**1. COURSE TITLE\*:** Statistical Concepts

**2. CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: MATH 1160**

**3. PREREQUISITES\*:**

Student must meet one of the following criteria to register for this course:

* Math 1118 or the equivalent with a grade of C or higher
* Math 1124 or Math 1141
* Three High school STEM or Core Math courses with grades of B or higher
* Appropriate score on the College Placement Test
* ACT Math Score of 22 or higher
* SAT Math Score of 530 or higher
* Accuplacer EA with a score of 90 or higher

**COREQUISITE(S)\*: None**

**4. COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**

**5. CREDIT HOURS\*:** 3 **LECTURE HOURS\*:** 3

**LABORATORY HOURS\*:** 0 **OBSERVATION HOURS\*:** 0

**6. FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***

**7. COURSE DESCRIPTION\*:**

This course serves as a non-technical introduction to fundamental ideas in statistics. Statistical ideas are introduced through examples, showing how statistics has helped solve major problems in various fields. Students who already earned credit for MATH 281 or MATH 2281 may not earn credit for MATH 1160.

**8. LEARNING OUTCOMES\*:**

At the completion of the course the student will:

1. Be familiar with the problems and possibilities in the collection of data.
2. Be able to create graphs and tables, and interpret data in graphs and tables.
3. Be able to calculate and interpret the summary statistics of mean and standard deviation.
4. Understand standard error of the mean and standard scores.
5. Be familiar with different types of probability distributions.
6. Be able to determine the probability of a simple event.
7. Understand the use of *p*-value and how probabilities are used in decision-making.
8. Be able to calculate and understand the use of confidence intervals.
9. Understand hypothesis testing as a means to reach statistical decisions.
10. Understand the different types of variables and their possible relationships.
11. Understand the use of chi-square analysis and be able to perform the relevant calculations.
12. Be able to calculate and use linear regression and correlation.
13. Understand analysis of variance for categorical and metric variables

**9. ADOPTED TEXT\*:**

Statistics, The Conceptual Approach, 1997

By: Iversen and Gergen

Springer-Verlag,

ISBN #0-387-94610-1

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

**10. OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

A scientific calculator is required; one that is also statistics capable is recommended. Supplemental materials are available in the Learning Resource Center.

**11. GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

B: 80 – 89

C: 70 – 79

D: 60 – 69

F: 0 – 59

**12. GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

|  |
| --- |
| *Example 1 - By Percent* |
| Homework 10%  Quizzes/Tests 90%  Total 100% |

|  |  |  |
| --- | --- | --- |
| *Example 2* | | |
| *Category* | *By Total Points* | *% of Grade* |
| Homework (20x10) | 200 | 10% |
| Quizzes/Tests  (5x360) | 1800 | 90% |
| Total | 2000 | 100% |

|  |  |  |
| --- | --- | --- |
| *Example 3* | | |
| *Category* | *By Total Points* | *% of Grade* |
| Online Quizzes | 400 | 100% |
| Online Tests  (6x100) | 600 | 15% |
| Notebook  (2x500) | 1000 | 25% |
| Midterm | 1000 | 25% |
| Final | 1000 | 25% |
| Total | 4000 | 100% |

**13. COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

The course design provides instruction and materials to support the course objectives.  Classes may consist of a variety of means to accomplish this including but not limiting to: lectures, class discussions, small group projects, supplemental materials, and outside assignments.  Practice is an important part of the learning process.  For every one hour of class time, two additional hours of study time should be expected.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

Chapter 1 Statistics: Randomness and Regularity - LO1

Chapter 2 Collection of Data - LO1, LO2

Chapter 3 Description of Data: Graphs and Tables - LO2

Chapter 4 Description of Data: Computing Summary Statistics – LO3, LO4

Chapter 5 Probability – LO4, LO5, LO6. LO7

Chapter 6 Drawing Conclusions: Estimation – LO8

Chapter 7 Drawing Conclusions: Hypothesis Testing – LO9

Chapter 8 Relationship between Variables – LO10

Chapter 9 Chi-square Analysis for Two Categorical Variables – LO11

Chapter 10 Regression and Correlation for Two Metric Variables – LO12

(Section 10.6 is optional)

Chapter 11 Analysis of Variance for a Categorical and a Metric Variable – LO13

Chapter 14 Statistics in Everyday Life

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

Students may be required to learn how to use a spreadsheet for the numerical methods portion of the course.

Suggested pace for the course with midterm and final exams, by chapter:

Week 1: 1, 2

Week 2: 3, 4

Week 3: 4

Week 4: 4, 5

Week 5: 6

Week 6: 6

Week 7: 7

Week 8: 7, Midterm

Week 9: 8, 10

Week 10: 10

Week 11: 10

Week 12: 11

Week 13: 11

Week 14: 11

Week 15: 9, 14

Week 16: **Finals**

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

\*\*\*Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.