem solving exams, quizzes and/or graded work will be used to evaluate students for the critical thinking skills needed to solve math problems. Problems must require students to demonstrate analytic skills and the step-by-step details required for the solution.

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Lehmann, Jay. A Pathway to Introductory Statistics. Pearson, 2016.

Moorpark College Faculty Work Book.

VIII. STUDENT MATERIALS FEES

No Yes

IX. PARALLEL COURSES

College	Course Number	Course Title	Units
College of San Mateo	MATH 190	Path to Statistics	6
Los Angeles Pierce College	MATH 228A	Statistics Pathway Part I	5
Ventura College	MATH V14	Prestatistics	6

X. MINIMUM QUALIFICATIONS

Courses Requiring a Masters Degree:

Master's degree in mathematics or applied mathematics OR bachelor's degree in either of the above AND master's degree in statistics, physics, or mathematics education OR the equivalent.

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

- Pass/No Pass only (no letter grade possible); or
- Letter grade (P/NP possible at student option)

2. Degree status:

Either Associate Degree Applicable; or Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?

Yes: No: If YES, what section(s)?

- A1 - Natural Sciences - Biological Science
- A2 - Natural Sciences - Physical Science
- B1 - Social and Behavioral Sciences - American History/Institutions
- B2 - Social and Behavioral Sciences - Other Social Behavioral Science
- C1 - Humanities - Fine or Performing Arts
- C2 - Humanities - Other Humanities
- D1 - Language and Rationality - English Composition
- D2 - Language and Rationality - Communication and Analytical Thinking
- E1 - Health/Physical Education
- E2 - PE or Dance
- F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: No:

2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes: No: If YES, which area(s)?

- | | | | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|
| A1 <input type="checkbox"/> | A2 <input type="checkbox"/> | A3 <input type="checkbox"/> | B1 <input type="checkbox"/> | B2 <input type="checkbox"/> | B3 <input type="checkbox"/> | B4 <input type="checkbox"/> |
| C1 <input type="checkbox"/> | C2 <input type="checkbox"/> | D1 <input type="checkbox"/> | D2 <input type="checkbox"/> | D3 <input type="checkbox"/> | D4 <input type="checkbox"/> | D5 <input type="checkbox"/> |
| D6 <input type="checkbox"/> | D7 <input type="checkbox"/> | D8 <input type="checkbox"/> | D9 <input type="checkbox"/> | D10 <input type="checkbox"/> | E <input type="checkbox"/> | |

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: No:

2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: No:

IGETC Area 1: English Communication

- English Composition
- Critical Thinking-English Composition
- Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- Mathematical Concepts

IGETC Area 3: Arts and Humanities

- Arts
- Humanities

IGETC Area 4: Social and Behavioral Sciences

- Anthropology and Archaeology
- Economics
- Ethnic Studies
- Gender Studies
- Geography
- History
- Interdisciplinary, Social & Behavioral Sciences
- Political Science, Government & Legal Institutions
- Psychology
- Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- Physical Science Lab or Physical Science Lab only (non-sequence)
- Physical Science Lecture only (non-sequence)
- Biological Science
- Physical Science Courses
- Physical Science Lab or Biological Science Lab Only (non-sequence)
- Biological Science Courses
- Biological Science Lab course
- First Science course in a Special sequence
- Second Science course in a Special Sequence
- Laboratory Activity
- Physical Sciences

IGETC Area 6: Language other than English

- Languages other than English (UC Requirement Only)

U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

- A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:

Possible locating of statistical applications in journal articles and/or studies using the Library's print and online resources.

- B. Are the currently held library resources sufficient to support the course assignment?

YES: NO:

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

Requisite Justification for 1 year of high school pre-algebra

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.
- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____
- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for MATH M09

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.

- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____
- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for MATH M09C or equivalent with grade of C or better

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.
- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____
- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for placement as measured by the college assessment process

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.
- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

XIV. WORKPLACE PREPARATION

MATH M08: Not Applicable

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

- Online (course will be delivered 100% online)
- Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)
- Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)
 - Lab activities will be conducted onsite
- Televideo (Examinations and an orientation will be held onsite)
- Teleconference
- Other

2. Need/Justification

Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

Provide students with an opportunity to ask questions of fellow students and the instructor using the "discussion forum" tool provided by the CMS.

Contact students via email within the CMS, by campus email, and/or MyVCCCD. Meet with students for study sessions and online office hours using an online communication tool like CCCConfer utilizing Blackboard, where instructors and students may speak with one another using VoIP or phone, and instructors may write the problems for all to see using an online whiteboard. These sessions may be archived so that students who were not able to attend may watch the session at a later time. Use the "announcement" tool to remind students of important assignments and due dates. Provide students with an online schedule of class events using the "calendar" tool in the online CMS.

4. Describe how instructors teaching this course will involve students in active learning.

Students may view video lessons and/or text-based lessons for each learning objective (created by an instructor or by a publishing company).

Students may complete homework on paper and/or using an interactive online homework system provided by a publishing company. Students may test their knowledge with interactive online quizzes provided by a publishing company. Students may interact with the instructor and classmates using an online discussion forum to ask questions. Students may attend online study sessions using a communication tool through CCCConfer. Students may submit questions to the instructor by email. Instructor may create student groups or group activities using the CMS.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

Live tutorials using a communication tool like CCCConfer.

Instructional Videos Textbook Links to online resources that may include video, quizzes, interactive math games, text explanations, and more.

6. Describe how instructors teaching this course will evaluate student performance.

Complete practice problems on paper and/or in an online interactive homework system

Complete regular online quizzes

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

General Education Division of Learning [check all applicable boxes]:

- Natural Sciences
 - Biological Science
 - Physical Science
- Social and Behavioral Sciences
 - American History/Institutions
 - Other Social Science
- Humanities
 - Fine or Performing Arts
 - Other Humanities
- Language and Rationality
 - English Composition
 - Communication and Analytical Thinking
- Health/Physical Education
- Ethnic/Women's Studies

Check either Option 1 or Option 2

- OPTION #1:** Moorpark College has already received approval from the CSU and/or UC systems for this course to fulfill a GE requirement.
Note: This option applies only to technical revisions and updated

courses.

- OPTION #2:** Moorpark College has not received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. This option applies to all new and substantively revised courses.

XVII. STUDENT MATERIALS FEE ADDENDUM

MATH M08: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

MATH M08: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: MATHEMATICS

Discipline Code and Number: MATH M08

Course Revision Category: New Course

Course Proposed By:

Originating Faculty Brendan Purdy 05/09/2016

Faculty Peer: Tom Ogimachi 05/09/2016

Curriculum Rep: Thanh Trinh 09/19/2016

Department Chair: Christine Cole 05/17/2016

Division Dean: Mary Rees 08/29/2016

Approved By:

Curriculum Chair: Jerry Mansfield 12/14/2016

Executive Vice President: Julius Sokenu 01/27/2017

Articulation Officer: Letrisha Mai 10/04/2016

Librarian: Mary LaBarge 10/03/2016

Implementation Term and Year: Fall 2017

Approval Dates:

Approved by Moorpark College Curriculum Committee: 11/01/2016

Approved by Board of Trustees (if applicable): 12/13/2016

Approved by State (if applicable): 02/09/2017