STATISTICS 121

Principles of Statistics

Section 02
3 Semester Hours

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"You haven't told me yet," said Lady Nuttall, "what it is your fiancé does for a living."
"He's a statistician," replied Lamia, with an annoying sense of being on the defensive.

Lady Nuttall was obviously taken aback. It had not occurred to her that statisticians entered into normal social relationships. The species, she would have surmised, was perpetuated in some collateral manner, like mules.

"But, Aunt Sara, it's a very interesting profession," said Lamia warmly.

"I don't doubt it," said her aunt, who obviously doubted it very much. "To express anything important in mere figures is so plainly impossible that there must be endless scope for well-paid advice on how to do it. But don't you think that life with a statistician would be rather, shall we say, humdrum?"

Lamia was silent. She felt reluctant to discuss the surprising depth of emotional possibility which she had discovered below Edward's numerical veneer. "It's not the figures themselves," she said finally, "it's what you do with them that matters."


Statistics is the science of collecting, organizing, and interpreting numerical facts—which we call data. We are bombarded by data in our everyday life. Most of us associate "statistics" with the bits of datum that appear in news reports: baseball batting averages, imported car sales, the latest poll of the president's popularity, and the average high temperature for today's weather. Advertisements often claim that data show the superiority of the advertiser's product. All sides in public debates about economics, education, and social policy argue from data. Yet the usefulness of statistics goes far beyond these everyday examples.

The study and collection of data are important in the work of many professions, thus training in the science of statistics is valuable preparation for a variety of careers. Each month, for example, government statistical offices release the latest numerical information on unemployment and inflation. Economists and financial advisors, as well as policy makers in government and business, study these data in order to make informed decisions. Doctors must understand the origin and trustworthiness of the data that appear in medical journals if they are to offer their patients the most effective treatment. Politicians rely on data from polls of public opinion. Business decisions are based on market research data that reveal consumer tastes. Farmers study data from field trials of new crop varieties. Engineers gather data on the quality and reliability of manufactured products. Most areas of academic study make use of numbers, and therefore also make use of the methods of statistics.

We can no more escape data than we can avoid the use of words. Just as words on a page are meaningless to the illiterate or confusing to the partially educated, so data do not interpret themselves, but must be read with understanding. Just as a writer can arrange words into convincing arguments or incoherent nonsense, so data can be compelling, misleading, or simply irrelevant. Numerical literacy—the ability to follow and understand numerical arguments—is important for everyone. The ability to express yourself numerically, to be an author rather than just a reader, is a vital skill in many professions and areas of study. The study of statistics is therefore essential to a sound education. We must learn how to read data critically and with comprehension, we must learn how to produce data that provide clear answers to important questions, and we must learn sound methods for drawing trustworthy conclusions from data.
COURSE LEARNING OUTCOMES
Students who receive a passing grade in Statistics 121 will:
1. Understand the importance of how data should be collected, and how data collection dictates the appropriate statistical method and acceptable inference.
2. Understand and communicate using technical language about probability and variation.
3. Interpret and communicate the outcomes of estimation and hypothesis tests in the context of a problem.

COURSE PREREQUISITE: MATH 110 (COLLEGE ALGEBRA) is recommended
Taking college algebra before taking Statistics 121 is similar to exercising before going skiing. A couch potato will likely injure him- or herself while skiing, whereas a physically fit person will have an enjoyable experience. Similarly, a person taking Statistics without having taken college algebra will find Statistics much more difficult than those who have. Statistics 121 requires students to be able to solve story problems and interpret the results in context.

Note: Precalculus or a full year of trigonometry in high school includes college algebra.

REQUIRED COURSE MATERIALS
After you have registered for the BYU Stat 121 Independent Study Section 02 course through Independent Study, there are two different websites that are required for this course for which you also need to register. The following is a brief description of each website:

1. StatsPortal (http://courses.bfwpub.com/bps5e.php) is a website maintained by the publisher of the textbook Basic Practice of Statistics, containing:
   - the e-book of Basic Practice of Statistics, 5th edition, by David S. Moore that supports highlighting and note taking
   - StatTutor, which includes the lecture videos that you need to watch
   - other study resources such as practice quizzes, exercises, and applets (maintained by WH Freeman and Company)

2. Statistics 121 Independent Study Section 02 website (http://statt3.byu.edu/moodle) is maintained by the Department of Statistics for the Statistics 121 course, containing:
   - all lesson instructions
   - Speedbacks (credit quizzes) and Mastery Checks (practice quizzes)
   - exam preparation materials
   - other course materials and helps

You will need to register for both websites.
- For the StatsPortal website there is a fee. Instructions for purchasing an access code and registering online for StatsPortal is found at the end of this document in the “Getting Started” section.
- For the Statistics 121 Independent Study Section 02 website, access is free, but you need to register on Moodle. Instructions for registering online for the Moodle website are found at the end of this document in the “Getting Started” section.

IMPORTANT: Please do not register for the Statistics 121 Online on Campus course, as this course is for students who are not taking a Statistics 121 Independent Study course.

You also need a scientific calculator—you’ll need this while you take all exams and many quizzes. (Note: Graphing calculators are not allowed on exams.)

OPTIONAL MATERIALS
- Lecture Notes 2010–2011: These are screen captures of the StatTutor lessons, the lecture videos that you are required to watch. You can purchase this through the BYU Bookstore. Please be aware that these lecture notes do not use the same numbering scheme as your Independent Study course outline, so you will need to match the chapter and section headings by content.
• Textbook: *Basic Practice of Statistics, 5th* edition, by David S. Moore and WH Freeman and Company. If you purchase a new textbook, you get FREE access to *StatsPortal*. The ISBN number for a new textbook with free access is: 9781429230933. If you purchase a used textbook, you will still have to purchase access to *StatsPortal*.

**COURSE REQUIREMENTS**

• Take all 42 Speedback assignments (41 credit quizzes plus 1 essay): worth 15 percent of your grade.
• Take 3 midcourse exams worth 55% of your grade. The first parts of midcourse exams 1 through 3 consist of multiple-choice questions and matching questions. The second parts are short essay. Both parts of each midcourse exam should be requested at the same time.
• Take the comprehensive final exam, which is worth 30 percent of your grade.

**COURSE ORGANIZATION**

• **Unit 1**: Data analysis and collection
  o Do lessons 1–10 and take Mastery Checks and Speedbacks 1–10.
  o Request and take both parts of midcourse exam (covers lessons 1-10).

• **Unit 2**: Bivariate data analysis, probability, and sampling distributions
  o Do lessons 11–21 and take Mastery Checks and Speedbacks 11–21.
  o Request and take both parts of midcourse exam 2 (covers lessons 1-21).

• **Unit 3**: Inferential Procedures
  o Do lessons 22–33 and take Mastery Checks and Speedbacks 22–33.
  o Request and take both parts of midcourse exam 3 (covers lessons 1-33).

• **Unit 4**: More Inferential Procedures
  o Do lessons 34–41 and take Mastery Checks and Speedbacks 34–41.
  o Request and take the final exam (covers lessons 1-41).

**Lessons**

All lessons are outlined on the Statistics 121 Independent Study Section 02 website (Moodle), as well as in the document “Statistics 121 Independent Study Lesson Outline.” For each lesson, you are assigned to do the following:

2. Watch the corresponding *StatTutor* videos on *StatsPortal*.
3. After reading the textbook and watching the videos, first take the practice quiz, or “Mastery Check.” Review as needed and then take the credit quiz, or “Speedback.”

**StatTutor Videos**

All *StatTutor* videos are available on the *StatsPortal* website. You can access them in two ways: either by clicking on the *StatTutor* icon in each section of each chapter of the e-book (with the exception of some chapter introductions), or under the Resources tab on *StatsPortal*. To play these *StatTutor* lessons, you will need *QuickTime Player* loaded on your computer. (It is a free download.) *StatsPortal* automatically gives the link for the download when you click on the *StatTutor* icon. A few *StatTutor* videos have two or three parts, which are indicated in the lesson outline.

**Mastery Checks**

Each lesson has a Mastery Check (practice quiz) to make you aware of the important concepts in that lesson and to check whether you have mastered the material.

Taking the Mastery Check without notes or the textbook is recommended, but you are welcome to use them. Getting help from others is also acceptable on Mastery Checks.

Each Mastery Check consists of multiple-choice and true/false questions. Some of these questions require the use of a basic calculator and/or statistical tables. A score of 60 percent or better on any Mastery Check will earn you one point extra credit. Because there are forty-one Mastery Checks, you can earn a maximum of forty-one extra credit points. The
fraction of Mastery Checks for which you earn a point will be multiplied by 10 percent and will go towards a possible 10 percent extra credit to be added to your overall Speedback percentage. Understanding the correct answers for all Mastery Check questions will help you prepare for the exams.

**Note:** You cannot retake Mastery Checks for this course. Complete feedback is given for every question after submitting each Mastery Check.

**Speedback Assignments**

For each lesson, you are required to take a Speedback (credit) “quiz.” Your scores on the Speedbacks count as 15 percent of your course grade.

These Speedbacks are also open book and open notes with no time limit, but getting help from any other person is not acceptable. Receiving assistance from another person on any Speedback quiz is considered cheating and could result in failure in the course.

Like Mastery Checks, Speedbacks consist of multiple-choice and true/false questions, and some of the Speedback questions require using a basic calculator and/or statistical tables.

**Your Speedback quiz grades must be transferred to the Independent Study data base once you’ve completed all quizzes on the Stat 121 IS section 02 Moodle website.** This overall quiz grade, labeled L1, must be posted BEFORE you can request your final exam so plan your study schedule accordingly.

**Note:** You cannot retake Speedback assignments for this course because complete feedback is given for each question after you submit each Speedback. Use the Mastery Check questions, StatTutor lessons, and textbook/e-book exercises to prepare for the Speedback quizzes before you take them. In addition, use your notes and textbook to correctly answer the questions.

**Be sure you take ALL Speedback quizzes associated with an exam before requesting that exam.**

**STUDY RESOURCES**

**Self-Assessment Quizzes**

A self-assessment quiz is available for every chapter on the Statistics 121 Independent Study Section 02 Moodle website under “Important Course Materials.” Take these when you feel they will help you best—before taking Speedback quizzes or as a review before taking exams.

**Pre- and Post-tests on the StatsPortal website**

Every chapter on the StatsPortal website has a personalized study guide. In this study guide are chapter pretests and posttests. Use these tests as needed to gain better understanding of the material.

**Textbook Exercises**

In the Basic Practices of Statistics textbook/e-book, the exercises are given at the end of each section and at the end of each chapter. Answers are given for all odd-numbered exercises. Do exercises as needed.

We recommend that you use a statistical software package to perform computations in the textbook exercises. StatCrunch is available at [http://statistics.byu.edu/statcrunch/index.html](http://statistics.byu.edu/statcrunch/index.html), but requires the following password: BYUStat. Instructions are available under “Important Course Materials” on the Statistics 121 Independent Study Section 02 Moodle website. CrunchIt! is available under the Resources tab on StatsPortal. Instructions are also found under the Resources tab. The data for each exercise are also available there. You may opt to use a graphing calculator such as the TI-83 or other statistical software such as Microsoft Excel instead of StatCrunch or CrunchIt! Using the other statistical software is okay, but you will have to figure out the necessary commands on your own. (Instructions are given under the Resources tab on StatsPortal.) Using StatCrunch, CrunchIt!, a graphing calculator, or other statistical software will save you a lot of time. But remember, buying a graphing calculator is not necessary—it’s just an option. All that is needed is a scientific calculator with a square-root function for Mastery Checks, Speedbacks, and midcourse exams. (You will not be asked about software commands on exams or Speedbacks.)
Glossary
A complete glossary of all the terms in this course is available on the StatsPortal website. In addition, you can click on any statistical term in the Basic Practices of Statistics e-book to get a definition. Glossaries of new terms you need to know for each exam are available on the Statistics 121 Independent Study Section 02 website in each “Exam Preparation” folder.

Midcourse and Final Exam Preparation Guides
Exam preparation guides are available to help you study for each exam. These include a list of terms for which you need to know their definitions, computations you need to be able to do, identifications you should be able to make, and so forth. The guides are available on the Statistics 121 Independent Study Section 02 website in the preparation lesson for each exam. Lesson 10 helps you prepare for Midcourse Exam 1, lesson 21 for Midcourse Exam 2, lesson 33 for Midcourse Exam 3, and lesson 42 helps you prepare for the final exam.

On the last page of each exam preparation guide is a copy of the formula sheet that will be at the end of each exam. Here is a description of the formulas you should be able to use for each midcourse exam:

- Midcourse Exam 1: the first row of formulas
- Midcourse Exam 2: the first row of formulas and the first formula on the second row
- Midcourse Exam 3: the first four rows of formulas
- Final: all of the formulas

Practice Exams
Before taking a midcourse exam or the final, be sure to take the corresponding practice exam, as you will not be able to retake any exam. The practice exams are available on the Statistics 121 Independent Study Section 02 website (Moodle) in the corresponding “Exam Preparation” folders. The answers to the practice exam questions are found on the last page of each practice exam.

The practice exams will give you a good idea of the types of questions that will be on the midcourse exams and the final. Do not expect the practice exam questions to be duplicated on the midcourse exams. The exams focus on statistical terms, facts, concepts, and interpretation of results more than computations.

EXAMS
Midcourse Exams
Note: You will use the Midcourse Exam Request and Final Exam Request links on the Statistics 121 Independent Study Section 02 Moodle website to request all exams.

Important:
- When requesting midcourse exam 1, request midcourse exam M1 and M2.
- When requesting midcourse exam 2, request midcourse exam M3 and M4.
- When requesting midcourse exam 3, request midcourse exam M5 and M6.

All midcourse exams and the final exam must be proctored. All are closed book and closed notes, but have no time limit.

After taking any exam, discussing anything on the exam with anyone other than the course instructor, the course coordinator, or the Independent Study statistics tutor will result in you failing the course.

At the end of each exam will be a page of formulas and a page of tables. Copies of both the “Stat 121 Tables” page and the “Stat 121 Formulas Sheet” are found in “Important Course Materials” at the top of the list of lessons on the Statistics 121 Independent Study Section 02 Moodle website. The formula page is also found at the end of every exam preparation guide as discussed above. You will also need a basic calculator to use while you take each midcourse exam and the final exam. Please bring one with you. (Remember, you cannot use a graphing calculator on exams.)

To prepare for each midcourse exam or final exam, make sure that you learn everything listed on its exam preparation guide. Then, take the corresponding practice exam. After you take the practice exam, check your answers and restudy the material corresponding to those questions that you missed. Reviewing the Mastery Checks and Speedbacks will also help. Self-assessment quizzes are available as well in “Important Course Materials” on the Statistics 121 Independent Study Section 02 Moodle website. Be sure that you are ready for an exam before scheduling it because there are no
midcourse exam retakes. Further, a midcourse exam cannot be taken until all of the Speedbacks associated with the units covered on that exam have been submitted.

Midcourse Exam 1 covers material in unit 1. See lesson 10 on the Statistics 121 Independent Study Section 02 website. Midcourse Exam 2 covers unit 2 with four or five questions from unit 1 (see lesson 21). Midcourse Exam 3 covers unit 3 with four or five questions from the previous units (see lesson 33).

It is recommended that you schedule at least 3 hours to take Midcourse Exams 1-3 at your testing center.

Final Exam
The final exam is comprehensive with about 25 percent of the questions coming from each unit, including unit 4. The final exam has no essay portion and counts as 30 percent of your final grade.

Note about the final exam: You must earn a minimum of 55 percent on the final in order to pass this course. If you fail the final exam (that is, score below 55 percent), you can petition to retake it if there are extenuating circumstances.

As with the midcourse exams, if you discuss anything on the final exam with anyone other than the course instructor, the course coordinator, or the Independent Study statistics tutor, you will fail the course.

Important: You cannot request to take the final exam until:
1. You have completed all forty-two course quizzes (forty-one Speedbacks plus one essay)
2. You have requested that your score be recorded on the Independent Study Grade Check website. The Speedback score you request to be recorded is permanent and cannot be changed later. So, be sure you have completed all the Speedbacks before you request the final exam!
3. You have completed and received a posted grade for all previous Midcourse Examinations. This means you must allow for mailing time between when you complete an exam and when it arrives at the Independent Study offices to be processed if you are on a deadline to finish the course.

Make your request to get your Speedback score recorded by sending an e-mail to isgrader@stat.byu.edu with this subject line: “Please transfer my percentage on my Speedbacks to the Independent Study Grade Check website.” You must include your full name, BYU NetID, your e-mail address, and “section 02” in the body of the e-mail. You can expect a Speedback score posted within 3 business days.

GRADING
Your final course grade is determined using the following percentages:
- Speedback quizzes: 15%
- Midcourse Exam 1: 17%
- Midcourse Exam 1 (essay portion): 01%
- Midcourse Exam 2: 17%
- Midcourse Exam 2 (essay portion): 01%
- Midcourse Exam 3: 18%
- Midcourse Exam 3 (essay portion): 01%
- Final exam: 30%

Here is the grading scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94–100</td>
<td>C</td>
<td>73–76</td>
</tr>
<tr>
<td>A−</td>
<td>90–93</td>
<td>C−</td>
<td>70–72</td>
</tr>
<tr>
<td>B+</td>
<td>87–89</td>
<td>D+</td>
<td>67–69</td>
</tr>
<tr>
<td>B</td>
<td>83–86</td>
<td>D</td>
<td>63–66</td>
</tr>
<tr>
<td>B−</td>
<td>80–82</td>
<td>D−</td>
<td>60–62</td>
</tr>
<tr>
<td>C+</td>
<td>77–79</td>
<td>E</td>
<td>59 or below</td>
</tr>
</tbody>
</table>

Note: We reserve the right to lower your grade for cheating on Speedbacks and exams or discussing the content of any exam with any unauthorized person.

CHECKING YOUR STATISTICS 121 GRADES
Your Speedback and Mastery Check scores are available on the Statistics 121 Independent Study Section 02 Moodle
website. Your exam scores, your cumulative Speedback score (with any extra credit added after you have requested it to be recorded), and your overall course grade will be available on the Independent Study Grade Check website (https://ce.byu.edu/is/ViewGrades.htm). Access this site using your BYU NetID. (You may need to set up a BYU NetID first.)

Scores listed on the Independent Study Grade Check website are as follows:

- Lesson 41: Your cumulative Speedback score from the Statistics 121 Independent Study Section 02 website after you have requested that it be recorded.
- M1: Your score for Midcourse Exam 1 after it is graded.
- M2: Your score for Midcourse Exam 1 essay portion after it is graded.
- M3: Your score for Midcourse Exam 2 after it is graded.
- M4: Your score for Midcourse Exam 2 essay portion after it is graded.
- M5: Your score for Midcourse Exam 3 after it is graded.
- M6: Your score for Midcourse Exam 3 essay portion after it is graded.
- F: Your score on the final exam after it is graded.
- G: Your course grade after everything is completed.

FREE TUTOR
To help you succeed in this course, Independent Study has provided a tutor for the course, free of charge. If at any point you would like further explanation or help with content-related issues, Speedbacks, or Mastery Checks, please feel free to contact your tutor:

Phone: 1-800-914-8931
E-mail/IM: isstatstutor@byu.edu

Please note: Send any and all e-mails from your own e-mail account (that is, your BYU e-mail account, Google, Yahoo!, MSN, and so forth). Do not send an e-mail from within the Statistics 121 Independent Study Section 02 site because it does not give your e-mail address so our statistics tutor cannot directly respond to you. Do not send e-mails from within the StatsPortal website because it sends your e-mail to the publisher’s help desk and not to our statistics tutor.

YOU MUST STATE THE FOLLOWING IN ANY CORRESPONDENCE WITH THE TUTOR as there are currently three different Statistics 121 Independent Study courses. You are in section 02, which corresponds to the 5th edition of the textbook:

1) your full name
2) BYU NetID
3) that you are in STAT 121 section 02

Best wishes as you complete the course!
Welcome to Statistics 121! As you complete this course, you will use these websites and e-mail addresses:

- E-mail address for registering for the Statistics 121 Independent Study Moodle course website: registerstat121@stat.byu.edu

- The Statistics 121 course website: http://statt3.byu.edu/moodle (contains the Speedback and mastery check quizzes)

- StatsPortal: http://courses.bfwpub.com/bps5e.php (contains the eBook and Stat Tutor lessons)

- The StatCrunch website: http://statistics.byu.edu/statcrunch/index.html; requires the following password, which is case sensitive: BYUStat (a software package to help with graphing and calculations)

- Website for requesting midterm exams and final exam: through links on http://statt3.byu.edu/moodle or directly from https://ce.byu.edu/is/ExamRequest.htm

- Website for checking grades: https://ce.byu.edu/is/ViewGrades.htm

- E-mail address for requesting that your essay Speedback gets graded and for requesting that your cumulative Speedback score gets recorded on the Independent Study Grade Check website so you can take the final exam: isgrader@stat.byu.edu

- E-mail address for contacting the Independent Study statistics tutor: isstattutor@byu.edu. Be sure to include your name, course code, and that you are in section 02.

**STATISTICS 121 INDEPENDENT STUDY SECTION 02 WEBSITE REGISTRATION (No fee)**

Registering for this website does NOT require a fee. BE SURE YOU SELECT the “Section 02” course whenever you are on http://statt3.byu.edu/moodle/.

**To register:** After you receive your course materials from Independent Study and set up your BYU NetID, send an e-mail to registerstat121@stat.byu.edu. Be sure to include your:

1. full name
2. e-mail address (the one you actually use and check often)
3. NetID
4. city/town
5. country

The registrar will register you on the Statistics 121 Independent Study Section 02 Moodle website within two working days and will send your login ID and a login password to the e-mail you specified. After you are registered, you can change your password by clicking “Profiles” on the bottom left-hand side of the screen. The registrar will also give you the Moodle course enrollment key.

If you encounter any problem logging onto the website at anytime, email the registrar with your current login information and a concise description of the problem. As with all correspondence with Independent Study please include your full name, NetID, and section of the course.

**Important:** Whenever you log in to the website, click “Statistics 121 Independent Study Section 02,” Do not select “Statistics 121 Online On Campus” (which is for students who are not taking a Statistics 121 Independent Study course).
Lessons on the Statistics 121 Independent Study Section 02 website are listed in chronological order and will guide you through each reading, viewing, practice, and graded assignment. If you have questions about assignments, quizzes, and so forth, contact the Independent Study statistics tutor at 1-800-914-8931 or isstattutor@byu.edu.

StatsPortal REGISTRATION (Fee Required)

Recommended: Use Mozilla Firefox or Safari instead of Internet Explorer.

Method 1: Purchase access and register online
Go to the StatsPortal website. (The website contains the StatTutor videos and the complete textbook in e-book format.)
On the right hand side next to “Students,” click “Purchase.” Then make the following selections:
1. Select the state or province where your institution is located: UT
2. Select your institution: BYU
3. Select your course / instructor: “BYU Stat 121 Independent Study Section 02 - Lynne Nielsen”
4. After making these selections, just follow the prompts and provide the required information.

Method 2: Purchase with your Activation Code from the Bookstore
Go to the StatsPortal website. On the right hand side next to “Students” click “Register an Activation Code.”

1. Fill out the required registration fields including your activation code, e-mail address, and password.
2. Select the state or province where your institution is located, namely: UT
3. Select your institution: BYU
4. Select your course / instructor: “BYU Stat 121 Independent Study Section 02 - Lynne Nielsen”
5. After making these selections, just follow the prompts.

If you do have problems registering please call the StatsPortal’s 24/7 help line at 1-800-936-6899.

Resolving Problems with StatsPortal:
If you can’t log into StatsPortal or you’re having technical problems with StatsPortal, call their support line at 1-800-936-6899. Most problems that occur with StatsPortal can be attributed to either using Internet Explorer or trying to log on inside Blackboard, Moodle, or other similar sites. The easiest way to log on and avoid problems is by typing “statsportal” into Mozilla Firefox, which will take you directly to StatsPortal.

Note: Be aware that you initially purchase a 1 year access to Statsportal, and if you chose to extend your Independent Study course you will need to contact Statsportal directly to extend access.
Patti B. Collings, M.S.

My name is Patti Burton Collings. I am a professor in the Department of Statistics at Brigham Young University. I have taught introductory statistics for over thirty years and have taught thousands of students. I have also tutored many students one-on-one who were struggling. I have learned much from these students about which concepts are difficult and what their misconceptions are.

I, together with other faculty in the Department of Statistics at Brigham Young University, have spent many, many hours producing the StatTutor lessons that form the basis for this Independent Study Course.

In developing this course, I have tried to provide lots of helps in addition to the StatTutor lessons. There are self-assessment quizzes, detailed homework solutions, a glossary, study guides as well as practice exams. My sincere hope is that the StatTutor lessons, the quizzes and all the other helps will help you to learn statistics.

On a personal note, I am married to Bruce Jay Collings who is also a professor in the Department of Statistics at Brigham Young University. He has helped me immensely in the preparing of this course. We are the parents of four wonderful children, two daughters and two sons. They are all married adding two more daughters and two more sons to our family. They have given us four wonderful grandchildren. In my spare time I enjoy listening to music, reading, sewing, and gardening.

Perpetua Lynne Nielsen, M.S.

Hello! I’m Perpetua Lynne Nielsen and I was born and raised in the Philippines. My Dad was an electrical engineer and my Mom stayed home to take care of five daughters and one son, the youngest. Our family joined the LDS church when I was eleven. I obtained my BS in Mathematics degree from the University of the Philippines and my MS in Statistics from Brigham Young University.

I have worked as a statistician for the Philippine government, the LDS Correlation Department, International Rectifier, INTEL, and SkyMall. I have also taught Math and Statistics at the Utah Valley University and the Chandler-Gilbert Community College.

My professional interests are teaching and educational research. I would like to see quantum improvement in the teaching of Math and Statistics at all levels.

I am an associate teaching professor and the Statistics 121 course manager at BYU. I am also the mother of five wonderful children, ages 11 to 25. I love to read, cook, dance, and sing. I sometimes have a hard time restraining myself from doing all of my children's math homework problems!