# Course Outline – Seattle Central Community College

<table>
<thead>
<tr>
<th>Course Prefix &amp; No.:</th>
<th>Title:</th>
<th>Credits:</th>
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<tbody>
<tr>
<td>MATH 136</td>
<td>Inferential Statistics</td>
<td>5</td>
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<table>
<thead>
<tr>
<th>Division:</th>
<th>Program/Department:</th>
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<tbody>
<tr>
<td>Science &amp; Math</td>
<td>Mathematics</td>
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<tr>
<th>Maximum Class Size:</th>
<th>Course length:</th>
<th>Prerequisite(s):</th>
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<tbody>
<tr>
<td>32</td>
<td>11 weeks</td>
<td>Completed MATH092 with a 2.0 or better</td>
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<tr>
<th>Total Contact Hours:</th>
<th>Mode(s) of Delivery:</th>
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<tbody>
<tr>
<td>55</td>
<td>On campus self-contained</td>
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Lecture: 55 (11 h. = 1 cr.)

Lab: (supervised; 22 hrs.=1 cr.)

Clinical:

Other: (unsupervised; 33 hrs. = 1 cr.)

Mode(s) of Delivery:
- On campus self-contained
- Correspondence
- Tele-course
- Online instruction
- Hybrid (e.g., online and on campus)
- Other (please describe): ___

## Course Description

This course provides an introduction to statistics and algebra for non-STEM majors and is based on the Statway™ curriculum for teaching statistics with integrated algebra. This is the third quarter of three in the STATWAY sequence. This sequence covers concepts and methods of statistics with an emphasis on data analysis. Topics for this course include probability distributions, confidence intervals, and hypothesis testing for proportions and means. Application problems will be taken from numerous fields. This sequence is recommended for students with majors that require no mathematics beyond freshman-level statistics. Completion of the MATH091, MATH092, and MATH136 sequence is equivalent to finishing a college level statistics course (such as MATH109 or MATH146).

## Learning Outcomes

As a result of taking this course, students will be able to:

- **Apply concepts of sampling distributions and the central limit theorem and use these to analyze, describe and measure sampling variability**
- **Conduct hypothesis testing and calculate confidence intervals for one-sample mean, two-sample means, one-sample proportion and two-sample proportions**
- **In a given context, determine appropriate null and alternative hypotheses and identify conclusions that reasonably follow from a decision to reject or not reject the null hypothesis, and explain these conclusions in context**
- **Interpret statistical significance, including significance levels and P-values**
- **Identify and explain the limitations of statistical inferences**
- **Use appropriate technology as a tool for doing statistics.**
- **Discuss mathematical problems and write solutions in accurate mathematical language and notation.**
- **Interpret mathematical solutions.**

## Program/Degree

This course addresses the following program or degree outcomes:
### Outcomes
- Have knowledge and skills in critical thinking and quantitative analysis
- Have effective skills for in-person interactions with individuals and within groups.
- Understand methods and modes of inquiry specific to mathematics
- Demonstrate effective oral and written communication, teamwork and collaboration in mathematical settings
- Demonstrate academic honesty and ethical behavior

### Topical Outline and/or Major Divisions
This course covers the following topics:

1. **Investigate statistical inference**
   - Sampling distributions
     - Standard error
     - Central Limit Theorem

2. **Apply techniques of statistical inference to a single proportion**
   - Large-sample confidence interval for a population proportion
   - One-sample Z-test for a population proportion

3. **Apply techniques of statistical inference to the difference between two population proportions**
   - Confidence interval for the difference in two population proportions
   - Two-sample Z-test for the difference in two population proportions

4. **Apply techniques of statistical inference to means**
   - One-sample confidence interval
   - Two-sample confidence interval
   - One-sample T-test
   - Two-sample T-test
   - Paired T-test

5. **Use appropriate technology as a tool for doing statistics. This may include tools such as:**
   - StatCrunch
   - Graphing calculator

6. **Discuss mathematical problems and write solutions in accurate mathematical language and notation**

7. **Interpret mathematical solutions**

### Distribution Area
None of the above/Elective

### Additional Information
Students need access to a computer as the text is an interactive on-line workbook.

### CAC Use Only Special
- [ ] QSR  - [ ] IS  - [ ] C  - [ ] GS  - [ ] US  - [ ] None
| Designation(s) | Outline Prepared by: Statway™ Committee | Date: Nov 2012 |