

## UNIVERSITY OF MASSACHUSETTS DARTMOUTH

**Course: MTH 147-7102 – Elementary Statistics – Summer \_\_\_\_\_**

**Time: ONLINE**

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**Tutoring:** STEM Learning Lab (Science & Engineering Building, Room 217, #8718)

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### 1. COURSE DESCRIPTION

This course provides a survey of statistical methods, with examples taken from sociology, psychology, education, and related fields. A minimum background in mathematics is assumed. Topics include descriptive statistics, measure of central tendency and variability, probability, binomial and normal distributions, estimation, correlation and regression and hypothesis testing.

MTH 147 is part of Cluster 1 of UMASS Dartmouth. Cluster 1D specifically focuses on the acquisition of quantitative and mathematical reasoning. This emphasis is placed in the curriculum because mathematics is the foundation of science and technology.

### 2. LEARNING OUTCOMES

Learning outcomes specific to this course:

1. Organize, summarize, present data using tables, charts and other graphical frequency distributions.
2. Calculate descriptive statistics (mean, medians, quartiles, variance, standard deviation) by hand and technology, explain the mathematical information verbally and graphically
3. Assign probabilities relative frequency, classical, counting principle to events
4. Computing probabilities
5. Determine and interpret probabilities and (position) values for discrete and continuous random variables using characteristics of Binomial and Normal Distributions.
6. Construct and interpret the confidence intervals by computing the critical values and the margin of errors, estimate the means for small and large samples from normal distribution with standard deviation known or known.
7. Perform one sample hypothesis test for the mean.
8. Estimate the parameters of regression equation, calculate the correlation coefficients for investigating the relationship between two random variables.
9. Develop good analytical and problem-solving skills through class activities, team work, and using the tools (such as the TI 83+).
10. Develop good communication skills, both in written and oral.

Learning outcomes with respect to Cluster 1D – Mathematics:

1. Recognize when to apply mathematical concepts and methods to problems.
2. Manipulate mathematical expressions to solve for particular variables.
3. Draw conclusions from quantitative information and communicate these conclusions verbally and graphically.
4. Implement mathematical models to obtain accurate or approximate solutions using appropriate tools.
5. Apply mathematical techniques to social and scientific problems.

### **3. COURSE MATERIAL**

TEXT: Fundamental of Statistics, by Sullivan, 3<sup>rd</sup> edition, Pearson. **You are not required to buy the book if you register online.**

Website: [www.mymathlab.com](http://www.mymathlab.com)

Course I.D#: \_\_\_\_\_

GRAPHING CALCULATOR: TI-83/TI-84

### **4. TEACHING PROCEDURES**

#### **ONLINE HOMEWORK**

A student will begin a chapter by reading the text, watching video lectures and performing homework. There is a wealth of material next to each homework problem to aid the student's learning, including tutorials, videos and links to the text covering the needed material to complete that problem.

A student may attempt a homework problem at least 3 or 4 times (except multiple choice questions). A minimum of 75% is required for every homework before you move to the next homework. Of course there is a possibility to get 100% on all your homework assignments if you are willing to put in the effort.

#### **ONLINE TESTS**

After two homework sections, there will be a corresponding online test that will be taken to test your level of mastery for these chapters. As mentioned above, you must score at least 75% on the homework material. You should try all the homework problems before taking a test. You cannot use your notes or any supplemental material for your online test. All the hard problems are not at the end of the test, but mixed in.

- If a student successfully scores a 70% or better on the online test, then the student may continue to the next homework section. However you **may** retake the test for a second time in order to improve your grade.
- If a student scores less than 70%, then you **must** take the online test for a second time. You can take every online test twice and the highest grade will count.

## **FINAL EXAM**

The final exam will be given online on \_\_\_\_\_ and it will be cumulative (Chapters 1 through 10). You will have a 4-hour time frame to finish it.

## **ACADEMIC INTEGRITY POLICY**

The Academic Integrity Policy, including plagiarism and cheating, appears in both the undergraduate catalogue and the student handbook. You must visit the following link: <http://www.umassd.edu/studenthandbook/academicregs/ethicalstandards.cfm>

## **5. EVALUATION POLICY**

There will be 5 online tests, 10 online homeworks and a final exam. Every online test will count for 12% of your final grade, every online homework for 2% of your final grade and the final online exam will count for 20% of your final grade.

Online Tests	60% (5 tests, each test counts 12%)
Final Online Test	20%
Online Homework	20% (10 homeworks, each for 2%)

## **6. REGISTER FOR MYMATHLAB**

**To register for MyMathLab, you have to go through the following steps:**

1. Go to: [www.mymathlab.com](http://www.mymathlab.com) (same as [pearsonmylabandmastering.com](http://pearsonmylabandmastering.com))
2. Click **Student** under **Register**.
3. Enter the **Course ID** and click **Continue**. The Course ID is: \_\_\_\_\_
4. Sign in or create an account:
  - You already have a Pearson account if you have used one of their online products before. Enter your username and password and click **Sign In**.
  - If you have a Pearson account, but can't remember your sign in information, click **Forgot your username and password**. An email will be sent to you.
  - If you don't have an account, click **Create**. You will create a username and password and add your contact information. Read and accept the license agreement. Click **Create an Account**.
5. Pay for access to your instructor's online course.
  - Use a **credit card** and enter billing and payment information, then review and submit your order. **Note:** If using a parent's credit card be sure to use the correct billing address and put your name in the **Your Name** field, not your parent's name.

## 7. SIGN IN FOR MYMATHLAB

To sign in for MyMathLab, you have to go through the following steps:

1. From the home page (www.mymathlab.com), click **Sign in**.
2. Enter your username and password, and click **Sign in**.
3. Your course is listed in the **MyLab / Mastering New Design** section of the page. Click on **MTH 147 (ONLINE), Summer** will take you to the course content.
4. From the course home page, you will use the course **menu** to navigate.

## 8. SCHEDULE OF WEEKLY ACTIVITIES

We will start covering the material on \_\_\_\_\_.

### Week 1 (June \_\_)

Syllabus and Introduction to MyMathLab

CHAPTER 1 - Data Collection -

- 1.1 Introduction to the Practice of Statistics

### **Online Homework 1 (Chapter 1)**

CHAPTER 2 - Organizing and Summarizing Data -

- 2.1 Organizing Qualitative Data
- 2.2 Organizing Quantitative Data: Popular Display
- 2.3 Graphical Misrepresentations of Data

### **Online Homework 2 (Chapter 2)**

### Week 2 (June \_\_)

### **Online Test 1 (Chapters 1 & 2)**

CHAPTER 3 - Numerically Summarizing Data -

- 3.1 Measures of Central Tendency
- 3.2 Measures of Dispersion
- 3.4 Measures of Position and Outliers
- 3.5 The Five-Number Summary and Boxplots

### **Online Homework 3 (Chapter 3)**

### **Week 3 (July \_\_\_)**

CHAPTER 4 - Describe the Relationship between Two Variables -

4.1 Scatter Diagram and Correlation

4.2 Least Squares Regression

4.3 The Coefficient of Determination

**Online Homework 4 (Chapter 4)**

**Online Test 2 (Chapters 3 & 4)**

### **Week 4 (July \_\_\_)**

CHAPTER 5 - Probability -

5.1 Probability Rules

**Online Homework 5 (Chapter 5)**

CHAPTER 6 - Discrete Probability Distributions -

6.1 Discrete Random Variables

6.2 The Binomial Probability Distribution –

**Online Homework 6 (Chapter 6)**

**Online Test 3 (Chapters 5 & 6)**

### **Week 5 (July \_\_\_)**

CHAPTER 7 - The Normal Probability Distribution -

7.1 Properties of the Normal Distribution

7.2 The Standard Normal Distribution

7.3 Applications of the Normal Distribution

**Online Homework 7 (Chapter 7)**

CHAPTER 8 - Sampling Distribution -

8.1 Distribution of the Sample Mean

8.2 Distribution of the Sample Proportion

**Online Homework 8 (Chapter 8)**

**Test 4 (Chapters 7 & 8)**

**Week 6 (July \_\_\_)**

CHAPTER 9 - Confidence Intervals -

- 9.1 Confidence Intervals for  $\mu$  when  $\sigma$  is known
- 9.2 Confidence Intervals for  $\mu$  when  $\sigma$  is unknown
- 9.3 Confidence Intervals for a Population Proportion

**Online Homework 9 (Chapter 9)**

**Week 7 (July \_\_\_)**

CHAPTER 10 - Hypothesis Tests Regarding a Parameter -

- 10.1 The language of Hypothesis Testing
- 10.2 Hypothesis Test for  $\mu$  when  $\sigma$  is known
- 10.3 Hypothesis Test for  $\mu$  when  $\sigma$  is unknown

**Online Homework 10 (Chapter 10)**

**Test 5 (Chapters 9 and 10)**

**Week 8 (August \_\_\_)**

**FINAL EXAM (Chapters 1-10)**