Clackamas Community College

Online Course/Outline Submission System

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Section #1 General Course Information

Department: Mathematics

Submitter

First Name: Mark
Last Name: Hull
Phone: 3707
Email: markhull

Course Prefix and Number: MTH - 244

 # 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 II

Course Description:

The tools learned in Statistics II are used for hypothesis tests and confidence intervals for one and two populations, linear regression, inference about regression, and chi-square tests.

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-243 with a C or better, or instructor consent

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?

No

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?

✓ Not every term

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. use the vocabulary of statistics and probability,
6. determine for which applications statistics and probability are appropriate problem-solving tools,
7. use technology to solve problems for which statistics or probability are appropriate tools,
8. use technology to organize and present data,
9. explain of the process of statistics,
10. compute point estimates for certain parameters,
11. create confidence intervals for proportions from one or two populations,
12. create confidence intervals for the mean from one or two populations, both paired and unpaired;
13. explain, in context, the meaning of each type of confidence interval;
14. use the vocabulary of hypothesis testing,
15. explain, in context, the meaning of Type I and Type II errors in hypothesis testing;
16. write null and alternative hypotheses, and appropriate conclusions, for hypothesis tests;
17. explain the meaning of significance level, critical region, and p-value;
18. conduct hypothesis tests for proportions from one or two populations,
19. conduct hypothesis tests for means from one or two populations, both paired and unpaired;
20. explain the meanings of “reject the null hypothesis” and “fail to reject the null hypothesis” in a real-world setting,
21. produce and explain scatter diagrams, and compute and interpret the linear correlation coefficient;
22. compute the least-squares regression line using technology, and interpret the slope and the y-intercept;
23. interpret the value of the coefficient of determination, and analyze residuals;
24. create and analyze residual plots to assess whether a given regression model is appropriate,
25. demonstrate the abiltiy to test a claim that a linear relation exists between two variables,
26. compute a confidence interval about the slope of the least-squares regression mode,
27. demonstrate the abiltiy to perform chi-square goodness-of-fit tests and chi-square tests for independence,

28. use technology to the various tasks involving confidence intervals, hypothesis tests, and regression analysis;
29. demonstrate the abiltiy to work together with others, in a small-group format, to create an extensive project in which a large raw-data set is analyzed with confidence intervals, hypothesis tests, and statistical plots.

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. Estimating proportions using confidence intervals.
a. Overview of confidence intervals.
b. Finding a confidence interval for a population proportion.
c. Confidence interval for the difference in two population proportions.
d. Using confidence intervals in decision-making.
2. Estimating means using confidence intervals
a. Finding a confidence interval for a population mean.
b. Confidence intervals for the population mean of paired differences.
c. Confidence interval for the difference in two population means.
d. Understanding any confidence interval.
3. Hypothesis tests for population proportions.
a. An overview of hypothesis testing.
b. Testing hypotheses about a population proportion.
c. Testing hypotheses about the difference in two population proportions.
d. Special concerns for hypothesis testing
d1. Sample size.
d2. Statistical significance.
d3. Practical importance.
4. Hypothesis tests for population means
a. The t-distributions.
b. Testing hypotheses about one population mean.
c. Testing hypotheses about the population mean of paired differences.
d. Hypothesis testing about the difference in two population means.
e. The relationship between significance tests and confidence intervals.
f. Choosing an appropriate inference procedure.
5. Linear regression.
a. Scatterplots.
b. Regression lines.
c. Correlation.
d. Correlation vs causation.
e. Sample and population regression models.
f. Estimating the standard deviation for regression.
g. Inference about the slope of a linear regression.
6. Chi-square methods for inference.
a. The chi-square test.
b. Testing for homogeneity of proportions and for independence.
c. Fisher's exact test for two-way tables.
d. Testing for goodness-of-fit.

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
: