



# Independent Study | in Idaho

**Math 1153  
Statistical Reasoning**

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The University of Idaho in statewide cooperation with  
Boise State University — Idaho State University — Lewis-Clark State College

# Course Guide

Independent  
Study | in Idaho

*Self-paced study. Anytime. Anywhere!*

## **Mathematics 1153 Statistical Reasoning**

Idaho State University  
3 Semester-Hour Credits

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RV: Jason Reed 1/2014

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## Math 1153: Statistical Reasoning

3 Semester-Hour Credits: ISU

### Welcome!

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Whether you are a new or returning student, welcome to the Independent Study in Idaho (ISI) program. Below, you will find information pertinent to your course including the course description, course materials, course objectives, as well as information about assignments, exams, and grading. If you have any questions or concerns, please contact the ISI office for clarification before beginning your course.

### Policies and Procedures

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Refer to the ISI website at [www.uidaho.edu/isi](http://www.uidaho.edu/isi) and select *Students* for the most current policies and procedures, including information on setting up accounts, student confidentiality, exams, proctors, transcripts, course exchanges, refunds, academic integrity, library resources, and disability support and other services.

### Course Description

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Descriptive statistics, probability, confidence intervals, and hypothesis testing for one and two parameters. Emphasis on applications to a wide variety of disciplines. ISU students: Satisfies Goal 3 of the General Education Requirements. Prerequisite: Math 1108 (Intermediate Algebra).

*\*\*Idaho State University changed the course number for Math 253 [Introduction to Statistics] to Math 1153 in August 2010.*

Required: Internet access, PC computer, calculator

*3 graded Extended Problems, 3 Topic Certifications (graded self-study), 4 graded proctored exams*

**Students may submit up to 2 extended problems per week and 1 exam per day.**

**Before taking exams, students MUST wait for grades and feedback on assignments, which may take up to three weeks after date of receipt by the instructor.**

ALL assignments and exams must be submitted to receive a final grade for the course.

### Course Materials

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#### Required Course Materials

- Warren, Carolyn, Kim Denley, and Emily Atchley. *Beginning Statistics*. 2nd ed. Mount Pleasant: Hawkes Learning Systems/Quant Systems, Inc., 2014.
  - There is 12-month access to the courseware and eBook on the publisher's website with the purchase of one of the options below. Students must purchase additional access if they take more than one year to complete the course.
  - Purchasing *Hawkes Learning Systems Beginning Statistics* courseware (HLS for short) at [www.hawkeslearning.com](http://www.hawkeslearning.com) gives access to the ebook, *Beginning Statistics*. HLS parallels *Beginning Statistics* section by section. HLS provides the student with a means to practice and then certify mastery of the material. See *Hawkes Student Instructions* on Canvas. With the ebook, a physical copy of the book is not needed for this course.
- Minitab 18 Statistical Software (*The current version is Minitab 18, but this may change by the time you read this course guide. You should obtain the latest version of the software, but if you somehow obtain an older version, that will work, too.*)

You can access Minitab in one of the following ways. (I recommend the free method.)

- A license can be rented for a semester or more or purchased at:
  - [www.minitab.com/en-US/academic/](http://www.minitab.com/en-US/academic/) (click on *Pricing and Licensing*)
- You can also download a 30-day Minitab Free Trial at [www.minitab.com/Downloads/](http://www.minitab.com/Downloads/).
- Ask the Math Department or Computer Center at your school if they have copies of Minitab for student use.
- Tutorial/Introduction:
  - [www.minitab.com/en-US/support/documentation/minitab/getting-started.aspx](http://www.minitab.com/en-US/support/documentation/minitab/getting-started.aspx) (click on *Meet Minitab*)
- Minitab Manuals: On the ISI Canvas website. (In this course guide, see the *Technology* section > *Minitab Statistical Software*.)

## **Additional Course Requirements**

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This course requires:

- a computer with Internet access (including email);
- access to a Windows-based computer (Windows XP or Vista, current Internet Explorer or Mozilla Firefox, 1024 x 768 display, 512 MB of memory, and Microsoft Office);
- Mac users: Minitab has a “smaller” version for a Mac; Hawkes has a web-based platform.
- a calculator that can take square roots (for use on exams). Since you will be using Minitab on most computational homework problems, having a TI-83 or TI-84 plus calculator (which the text uses) is not essential.

## **Course Delivery**

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This course is available online. An electronic course guide is accessible through Canvas at no additional cost. Refer to your *Registration Confirmation Email* for instructions on how to access Canvas.

The Canvas site has live links to:

- ISI Math 1153 Course Guide (in a printable format)
- Minitab Statistical Software resources
- Extended Problem resources
- Hawkes Learning Systems (HLS) Software instructions

## **Technology: Minitab and Hawkes Learning Systems (HLS) Courseware**

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Your original course developer took the equivalent of Math 1153 in about 4BC (**B**efore **C**alculators were everywhere), or maybe it was 30 BC (**B**efore **C**omputers were everywhere). However you want to look at it. In those primitive times, all of our calculations had to be done by hand or by tables. We spent so much time doing arithmetic that it was easy to miss the point of the course. Technology lets us avoid most of this issue.

We will be using the following Courseware (for full listings, see the *Course Materials* section of this course guide):

1. Minitab 18 Statistical Software package
2. Hawkes Learning Systems (HLS) Beginning Statistics Courseware

### **Minitab Statistical Software**

You need to rent or purchase a copy of Minitab 18. Your Minitab software comes with tutorials and also provides an introduction to Minitab (see the *Required Course Materials* section in this course guide).

Minitab will do calculations and draw charts and graphs, freeing you to master the course content. Minitab output can be pasted into documents. This should be very valuable for you in preparing reports and papers for this and other classes. Much of the homework can be done either by hand or with Minitab. When practical, you should use both methods.

Minitab is very powerful, and we will only use a fraction of its power in this course. The textbook provides some examples of how to use Minitab, but only really touches the surface. (In your textbook, see *Appendix C: Getting Started with Minitab* and the *Technology* sections at the end of every chapter.)

The ISI Math 1153 Canvas site offers Minitab resources. One of your original course developers, Amy Mills, prepared the *ISI Minitab Manual* which includes a set of Minitab examples based on problems from your text. This manual is designed to help you with the Extended Problems in this course guide. You will also find ISU's "WILDEST" Minitab Manual. The "WILDEST" Manual was written to help teach statistics in high schools. While "WILDEST" is based on a different text and the tutorials were written for Minitab 15, the examples given should be useful.

Of course, you can also consult Minitab's help and search the Web for more examples.

### **Hawkes Learning Systems (HLS) Beginning Statistics Courseware**

Purchasing *Hawkes Learning Systems Beginning Statistics* courseware (HLS for short) at [www.hawkeslearning.com](http://www.hawkeslearning.com) includes access to the ebook, *Beginning Statistics*. The HLS Courseware HLS provides computer-based instruction, tutoring, and a means to practice and then certify (or show) your mastery of the material. (See *Lessons > Certification Assignments* in this course guide.) It will be key to your success in the course. HLS parallels *Beginning Statistics* section by section. Please note that once you open the package, the materials are **NOT** refundable. You do not NEED a physical copy of the book.

If you have any problems or questions about HLS Courseware, visit any of the following for help:

- HLS Support Center: [www.hawkeslearning.com/supportcenter/](http://www.hawkeslearning.com/supportcenter/)
- 1-843-571-2825

Detailed instructions on accessing your HLS Courseware is in Canvas under *Hawkes Student Instructions*. There are also instructions for the Minitab 16 Statistical Courseware.

## **Course Introduction**

Introduction to Statistics, Math 1153, is a survey course in statistics serving students from a variety of disciplines. Math 1108, Intermediate Algebra, is the prerequisite for this course, but the focus of the class is not on solving difficult algebraic problems; rather, the primary purpose of this class is to introduce the student to statistical thinking and to develop the skills needed to understand and incorporate data analysis techniques in everyday life.

Statistics, the science, is all about data. So even though this course is listed as Math 1153, it is really not a mathematics course. Because data vary, there is an inherent level of uncertainty in statistical problems that is not present in, say, geometry.

The real world is full of variability, and we are regularly forced to make judgments in the face of uncertainty. Statistical reasoning can help us make better judgments more often. We can't always be right, and statistics cannot literally *prove* anything, but statistics can provide guidance in a complex world.

No doubt you've heard analysts on TV dismiss statistics saying, "You can make statistics say anything you want." Well, of course you can—just as you can tell lies in English. That people sometimes fib doesn't mean you shouldn't learn to speak and listen, but that you should learn to identify fibbers. Similarly, that people can mislead with statistics doesn't mean you shouldn't use statistics, but that you need to learn how to identify statistical fibbers. I hope this course will help you to do this.

## **Course Objectives**

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Students will be introduced to descriptive and inferential statistics in this course. In a modern world that often suffers from both too much and too little data, students will participate in intelligently applying the concepts of this course to a variety of disciplines.

Students will:

1. interpret and produce descriptive statistics, both graphical and numerical;
2. study some of the foundational concepts of statistical inference, including the role of the normal distribution and other distributions;
3. solve numerous problems in inferential statistics from a wide collection of real-world and academic environments, with emphasis on testing hypotheses and estimating parameters;
4. determine the assumptions that underlie and explain past and present use and abuse of statistical reasoning;
5. practice using tables, calculators, and/or Courseware as time- and labor-saving devices, but only to the extent that these devices enhance understanding of the concepts and procedures of statistics.

## **Course Overview**

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In this course, we will cover most of the material in *Beginning Statistics*. The course consists of twelve lessons (arranged in three topics) and four exams. The graded assignments are **Certifications** (via HLS Courseware) and **Extended Problems** for each of the three Topics. (See *Grading* in this course guide.)

<b>Topics</b>	<b>Lessons</b>	<b>Certifications (HLS)</b>	<b>Extended Problems</b>	<b>Exams</b>
Topic 1: Data and Data Description	1–3	Topic 1: 12 certifications	Topic 1	Exam 1
Topic 2: Probability and Distributions	4–7	Topic 2: 14 certifications	Topic 2	Exam 2
Topic 3: Inference and Regression	8–12	Topic 3: 18 certifications	Topic 3	Exam 3
Topics 1–3	1–12: Comprehensive			Final Exam

## **Assignments**

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Assignments consist of the following:

### TOPIC CERTIFICATIONS

The Topic Certifications are computer-graded and provide immediate feedback. The Topic Certifications are to be completed within the Hawkes Learning Systems Courseware and are submitted online via the HLS Courseware.

### EXTENDED PROBLEMS

Submit Extended Problems for grading to Dr. Jason Reed at [jreed@uidaho.edu](mailto:jreed@uidaho.edu). Graded Extended Problems will be returned via email by Dr. Reed.

Each lesson includes the following components:

- lesson objectives
- reading assignments
- important terms
- a lecture
- chapter exercises (self-study)
- certification assignment (via HLS Courseware)
- a Minitab technology section (most lessons include this)
- an Extended Problem (three problems, located after lessons 3, 7, and 12 in this course guide)

### Certification Assignments (HLS Courseware)

*Certification* informs your instructor as to how you are doing in each chapter and provides feedback about areas that require more study on your part. The certification process (or displaying mastery of the lesson material) lets your instructor track your progress and will contribute to a portion of your final grade. (See *Grading* in this course guide.) You may attempt to certify as many times as you wish, but you must observe the following rules:

- Do not move on to the next section until you are completely done (for example, don't try certifying on 2.2 until you are certified on 2.1).
- Each certification allows so many incorrect responses before you are forced to start over. If you "strike out," please wait at least an hour before you try again. Take some time to reread the corresponding section of the text and/or the *Instruct* option in the HLS Courseware.

To Certify, do your assignment in the HLS Courseware.

1. The *Certify* option is where you will complete your assignment.
2. After certifying, you will be given a certification code which verifies that you completed your assignment. It is recommended that you print and/or save your certification code.
3. If you certify while connected to the Internet, you should receive a message that says your certificate has been submitted automatically into your instructor's HLS gradebook. You are now done with that assignment!
4. If you certify while not connected to the Internet, then you must submit the certificate manually via the HLS Courseware once you regain Internet access.

### Extended Problems

The Extended Problems found in this course guide touch many of the sections in each topic and should help unify the material. You will submit the Extended Problems via email attachments in written form using completed sentences and addressing all of the questions posed in the problem. Think of those as mini-reports. Each Extended Problem submission should be between two and four typed pages and may include some graphical display. There are two instructors for this course.

### Submit Extended Problems to Jason Reed at [jreed@uidaho.edu](mailto:jreed@uidaho.edu).

A sample Extended Problem and sample Extended Problem are provided on the Canvas site.

#### Study Hints:

- Keep a copy of every assignment submitted.
- Complete all assigned readings.
- Set a schedule allowing for course completion **one month** before your desired deadline.
- Web pages and URL links in the World Wide Web are subject to change. If you cannot access a link that has been listed in this course guide, use your favorite search engine (such as Google) to locate the site. To seek assistance or provide any updated information, contact your instructor.
- Independent Study in Idaho Math 1153 resources can be found on the ISI Canvas site.
- Always complete the *Instruct* section on the HLS Courseware.
- Use the *Practice* section on the HLS Courseware as much as you wish.
- Complete the *Chapter Exercises* in the textbook. These are to prepare you to do the certifications and are **NOT** submitted for grading. Almost all of these problems have answers in the back of your textbook. Every textbook I have ever seen has some incorrect answers. If you think you've found one, please let your instructor know.
- *Certify* on the HLS Courseware. This counts towards your final course grade!
- Complete and submit the three Extended Problems to your instructor via an email attachment.
- As you end each chapter in *Beginning Statistics*, consult the *Chapter Review*.

Refer to the *Course Rules* in Canvas for further details on your instructor's lesson guidelines and requirements. Also, refer to the *ISI Policies and Procedures* for essential ISI policies on submitting assignments to your instructor.

### Exams

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Each exam will be designed to take an hour, but, to reduce time pressure, you will have up to 90 minutes on the exams. You will have two hours for the Final Exam. For each exam you may bring a calculator, the foldout of formulas and tables from your book, and one standard-sized page of notes (8.5" x 11" with writing on both sides). You should make a copy of your page of notes because you must submit your notes with your exam. The *Formulas and Tables* foldout from *Beginning Statistics* is essential for all exams.

Calculations on the exams will not be difficult, but there must be enough work to justify all answers.

- For your instructor's exam guidelines, refer to the *Exam Information* sections in this course guide.
- Take the exam for each topic after you are fully certified in that topic and have the graded Extended Problem back from your instructor.
- You are advised to wait for your instructor's grades and comments on assignments and exams before taking each subsequent exam.

See the *Grading* section in this course guide for specific information on lesson and exam points and percentages.

All exams require a proctor unless an exam is self-administered.

To submit your *Proctor Information Form* online, visit the ISI website and select *Forms, Proctor Information Form*. Submit this form at least two weeks before your first exam. Refer to *Students, Assignments and Exams* on the ISI website for information on acceptable and unacceptable proctors.

## Grading

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The course grade will be based upon the following lessons and exams:

### Certifications (10 points per group; 30 points total)

You can receive up to 10 points as a *cumulative* grade for the certifications within each of the three Topics. (See *Course Overview* in this course guide.) For example, if you certify 12 of the required 14 sections for Topic 2, then you will receive a score of 8.571 out of 10 for Certification 2. (Note: 8.571 is 12/14 of 10 points.). These are computer graded via the HLS Courseware.

### Extended Problems (10 points each; 30 points total)

You must also turn in an Extended Problem after you complete Lessons 3, 7, and 12 (at the end of each Topic in this course guide). This problem is to be carefully written up in complete sentences. Dr. Reed grades these.

### Exams (150 points)

After you have completed all Certifications and submitted your Extended Problem, you should take the corresponding Exam. Dr. Jason Reed grades the exams. His email is [jreed@uidaho.edu](mailto:jreed@uidaho.edu).

(See the chart below.)

<b>Certifications</b>	<b>Lessons</b>	<b>Points</b>	<b>Percentages</b>
Topic 1	1–3	10	4.76%
Topic 2	4–7	10	4.76%
Topic 3	8–12	10	4.76%
<b>Total</b>		<b>30</b>	<b>14.28%</b>

<b>Extended Problems</b>	<b>Lessons</b>	<b>Points</b>	<b>Percentages</b>
Topic 1	1–3	10	4.76%
Topic 2	4–7	10	4.76%
Topic 3	8–12	10	4.76%
<b>Total</b>		<b>30</b>	<b>14.28%</b>

<b>Exams</b>	<b>Lessons</b>	<b>Points</b>	<b>Percentages</b>
Exam 1	1–3	30	14.29%
Exam 2	4–7	30	14.29%
Exam 3	8–12	30	14.29%
Final Exam	1–12	60	28.57%
<b>Total</b>		<b>150</b>	<b>71.44%</b>

<b>Total Possible Points</b>	<b>210</b>	<b>100%</b>
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### Grade = Points Range

Your grade will be based on your point total using the following scale. Of course, if your point total falls on the cutoff between two intervals, you will receive the higher grade. For example, if you score 183 points, you will receive a grade of B+.

A = 195-210	B+ = 183-189	C+ = 162-168	D+ = 141-147	F = 0-126
A- = 189-195	B = 174-183	C = 153-162	D = 132-141	
	B- = 168-174	C- = 147-153	D- = 126-132	

The final course grade is issued after all assignments and exams have been graded.

Acts of academic dishonesty, including cheating or plagiarism, are considered a very serious transgression and may result in a grade of F for the course.

### **About the Course Developers**

My name is Jason Reed, and I am a lecturer of mathematics at Idaho State University. I have been teaching math since 2003. I teach a variety of courses, including algebra, trigonometry, calculus, math for elementary teachers, and statistics. If I had any spare time, I would enjoy music, reading, hiking, and acting.

Alan Egger is a Professor of Mathematics at Idaho State University. He has roughly thirty years of classroom experience and has taught courses at all levels. His research interests overlap mathematics and statistics. For the past ten years, Alan's spent more time in administration than in teaching but can assure you, teaching is more fun.

Amy Mills is a Mathematics instructor at Idaho State University. She's taught most of the intro-level math classes, and most semesters she's had at least one section of Intro Statistics. When not teaching, Amy spends time gardening, hiking, and practicing Taiji.

### **Contacting Your Instructor**

Instructor contact information is posted on your Canvas site under *Course Rules*.

## Assignment Submission Log

Send the completed *Proctor Information Form* to the ISI office at least two weeks before taking your first exam.

### 1. Readings

Warren, Carolyn, Kim Denley, and Emily Atchley. *Beginning Statistics*. 2nd ed. Mount Pleasant: Hawkes Learning Systems/Quant Systems, Inc., 2014.

### 2. Self-Study Exercises: Do not submit these.

#### a. Chapter Exercises:

Exercises in *Beginning Statistics*. An answer key for odd exercises can be found in the back of the text. These exercises will prepare you to do the Certifications. (For a list of exercises from the text, see the *Chapter Exercises* for Lessons 1–12 in this course guide.)

#### b. Minitab Technology Practice

Minitab 18 Statistical Software (for rental/purchase information, see *Required Course Materials* in this course guide); tutorials and exercises in *Beginning Statistics*.

### 3. Graded Assignments: Submit these for grading.

#### a. Certifications

Certifications are submitted automatically online via courseware on the publisher’s website.

#### b. Extended Problems

Three Extended Problems after Lessons 3, 7, and 12 in this course guide. Submit Extended Problems directly to your instructor via an email attachment; graded Extended Problems will be returned by email.

<b>Topic 1: Data and Data Description (Lessons 1-3)</b>			
Lesson	Readings	Self-Study Exercises	Graded Assignments
1	Chapter 1, <i>Beginning Statistics</i> , pages 1-44	<ul style="list-style-type: none"> <li>• Chapter 1 exercises: Sections 1.1 through 1.4, and pages 45-47 in <i>Beginning Statistics</i></li> <li>• Minitab Technology Practice, page 51 in <i>Beginning Statistics</i>; use Minitab 18 Statistical Software</li> </ul>	HLS Courseware, Chapter 1: Topic 1 Certifications 1.1, 1.2, 1.3, 1.4 <b>(Submit via HLS.)</b>  Date Submitted: _____
2	Chapter 2, pages 53-109	<ul style="list-style-type: none"> <li>• Chapter 2 exercises: Sections 2.1, 2.2, 2.3, and pages 110-114 in <i>Beginning Statistics</i></li> <li>• Minitab, pages 120–122; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 2: Topic 1 Certifications 2.1, 2.2a, 2.2b, 2.3 <b>(Submit via HLS.)</b>  Date Submitted: _____
3	Chapter 3, pages 123-179	<ul style="list-style-type: none"> <li>• Chapter 3 exercises: Sections 3.1, 3.2, 3.3, and page 180-181 in <i>Beginning Statistics</i></li> <li>• Minitab, page 187; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 3: Topic 1 Certifications 3.1, 3.2a, 3.2b, 3.3 <b>(Submit via HLS.)</b>  Date Submitted: _____
<b>Extended Problem 1</b>	Located after Lesson 3 in this course guide: Topic 1 Extended Problem: Data and Data Description - Hot and Cold Rubber Bands Two-page report <b>(Submit via email attachment)</b>  Date Submitted: _____		
<b>It is time to make arrangements with your proctor to take Exam 1.</b>			
<b>Topic 2: Probability and Distributions (Lessons 4-7)</b>			

Lesson	Readings	Self-Study Exercises	Graded Assignments
4	Chapter 4, <i>Beginning Statistics</i> , pages 189-249	<ul style="list-style-type: none"> <li>Chapter 4 exercises: Sections 4.1, 4.2, 4.3, 4.4, 4.5, and pages 250-252 in <i>Beginning Statistics</i></li> <li>Minitab, pages 258-259 in <i>Beginning Statistics</i>; use Minitab 18 Statistical Software</li> </ul>	HLS Courseware, Chapter 4: Topic 2 Certifications 4.1 through 4.5 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
5	Chapter 5, pages 261-283	<ul style="list-style-type: none"> <li>Chapter 5 exercises: Sections 5.1, 5.2 in <i>Beginning Statistics</i></li> <li>Minitab, page 313; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 5: Topic 2 Certifications 5.1, 5.2 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
6	Chapter 6, pages 315-373	<ul style="list-style-type: none"> <li>Chapter 6 exercises: Sections 6.1, 6.2, 6.3, 6.4, 6.5, and pages 374-376 in <i>Beginning Statistics</i></li> <li>Minitab, pages 382-383; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 6: Topic 2 Certifications 6.1 through 6.5 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
7	Chapter 7, pages 385-415	<ul style="list-style-type: none"> <li>Chapter 7 exercises: sections 7.1, 7.2, 7.3, and pages 416-417 in <i>Beginning Statistics</i></li> <li>Minitab, page 423; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 7: Topic 2 certifications 7.2 and 7.3 <b>(Submit via HLS.) Note:</b> There is no “certify” option for Section 7.1, but please complete the “simulate” activity.  <b>Date Submitted:</b> _____
<b>Extended Problem 2</b>	Located after Lesson 7 in this course guide: Topic 2 Extended Problem: Probability and Distributions - The Penny Thing Two-page report <b>(Submit via email attachment)</b>  <b>Date Submitted:</b> _____		
<b>It is time to make arrangements with your proctor to take Exam 2.</b>			

<b>Topic 3: Inference and Regression (Lessons 8-12)</b>			
<b>Lesson</b>	<b>Readings</b>	<b>Self-Study Exercises</b>	<b>Graded Assignments</b>
<b>8</b>	Chapter 8, <i>Beginning Statistics</i> , pages 425-476, 489-491	<ul style="list-style-type: none"> <li>Chapter 8 exercises: Sections 8.1, 8.2, 8.3, 8.4, and pages 493-494 in <i>Beginning Statistics</i></li> <li>Minitab, pages 501-504; use Minitab 18 Statistical Software</li> </ul>	HLS Courseware, Chapter 8: Topic 3 Certifications 8.1 through 8.4 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
<b>9</b>	Chapter 9, pages 505-553, 566-568	<ul style="list-style-type: none"> <li>Chapter 9 exercises: Sections 9.1, 9.2, 9.3, 9.4 in <i>Beginning Statistics</i></li> <li>Minitab, pages 585-587; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 9: Topic 3 Certifications 9.1 through 9.4 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
<b>10</b>	Chapter 10, pages 589-644, 680-683	<ul style="list-style-type: none"> <li>Chapter 10 exercises: Sections 10.1, 10.2, 10.3, 10.4 in <i>Beginning Statistics</i></li> <li>Minitab, pages 703-704; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 10: Topic 3 Certifications 10.1 through 10.4 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
<b>11</b>	Chapter 11, pages 707-749	<ul style="list-style-type: none"> <li>Chapter 11 exercises: Sections 11.1, 11.2, 11.3, 11.4 in <i>Beginning Statistics</i></li> <li>Minitab, pages 802-804; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 11: Topic 3 Certifications 11.1 through 11.4 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
<b>12</b>	Chapter 12, pages 809-838, 863-865	<ul style="list-style-type: none"> <li>Chapter 12 exercises: Sections 12.1 and 12.2 in <i>Beginning Statistics</i></li> <li>Minitab, pages 877-878; use Minitab Statistical Software</li> </ul>	HLS Courseware, Chapter 12: Topic 3 Certifications 12.1 and 12.2 <b>(Submit via HLS.)</b>  <b>Date Submitted:</b> _____
<b>Extended Problem 3</b>	Located after Lesson 12 in this course guide: Topic 3 Extended Problem: Inference and Regression - Revenge of the Rubber Bands Two-page report <b>(Submit via email attachment)</b>  <b>Date Submitted:</b> _____		
<b>It is time to make arrangements with your proctor to take Exam 3.</b>			
<b>It is time to make arrangements with your proctor to take your Final Exam.</b>			

## TOPIC 1: Data and Data Description

### Lesson 1

### Statistics and Data

#### **Lesson Objectives**

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After successfully completing this lesson, you will be able to:

- Understand and apply the basic vocabulary of statistics.
- Understand the basic processes and types of statistical studies.
- Understand and describe basic sampling techniques.
- Appreciate common practical and ethical concerns that arise in a study.

#### **Reading Assignment**

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*Beginning Statistics*, Chapter 1, "Introduction to Statistics," pages 1-44.

#### **Important Terms**

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Important terms for this lesson are found on pages 41-44 of your *Beginning Statistics* textbook.

#### **Introductory Lecture**

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Statistics (as a discipline) is all about data. A *statistic* is a numerical description of a sample. Chapter 1 of *Beginning Statistics* provides you with the foundation you need to intelligently collect and discuss data. We cannot meaningfully discuss data without a common vocabulary and a few essential principles. Time invested in mastering these important terms will be essential to the course. The technology example (Example T.3 on page 51) is quite simple, but it will get you started on Minitab. Follow the instructions on page 51 to produce random numbers in Minitab. Be sure to study the *Chapter Review* in *Beginning Statistics* on pages 41-44.

#### **Assignment Overview**

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Before beginning the first written assignment, refer to the *Course Rules* in Canvas for your instructor's assignment requirements. If emailing assignments to your instructor, please copy the ISI office at [indepst@uidaho.edu](mailto:indepst@uidaho.edu).

Before starting the *self-study* exercises and graded assignments for Lesson 1, please read:

- the introductory section of this course guide, pages 1-12, for important course information.
- The *Course Rules* in Canvas for your instructor's requirements.

You are responsible for understanding and following ISI policies and procedures. If there is anything on these pages you do not understand, contact the ISI office for clarification.

**NOTE: For questions about the coursework, contact your instructor directly. Contact information is available in the *Course Rules* in Canvas.**

## **Chapter Exercises (Self-Study)**

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These chapter exercises will prepare you to do the graded HLS Certifications.

### **Instructions:**

Complete the following problems in *Beginning Statistics*. Almost all of the problems have answers in the back of your textbook. **Do not submit these exercises.**

### **Hint:**

Do the exercises for one section below, then complete the corresponding HLS Certification. For example, do *Section 1.1 Getting Started* in *Beginning Statistics*, then certify Section 1.1 in your HLS Courseware. See *Certification Assignment: Topic 1* below.

Section 1.1, pages 7-10:	1, 3, 9, 11, 13, 15, 19, 21, 23, 25, 27
Section 1.2, pages 16-18:	1, 3, 5, 9, 15, 17, 23
Section 1.3, pages 30-34:	1, 3, 5, 8-16, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 39, 41
Section 1.4, pages 39-40:	1-6, 11, 13
Chapter 1 Exercises, pages 43-47:	3, 7, 15

## **Certification Assignment: Topic 1**

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Read the instructions in Canvas on how to access and use your HLS Certification Courseware.

### **Instructions:**

Complete the HLS Certifications for Chapter 1. **Submit them for grading** via HLS; the answers will be automatically graded. If you certify while connected to the Internet, your certification will be submitted automatically to the HLS gradebook. (You will submit an Extended Problem for Topic 1 after you complete Lesson 3.)

Certify 1.1, 1.2, 1.3, and 1.4.

## **Minitab Technology Practice (Self-Study)**

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Read the information provided in Canvas for information on accessing and using Minitab. Also, refer to the *Technology* section in this course guide.

**Do not submit the following exercise:** *Beginning Statistics*, page 51.