COURSE PLAN

Course Number and Title: MTH 157 Elementary Statistics (3 cr.)

Prepared by: Math Faculty   Fall 2013
                                                                        (Date)

Approved by: Fall, 2013
                    (Interim Dean)   (Date)

I.   Course Description

MTH 157 – Elementary Statistics.   Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression and categorical data analysis. (Credit will not be awarded for both MTH 157 and MTH 240.)   Prerequisites: Algebra I, Algebra II and Geometry and a placement recommendation for MTH 151. Lecture: 3 hours per week.

II.   Introduction

This course is designed to introduce students to statistical ideas and concepts that apply to a variety of fields and every-day life. It satisfies the general education mathematics requirement for many degree programs.

III.   Student Learning Outcomes

Upon successful completion of this course, the student will be able to:

1. Solve application problems by interpreting the materials presented, including determining the nature and extent of the information needed, and present the answer in standard English
2. Estimate and consider answers to mathematical problems in order to determine reasonableness.
3. Distinguish between population and sample, parameters and statistics.
4. Distinguish between types of data (numerical, categorical, nominal ordinal, interval, ratio).
5. Distinguish between types of statistical studies.
6. Determine the type of sampling that is used in a study and whether biases might result.
7. Simulate different types of sampling techniques.
8. Construct frequency distributions, histograms, bar charts, pie charts, stem plots, and box plots.
9. Read statistical graphs and use the graphs to analyze the data.
10. Calculate the mean, median, mode, range, quartiles, variance and standard deviation for a set of data.
11. Construct tables for two variable data, time plots, and scatter plots.

12. Calculate correlations and regression equations.
13. Use regression equations for prediction.
14. Construct and use discrete probability distributions.
15. Calculate the expected value of a discrete probability distribution.
16. Find probabilities and proportions using the standard normal distribution and the Empirical Rule.
17. Calculate z-scores and percentiles.
18. Use the Central Limit Theorem and the probability distribution of sample statistics to find probabilities.
19. Estimate population means, and proportions using the z-distribution
20. Write a complete, concise interpretation for a confidence interval using standard English
21. Test hypotheses about means and proportions.
22. Calculate and interpret P-values.
23. Test hypotheses about regression equations (optional)
24. Write a complete, concise conclusion for a hypothesis test for a given significance level using standard English
    Use a computer application such as Microsoft Excel to do statistical calculations and construct statistical graphs (optional).

IV.   **Instructional Methods**

The instructional procedures will include lectures, discussions, problem sessions, in class work, homework, reviews and tests

V.   **Instructional Materials**

- **Textbook:** Essential Statistics (With CD), David S. Moore. W.H. Freeman 2010, ISBN: 1-4292-3446-6.

- **Calculator:** A scientific calculator such at the Ti 30X IIs or Casio Fx 260. Graphing calculators are not required and will not be permitted on tests or quizzes.

- **Other:** Note paper, graph paper, pencils etc. Submitted work should be neat, legible and preferably written in pencil.

VI.   **Course Content**

- Populations, parameters, samples and statistics
- Statistical graphs
- Probability and probability distributions
- Sampling distributions
- Estimation of parameters
- Hypothesis tests for parameters
- Regression

VII.   Evaluation

The grade for the course will be calculated from Tests, Quizzes, homework, a final exam and other work as deemed appropriate by the instructor. See individual syllabus for details on percentages/points.

VIII.   Attendance

Regular attendance at classes is required. When absence from a class becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence whenever possible. The student is responsible for the subsequent completion of all study missed during an absence. Any instruction missed and not subsequently completed will necessarily affect the grade of the student regardless of the reason for the absence.

IX.   Cheating Policy

The giving or receiving of any help from another student or unauthorized individual on any graded portion of the course is considered cheating and will not be tolerated. The use of books, notes, electronic devices of any other unauthorized material during tests is considered cheating, and will not be tolerated. Any student found cheating will receive a grade of "0" on that assignment and may receive an "F" for the course. This "0" cannot be replaced by any other score. Mobile phones are not permitted to be used as calculators

X.   Withdrawal Policy

Student Initiated Withdrawal Policy

A student may drop or withdraw from a class without academic penalty during the first 60 percent of a session. For purposes of enrollment reporting, the following procedures apply:

a.   If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.

b.   After the add/drop period, but prior to completion of 60 percent of a session, a student who withdraws from a class will be assigned a grade of "W." A grade of "W" implies that the student was making satisfactory progress in the class at the time of withdrawal, that the withdrawal was officially made before the deadline published in the college calendar, or that the student was administratively transferred to a different program.

c.   After that time, if a student withdraws from a class, a grade of "F" or "U" will be assigned. Exceptions to this policy may be made under documented mitigating circumstances if the student was passing the course at the last date of attendance.

A retroactive grade of "W" may be awarded only if the student would have been eligible under the previously stated policy to receive a "W" on the last date of class attendance. The last date of attendance for a distance education course will be the last date that work was submitted.

Late withdrawal appeals will be reviewed and a decision made by the Director of Student Services.

No-Show Policy

A student must either attend face-to-face courses or demonstrate participation in distance learning courses by the last date to drop for a refund. A student who does not meet this deadline will be reported to the Admissions and Records Office and will be withdrawn as a no-show student. No refund will be applicable, and the student will not be allowed to attend/participate in the class or submit assignments. Failure to attend or participate in a course will adversely impact a student's financial aid award.

Instructor Initiated Withdrawal

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance (face-to-face classes) or performance/participation (DE classes) in each class throughout the semester.

When a student's absences equal twice the number of weekly meetings of a class (equivalent amount of time for summer session), the student may be dropped for unsatisfactory attendance in the class by the instructor.

Since attendance is not a valid measurement for Distance Education (DE) courses, a student may be withdrawn due to non-performance. A student should refer to his/her DE course plan for the instructor's policy.

In accordance with the No-Show Policy, a student who has not attended class or requested/accessed distance learning materials by the last day to drop the class and receive a refund must be withdrawn by the instructor during the following week. No refund will be applicable.

When an instructor withdraws a student for unsatisfactory attendance (face-to-face class) or non-performance (DE class), the last date of attendance/participation will be documented. Withdrawal must be completed within five days of a student's meeting the withdrawal criteria. A grade of "W" will be recorded during the first sixty percent (60%) period of a course. A student withdrawn after the sixty percent (60%) period will receive a grade of "F" or "U" except under documented mitigating circumstances when a letter of appeal has been submitted by the student. A copy of this documentation must be placed in the student's academic file.

The student will be notified of the withdrawal by the Admissions and Records Office. An appeal of reinstatement into the class may be approved only by the instructor.

XI. **Disability and Diversity Statements**

If you are a student with a documented disability who will require accommodation in this course, please register with the Disability Services Office located in the Counseling Center for assistance in developing a plan to address your academic needs.

The NRCC community values the pluralistic nature of our society. We recognize diversity including, but not limited to, race ethnicity, religion, culture, social class, age, gender, sexual orientation and physical or mental capability. We respect the variety of ideas, experiences and practices that such diversity entails. It is our commitment to ensure equal opportunity and to sustain a climate of civility for all who work or study at NRCC or who otherwise participate in the life of the college.