

# MATH 1040—Introduction to Statistics

Section 03, MW, 1:00–2:15 pm, NIB 144, CRN: 23620  
Spring 2010—3 credits

**Instructor:** Taylor Jensen

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**Office Hours:** MTWR 2:30–5:00 pm

**Additional Help:** NIB 134 *or* Browning Learning Resource Center

Required Text: *Elementary Statistics: Picturing the World* (4<sup>th</sup> edition) by Larson and Farber

Calculator Requirement: You *must* have a graphing calculator. The TI–83 (any version) or TI–84 (any version) is recommended.

Prerequisite: You *must* meet at least one of the following minimum requirements. Moreover, this requirement must have been met within the past two years.

- Passed Math 1010 with a “C” or better.
- Earned ACT math score of 23 or higher.
- Earned a suitable CPT score. [For details on this test, go to <http://new.dixie.edu/math>, click on Q&A, then click on “Which math class should I take?”.]

## Course Description

Math 1040 is an introduction to the basic concepts and methods used in statistical data analysis. Course topics include descriptive statistics, sampling methods, and inferential statistics. The course emphasizes problem solving and critical thinking. Furthermore, Math 1040 is a lecture course with homework assignments, lab assignments, and tests—including a non-comprehensive final exam. Importantly, the basic principles learned in Math 1040 can greatly benefit anyone and everyone, regardless of which future career a person chooses.

## Course Objectives

All classes in mathematics at Dixie State College of Utah support the general education goals of the college. Each mathematics class will:

- Require students to perform mathematical processes including fractions, percentages, decimals, proportions/ratios, algebraic equations, and/or calculus techniques
- Provide students with application problems that use a variety of methods including arithmetical, algebraic, and geometric methods
- Challenge students to make inferences from mathematical models that include formulas, graphs, and tables
- Provide students with real-life applications that use a variety of mathematical functions

Upon successful completion of Math 1040, a student will demonstrate the ability to:

- Compute and interpret descriptive statistics, including mean, median, mode, standard deviation, and interquartile range
- Employ and interpret graphical representations of data
- Construct confidence intervals for population parameters of interest
- Determine the sample size required to satisfy a predetermined goal
- Test null hypotheses related to the mean, the proportion, or the variance of a sample
- Test null hypotheses related to the difference in mean or the difference in proportion between two samples
- Interpret the results of null hypothesis tests, including the role of the significance level  $\alpha$

- Interpret bivariate correlations and linear regression models
- Apply various other statistical tests, including goodness-of-fit tests, independence tests, two sample  $F$ -tests, and ANOVA

## Behavior Policies

1. **Your attendance and behavior are expected to reflect your dedication to excellence as a university student.** You are expected to attend class, participate in discussions and group work, and to use class time for Math 1040 activities only.
2. **You must abide by all regulations set forth in the “Student Rights and Responsibilities Code” (DSC Policy 5.33).** These regulations can be found online at <http://www.dixie.edu/humanres/polstu.html> (then click on the link to DSC Policy 5.33). In particular, you should be aware of your obligations pertaining to academic performance (“Academic Performance Responsibilities,” DSC Policy 5.33.5).
3. When completing homework, working together is ok—in fact, I encourage it. However, copying another person’s work is not ok. Furthermore, you should try your very best to do a problem before you look at the solutions manual for help. Most importantly, sharing test information is not ok, and if you’re caught, you’ll receive an “F” for the course.

## Homework Policies

**The goal of your doing homework should be to gain *understanding* of statistics—above and beyond rote memorization and superficial knowledge of formulas and “facts.”** With that in mind, let me present my homework policies:

1. You will read sections from the textbook *before* attending the scheduled lecture about those particular sections. After actively participating in the classroom discussion on the sections, you will then complete all assigned homework exercises from those sections.
2. Each class day is divided into three time periods: first, you will take a *quiz* which is based on homework which has already been considered in class; second, I will *lecture* on the sections which you read before coming to that class session; third, you will ask me *questions* about homework problems you have completed. If you are involved in extracurricular activities (such as an athletic team), and one of your scheduled events conflicts with class, it is *your* responsibility to give me advance warning so I can give you an alternate assignment in place of the quiz.
3. Daily quizzes are worth 6 points each. Each quiz is comprised of a two problem, usually from the textbook, which are like homework problems you had to do as part of your assignment. You will receive at least 2 points just for taking the quiz. The other 4 points are earned by completing the problem satisfactorily. (On the first day of class, I will present to you some important guidelines as to what “satisfactorily” means. If you miss the first day of class, please let me know so I can go over these guidelines with you.)
4. Quizzes will be graded in pairs. At the end of the semester, each of your two lowest paired scores earned during the semester will be boosted by up to 6 points. Furthermore, you can receive 5 extra credit points by filling out an online survey for this course. (I will provide details about this extra credit opportunity when it becomes available.)

## Exam Policies

1. **Exams cannot be made up for any reason.** Midterm exams will be administered in the Testing Center, while the final exam will be administered in our regular classroom.
2. You should bring the following items to each midterm exam as well as to the final exam: (a) scantron (form no. 882-E); (b) #2 pencil (not mechanical); (c) photo ID; (d) graphing calculator; (e) one “cheat sheet” (8½ by 11 inches, front and back). **Important:** You should photocopy the cheat sheet before you take a midterm exam if you wish to have a permanent copy, because the Testing Center staff will not allow you to take it with you after you complete the exam (for test integrity purposes).
3. If you miss a midterm exam, your score on that exam will be extrapolated from the *next* midterm exam (or from the final exam, if necessary). Extrapolated midterm exam scores are subject to an automatic penalty of 30% of the total value of the missed exam.
4. If you miss a second midterm exam or the final exam, you will receive an automatic **zero** for that exam, regardless of excuse.
5. A 10% penalty will be given to any student showing up more than 10 minutes late for the final exam. A 30% penalty will be given to any student missing the exam period by more than an hour. (This is to ensure students do not “hang back” and study longer than their classmates.)

## Grading

Quiz pairs (12 pts. each)	108 points
Exams (60 pts. each)	360 points

There are 468 total points possible. Your grade will be determined according to the percentage of points you earn in this course.

≥ 92.0% A	≥ 89.0% A–	≥ 86.0% B+	≥ 82.0% B
≥ 79.0% B–	≥ 75.0% C+	≥ 70.0% C	≥ 67.0% C–
≥ 64.0% D+	≥ 60.0% D	< 60.0% F	

## Disability Resource Center

If you are a student with a documented physical or mental impairment that will substantially limit a major life activity, please contact the Disability Resource Center on the main campus. The Center Coordinator and staff will assist you in evaluating your eligibility for services. If you are deemed eligible, reasonable accommodations that are appropriate for your disability will be assigned. If you have any questions concerning this process, please contact the Center at (435) 652–7516 or go to the Student Services Center (located next to the Testing Center).

## Website Resources

Library	<a href="http://library.dixie.edu/">http://library.dixie.edu/</a>
Writing Center	<a href="http://new.dixie.edu/english/dsc_writing_center.php">http://new.dixie.edu/english/dsc_writing_center.php</a>
Testing Center	<a href="http://new.dixie.edu/testing/">http://new.dixie.edu/testing/</a>
Tutoring	<a href="http://dsc.dixie.edu/tutoring/index.htm">http://dsc.dixie.edu/tutoring/index.htm</a>

## Communication Policy

Important class and college information, including lecture notes, syllabus changes, etc. for this class, will be sent to either the preferred email account you submitted to Dixie State College when you began school here or to your “Dmail” account. This information includes your DSC bill, financial aid and scholarship notices, notification of dropped classes, reminders of important dates and events, and other information critical to your success in this class and at DSC in general. You will be held responsible for any emailed information sent to you by me or by DSC, so please check your email account often. When trying to get in contact with me, the best option is to call my office phone and leave a message. If you are not comfortable with that option, please email me.

## My Teaching Philosophy

I believe every dedicated student, including **you**, can learn the material taught in this course. I am confident that learning this material will make a **vital** difference in your ability to apply statistical reasoning to everyday problems. Learning about statistics should be **fun!** If we're not having fun while we learn, we're not really learning! 😊

# Lecture Schedule

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<u>DATE</u>	<u>QUIZ</u>	<u>LEC.</u>	<u>?s</u>
1/11		Intro	
1/13		1.1 & 1.2	
1/18	<b>Martin Luther King Day</b>		
1/20		1.3 & 2.1	1.1 & 1.2
1/25	1.1 & 1.2	2.2 & 2.3	1.3 & 2.1
1/27	1.3 & 2.1	2.4 & 2.5	2.2 & 2.3
2/1*	2.2 & 2.3	3.1 & 3.2	2.4 & 2.5
2/3	2.4 & 2.5	–Review–	
2/8		3.3 & 3.4	3.1 & 3.2
2/10	3.1 & 3.2	4.1 & 4.2	3.3 & 3.4
2/15	<b>Presidents Day</b>		
2/17	3.3 & 3.4	4.3	4.1 & 4.2
2/22	4.1 & 4.2	5.1 & 5.2	4.3
2/24	4.3	–Review–	
3/1		5.3 & 5.4	5.1 & 5.2
3/3*	5.1 & 5.2	5.5	5.3 & 5.4
3/8 & 3/10	<b>Spring Break</b>		
3/15	5.3 & 5.4	6.1 & 6.2	5.5
3/17	5.5	–Review–	
3/22		6.3 & 7.1	6.1 & 6.2
3/24	6.1 & 6.2	7.1 & 7.2	
3/29		7.3 & 7.4	6.3, 7.1, & 7.2
3/31	6.3, 7.1, & 7.2	–Review–	
4/5		8.1 & 8.2	7.3 & 7.4
4/7	7.3 & 7.4	8.3 & 8.4	8.1 & 8.2
4/12	8.1 & 8.2	9.1 & 9.2	8.3 & 8.4
4/14	8.3 & 8.4	–Review–	
4/19		10.1 & 10.2	9.1 & 9.2
4/21	9.1 & 9.2	10.4	10.1 & 10.2
4/26	10.1 & 10.2		10.4
4/28		–Review–	

*Note:* Midterm exams open the class day on which we review the preceding material. They close *two days* later. The final exam will be at 12:00 noon on Monday, May 3<sup>rd</sup> (in class.)

\* The last day you may drop the class without a “W” appearing on your transcript is Tuesday, February 2<sup>nd</sup>. The last day you may drop the class is Friday, March 5<sup>th</sup>. Other important dates on the academic calendar for this semester can be found online at <http://new.dixie.edu/reg/?page=calendar&sid=201020>.

# Homework Assignments

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**(1)** 1.1: 1–10, 11–37 odd

1.2: 1–6, 7–23 odd

1.3: 1–10, 11–29 odd, 30, 31, 33

2.1: 1–8, 9–31 odd

**(2)** 2.2: 1–8, 9, 11, 13–17 all, 23, 27, 30

2.3: 1–16, 17–33 e.o.o., 35–40, 41–49 e.o.o.

2.4: 1–6, 7–13 odd, 17–25 odd, 29–33 odd

2.5: 1, 3, 5, 7–10, 11–27 e.o.o., 29–33 odd

**(3)** 3.1: 1–4, 5–15 odd, 17–24, 25–33 e.o.o., 41(a & c), 43, 45, 49

3.2: 1, 3, 4, 5–11 odd, 13–29 e.o.o.

3.3: 3–8, 9, 11, 13–25 e.o.o.

3.4: 3–6, 7–13 odd, 15–18, 19–25 odd, 28, 37–49 e.o.o., 51, 52

**(4)** 4.1: 1, 5–8, 9–21 odd, 29–45 e.o.o.

4.2: 7–13 odd, 15, 19, 23, 28

4.3: 1–9 odd, 11–16, 17–23 odd

**(5)** 5.1: 2, 3, 4, 15–39 e.o.o., 47–59 e.o.o.

5.2: 1–29 e.o.o.

5.3: 1–45 e.o.o.

5.4: 1, 3, 5–8, 9–37 e.o.o.

**(6)** 5.5: 1–7 odd, 9–16, 19, 23

6.1: 3–15 e.o.o., 23–39 e.o.o., 51–63 e.o.o.

6.2: 1–21 e.o.o., 23, 27

**(7)** 6.3: 1, 2, 3–23 e.o.o., 27(a)

7.1: 1–8, 9, 11, 13, 19, 21, 23, 25–45 e.o.o.

7.2: 1, 3, 5, 13–19 odd, 25, 27, 29, 33(not b), 37(not b), 39(not c), 43(not c)

7.3: 1, 3, 7, 11, 19, 20, 23–31(not c) e.o.o.

7.4: 2, 3, 5, 7, 9–13(not c) odd

**(8)** 8.1: 5–11 odd, 17, 18, 21–29(a, d, & e) e.o.o.

8.2: 2, 15–23(a, d, & e) e.o.o.

8.3: 1, 2, 4, 6, 9–17(a, e, & f) e.o.o.

8.4: 2, 4, 5, 7–15(a, d, & e) e.o.o.

**(9)** 9.1: 1, 2, 5–8, 13, 14, 15–27 e.o.o.

9.2: 1–12, 15, 17, 19

10.1: 2, 7, 11, 17

10.2: 1–6, 7, 11, 13–21(a & d) e.o.o.

10.4: 1, 2, 5–13(a & d) e.o.o.

## Remember!

The final exam will be administered in NIB 144 at 12:00 noon on Monday, May 3<sup>rd</sup>.