

## Washtenaw Community College Comprehensive Report

### MTH 160X Basic Statistics

#### Conditional Approval

Effective Term: Winter 2025

#### Course Cover

**College:** Math, Science and Engineering Tech

**Division:** Math, Science and Engineering Tech

**Department:** Math & Engineering Studies

**Discipline:** Mathematics

**Course Number:** 160X

**Org Number:** 12200

**Full Course Title:** Basic Statistics

**Transcript Title:** Basic Statistics

**Is Consultation with other department(s) required:** No

**Publish in the Following:**

**Reason for Submission:**

**Change Information:**

**Rationale:** As developmental education courses are reduced and eliminated at WCC, we are aiming to create college-level courses at WCC that serve level 1 and level 2 students.

**Proposed Start Semester:** Winter 2025

**Course Description:** In this course, students will use elementary statistics to achieve statistical literacy. Emphasis is on interpretation and evaluation of statistical results. Broad topics include descriptive statistics, linear regression, basic probability theory and inferential statistics. Specific topics include describing data sets graphically and numerically, measures of center and spread, bivariate data and least squares regression, correlation, random variables, basic probability distributions, confidence intervals and hypothesis tests. A graphing calculator is required for this course. See the time schedule for current brand and model. This course includes additional instructor contact hours and is open to Math Level 1 and Math Level 2 students only.

#### Course Credit Hours

**Variable hours:** No

**Credits:** 4

**Lecture Hours: Instructor: 75 Student: 75**

**Lab: Instructor: 0 Student: 0**

**Clinical: Instructor: 0 Student: 0**

**Total Contact Hours: Instructor: 75 Student: 75**

**Repeatable for Credit:** NO

**Grading Methods:** Letter Grades

Audit

**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

#### College-Level Reading and Writing

Reduced Reading/Writing Scores

#### College-Level Math

No Level Required

## **Requisites**

### **Enrollment Restrictions**

Academic Reading Level 3 and concurrently enrolled in ENG 111 and ENG 111S; or Academic Reading Level 5. Open to Math Level 1 and Math Level 2 students only.

## **General Education**

## **Request Course Transfer**

### **Proposed For:**

## **Student Learning Outcomes**

1. Identify common statistical terminology, and represent qualitative and quantitative data in tables and graphs.

### **Assessment 1**

Assessment Tool: Outcome-related common final exam questions

Assessment Date: Spring/Summer 2025

Assessment Cycle: Every Two Years

Course section(s)/other population: All

Number students to be assessed: 10-20% representative random sample of students from all sections of the course

How the assessment will be scored: The selected set of common questions for this outcome from the paper departmental final exam will be scored with a rubric

Standard of success to be used for this assessment: 75% of students will score at least 70% on the selected set of questions assessed for this outcome

Who will score and analyze the data: Course mentor (coordinator)/department faculty

2. Interpret, plan, produce and apply descriptive statistics, including common quantitative measures for univariate data and common quantitative measures related to linear regression analysis of bivariate data.

### **Assessment 1**

Assessment Tool: Outcome-related common final exam questions

Assessment Date: Spring/Summer 2025

Assessment Cycle: Every Two Years

Course section(s)/other population: All

Number students to be assessed: 10-20% representative random sample of students from all sections of the course

How the assessment will be scored: The selected set of common questions for this outcome from the paper departmental final exam will be scored with a rubric

Standard of success to be used for this assessment: 75% of students will score at least 70% on the selected set of questions assessed for this outcome

Who will score and analyze the data: Course mentor (coordinator)/department faculty

3. Interpret and apply probability, discrete probability distributions and common continuous probability distributions.

### **Assessment 1**

Assessment Tool: Outcome-related common final exam questions

Assessment Date: Spring/Summer 2025

Assessment Cycle: Every Two Years

Course section(s)/other population: All

Number students to be assessed: 10-20% representative random sample of students from all sections of the course

How the assessment will be scored: The selected set of common questions for this outcome from the paper departmental final exam will be scored with a rubric

Standard of success to be used for this assessment: 75% of students will score at least 70% on the selected set of questions assessed for this outcome

Who will score and analyze the data: Course mentor (coordinator)/department faculty

#### 4. Interpret, plan, produce and apply inferential statistics.

##### **Assessment 1**

Assessment Tool: Outcome-related common final exam questions

Assessment Date: Spring/Summer 2025

Assessment Cycle: Every Two Years

Course section(s)/other population: All

Number students to be assessed: 10-20% representative random sample of students from all sections of the course

How the assessment will be scored: The selected set of common questions for this outcome from the paper departmental final exam will be scored with a rubric

Standard of success to be used for this assessment: 75% of students will score at least 70% on the selected set of questions assessed for this outcome

Who will score and analyze the data: Course mentor (coordinator)/department faculty

### **Course Objectives**

1. Use standard statistics terminology to describe the output of technology, or written narrative, of inferential statistics.
2. Classify sampling methods, variables and types of data.
3. Recognize and critique varied descriptive statistical summaries such as tables, graphs and numerical measures.
4. Tabulate data, and prepare varied statistical summaries such as tables, graphs and numerical measures.
5. Construct and interpret a scatterplot for two variables.
6. Calculate and interpret the correlation coefficient for two variables.
7. Calculate and interpret the equation of the least squares regression line, and use it to predict values of the response variable from values of the explanatory variable.
8. Calculate and interpret basic probabilities via the fundamental probability principle, the addition rule, the rule of complements, conditional probability rules, and the multiplication rule.
9. Produce discrete probability distributions corresponding to empirical data or discrete random variables.
10. Interpret discrete probability distributions, and calculate the corresponding means and standard deviations.
11. Interpret and apply normal probability distributions from normal populations, distributions of sample means, and distributions of sample proportions.
12. Explore the Central Limit Theorem and summarize attributes of sampling distributions while recognizing their connection to the normal distribution.
13. Interpret, construct and apply confidence intervals and calculate sample sizes necessary, given a margin of error and confidence level.
14. Interpret and develop statistical hypotheses for one and two populations.
15. Make statistical tests of hypotheses about means and proportions for one and two populations using z and t distributions.
16. Interpret and make inferences based upon hypothesis tests using appropriate statistics terminology.
17. Translate results of inferential statistics into everyday language.

### **New Resources for Course**

#### **Course Textbooks/Resources**

##### Textbooks

Navidi, W. and Monk B. *Elementary Statistics (Digital edition with ebook and ALEKS 360 Access)*, 4th ed. McGraw Hill, 2022

##### Manuals

##### Periodicals

## Software

**Equipment/Facilities**

Level III classroom

Other: calculator emulator software (such as TI-84 Plus SmartView and/or statistics software as specified by math department)

<b><u>Reviewer</u></b>	<b><u>Action</u></b>	<b><u>Date</u></b>
<b>Faculty Preparer:</b> <i>Robert Klemmer</i>	<i>Faculty Preparer</i>	<i>Sep 27, 2024</i>
<b>Department Chair/Area Director:</b> <i>Nichole Klemmer</i>	<i>Recommend Approval</i>	<i>Sep 27, 2024</i>
<b>Dean:</b> <i>Tracy Schwab</i>	<i>Request Conditional Approval</i>	<i>Sep 27, 2024</i>
<b>Curriculum Committee Chair:</b>		
<b>Assessment Committee Chair:</b>		
<b>Vice President for Instruction:</b> <i>Brandon Tucker</i>	<i>Conditional Approval</i>	<i>Sep 27, 2024</i>