Clackamas Community College

Online Course/Outline Submission System

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Section #1 General Course Information

Department: Mathematics

Submitter

First Name: Mark
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Course Prefix and Number: MTH - 243

 # Credits: 4

Contact hours

Lecture (# of hours): 44
Lec/lab (# of hours):
Lab (# of hours):
Total course hours: 44

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Course Title: Statistics I

Course Description:

This course introduces students to descriptive statistics, observational studies, experiments, elementary probability, random variables, and sampling distributions.

Type of Course: Lower Division Collegiate

Is this class challengeable?

Yes

Can this course be repeated for credit in a degree?

No

Is general education certification being sought at this time?

Yes

Check which General Education requirement:

✓ Mathematics

Is this course part of an AAS or related certificate of completion?

No

Are there prerequisites to this course?

Yes

Pre-reqs: Pass MTH-105 or MTH-111 with a C or better, or placement in MTH-112

Have you consulted with the appropriate chair if the pre-req is in another program?

No

Are there corequisites to this course?

No

Are there any requirements or recommendations for students taken this course?

Yes

Recommendations: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121

Requirements: None

Are there similar courses existing in other programs or disciplines at CCC?

No

Will this class use library resources?

No

Is there any other potential impact on another department?

No

Does this course belong on the Related Instruction list?

Yes

Area: Computation

GRADING METHOD:

A-F or Pass/No Pass

Audit:Yes

When do you plan to offer this course?

✓ **Summer**
✓ **Fall**
✓ **Winter**
✓ **Spring**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

No

Will this course appear in the college catalog?

Yes

Will this course appear in the schedule?

Yes

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. apply problem-solving techniques to engage problems without being provided with a template,
2. demonstrate the ability to work in groups to solve problems,
3. demonstrate the ability to read and interpret mathematical information,
4. explain mathematical information in lay-language,
5. apply the vocabulary of statistics and probability,
6. determine for which applications statistics and probability are appropriate problem-solving tools,
7. apply technology to solve problems for which statistics or probability are appropriate tools,
8. apply technology to organize and present data,
9. use sample data to draw inferences about a population,
10. distinguish between types of variables found in statistics,
11. distinguish between types of data,
12. explain the meaning of statistics such as mean, median, IQR, and standard deviation in a real-world context;
13. obtain random samples using a variety of bias-free methods,
14. explain the usefulness of a data set and demonstrate an understanding of the sources of errors in sampling,
15. describe the elements of a well-designed experiment,
16. construct a variety of tables and graphs used to organize and present data,
17. determine when data is presented in a misleading or deceptive way,
18. compute various summary measures describing a data set,
19. determine when it is more appropriate to use one descriptor of a data set rather than some other descriptor,
20. describe the shape of the distribution of a data set,
21. determine whether events are mutually exclusive or independent,
22. distinguish between discrete and continuous random variables,
23. compute probabilities using discrete probability distributions,
24. explain, in context, the meaning of “and,” “or,” and conditional probabilities;
25. use the binomial probability distribution to solve problems in appropriate situations,
26. define a continuous probability density function,
27. explain the relationship between area and probability in applications involving continuous random variables,

28. compute probabilities using uniform probability distributions,
29. use the normal probability distribution to solve problems in appropriate situations,
30. demonstrate the ability to standardize a normal random variable,
31. explain the area under a normal curve in applications,
32. distinguish between the distribution of data from a population and a sampling distribution from a population,
33. compute quantitative measures of a sampling distribution,
34. use the central limit theorem appropriately to sampling distributions,
35. explain the difference between the distribution of a sample of individuals and the distribution of a sample mean or sample proportion,
36. apply normal distributions to discrete random variables in appropriate situations.

AAOT/ASOT GENERAL EDUCATION OUTCOMES

COURSE OUTLINE MAPPING CHART

Mark outcomes addressed by the course:

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

As a result of completing the AAOT/ASOT general education requirements, students will be able to:

WR: Writing Outcomes

1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.

2. Locate, evaluate, and ethically utilize information to communicate effectively.

3. Demonstrate appropriate reasoning in response to complex issues.

SP: Speech/Oral Communication Outcomes

1. Engage in ethical communication processes that accomplish goals.

2. Respond to the needs of diverse audiences and contexts.

3. Build and manage relationships.

MA: Mathematics Outcomes:

C 1. Use appropriate mathematics to solve problems.

C 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

AL: Arts and Letters Outcomes

1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.

2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

SS: Social Science Outcomes

1. Apply analytical skills to social phenomena in order to understand human behavior.

2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

SC: Science or Computer Science Outcomes

1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.

2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.

3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

Outcomes Assessment Strategies:

:

Major Topic Outline:

1. Working with data.
a. Raw data.
b. Types of variables.
c. Summarizing one or two categorical variables.
d. Visual displays of quantitative data.
e. Numerical summaries of quantitative variables.
f. Outliers and box plots.
g. Standard deviation.
h. Bell-shaped distributions.
i. The empirical rule.
2. Collecting sample data
a. Collecting and using sample data wisely.
b. Margin of error and confidence intervals.
c. Simple random samples.
d. Other sampling methods.
e. Bias and other difficulties in sampling.
3. Experiments and observational studies.
a. Distinguishing experiments from observational studies.
b. Designing a good experiment.
c. Designing a good observational study.
d. Confounding and bias in experiments and observational studies.
4. Probability.
a. Random circumstances.
b. Interpretations of probability.
c. Probability definitions and relationships.
d. Basic rules for finding probabilities.
e. Strategies for finding complicated probabilities.
5. Random variables.
a. Introduction to random variables.
b. Displays of discrete random variables.
c. Summarizing a random variable: expected value (mean) and standard deviation.
d. Binomial random variables.
e. Continuous random variables.
f. Normal random variables.
g. Approximating a binomial random variable using a normal random variable.
6. Sampling distributions: statistics as random variables.
a. Parameters and statistics.
b. Inference about population parameters.
c. Overview of five types of sampling distributions.
d. Sampling distribution for one sample proportion.
e. Sampling distribution for one sample mean.
f. Central limit theorem.

Does the content of this class relate to job skills in any of the following areas:

1. Increased energy efficiency	**No**
2. Produce renewable energy	**No**
3. Prevent environmental degradation	**No**
4. Clean up natural environment	**No**
5. Supports green services	**No**

Percent of course:0%

Section #2 Course Transferability

Concern over students taking many courses that do not have a high transfer value has led to increasing attention to the transferability of LDC courses. The state currently requires us to certify that at least one OUS school will accept a new LDC course in transfer. Faculty should communicate with colleagues at one or more OUS schools to ascertain how the course will transfer by answering these questions.

1. Is there an equivalent lower division course at the University?
2. Will a department accept the course for its major or minor requirements?
3. Will the course be accepted as part of the University's distribution requirements?

If a course transfers as an elective only, it may still be accepted or approved as an LDC course, depending on the nature of the course, though it will likely not be eligible for Gen Ed status.

Which OUS schools will the course transfer to? (Check all that apply)

Identify comparable course(s) at OUS school(s)

How does it transfer? (Check all that apply)

:

Provide evidence of transferability: (minimum one, more preferred)

First term to be offered:

Next available term after approval

: