

COURSE SYLLABUS

# Course Prefix, Number, and Title:

Math 281: Introduction to Statistics

# Credits:

3 credits

# University Name:

Dakota State University

# Academic Term/Year:

Spring 2024

## Last date to Drop and receive 100% refund:

Wednesday, 17 January 2024

## Last date to Withdraw and earn a grade of 'W':

Tuesday, 02 April 2024

# Course Meeting Time and Location:

MWF 09:00-09:50 am, DSC 135

# Instructor Information:

## Name:

Dr. Jeffrey S. Palmer

## Office:

DSC 146I

## Phone Number(s):

605-679-7668

## Email Address:

jeff.palmer@dsu.edu

## Office Hours:

T 09:00-09:50 am, MTWF 11:00-11:50 am, WF 08:30-08:50 am, or by appointment

# Approved Course Description:

## Catalog Description:

A study of descriptive statistics including graphs, measures of central tendency and variability and an introduction to probability theory, sampling, and techniques of statistical inference with an emphasis on statistical applications (2023-2024 DSU Undergraduate Catalog).

## Additional Course Information:

None

# Prerequisites:

## Course Prerequisite(s):

Math 114 or Math 115 or Math 121 or Math 123.

## Technology Skills:

This course will make use of MyStatLab, Microsoft Excel, and other appropriate tools.

# Student Learning Outcomes:

As you explore the concepts, ideas and applications encountered in this course do not be content to simply get an answer. Rather, you should constantly be asking yourself questions. What am I doing? Why am I doing this? What does this mean? I hope you will develop knowledge of, skill in, and understanding of those fundamental calculations that are needed in your mathematical toolbox. Mathematics is not moving symbols around on a piece of paper and obtaining the correct answer. You should always be asking yourself what you are doing and why you are doing it. We will use our mathematical toolbox to examine applied problems from a variety of disciplines. Applications from biology, chemistry, physics, business, economics, and other disciplines form an integral part of the course. Mathematics is not a cookbook discipline; the ultimate validation of your skills and understanding is reflected in your ability to develop solutions to problems that are new and unfamiliar to you. You will encounter, in course assignments and evaluations, activities that require problem solving and critical thinking. Finally, I hope that you will come to understand and appreciate both the power and the shortcomings of technology, particularly the computer, as a tool for understanding mathematical concepts and for solving applied problems. In conclusion, as a student in this course you are expected to:

* learn, practice, and master basic skills,
* understand important concepts,
* apply your knowledge to other disciplines,
* engage in problem solving and critical thinking,
* use technology as an appropriate tool.

This course satisfies Regental General Education Goal 5: Students will understand and apply

fundamental mathematical processes and reasoning.

* Student Learning Outcome 1: Students will use mathematical symbols and mathematical structure to model and solve real world problems. Assessment: Homework, quizzes, and exams
* Student Learning Outcome 2: Students will demonstrate appropriate communication skills related to mathematical terms and concepts. Assessment: Homework, quizzes, and exams

# Course Materials:

## Required Textbook(s):

Statistics: The Art and Science of Learning from Data, Fourth Edition, by Agresti, Franklin, and Klingenberg (Pearson / Addison Wesley).

This text (on-line version) and MyStatLab can be accessed using an access code that is available for sale at <http://pearsonmylabandmastering.com> or from the DSU Bookstore. The access code is required, while the hardcopy textbook is optional. Once you have purchased the access code, you must sign up for this course at <http://pearsonmylabandmastering.com> using the Course ID palmer87871.

## Required Supplementary Materials:

None, however, students may use a scientific calculator.

## Optional Materials:

None.

# Course Delivery and Instructional Methods:

This course is an introduction to the collection, organization, analysis, and interpretation of data. Topics include descriptive statistics, probability, and inferential statistics. Our class time will be devoted to lecture and discussion of the material in Chapters 1 - 10 of your textbook - certain sections may be skipped and certain supplementary material may be introduced. We will primarily use Excel to assist us with our exploration and analysis of statistical concepts and ideas although other software and applets may be used as well.

# Communication and Feedback:

## Preferred Email Contact Method:

Please send all e-mail communications to Dr. Palmer or Professor Palmer at my [jeff.palmer@dsu.edu](mailto:jeff.palmer@dsu.edu) account.

## Email Response Time:

Typically, I access and read email once per day Monday through Friday when classes are in session. I generally respond to email messages within 48 hours, excluding weekends and holidays.

## Feedback on Assignments:

With extremely limited exceptions, I typically return work to students within 1 week, often earlier, of the due date, excluding holidays.

# Evaluation Procedures:

## Assessments:

There are four examinations (240 total points) scheduled for this course – see the Tentative Course Outline and Schedule below. Each exam will be cumulative, covering material from the beginning of the course through the preceding Friday. Exams may consist of both an in-class and/or a take-home component at the discretion of the instructor. If you miss an exam for a valid reason, you may be allowed to make up that exam or replace it with your score on the Final Exam (Exam 4) at the discretion of the instructor.

## Final Examination:

Wednesday, 01 May 2024, 08:00 – 10:00 am

## Performance Standards and Grading Policy:

Your grade will be calculated using your accumulated point total (240 possible). The grading scale is:

>85% 204 – 240 points A

>70% 168 – 203 points B

>60% 144 – 167 points C

>50% 120 – 143 points D

<50% 000 – 119 points F

To provide a more accurate picture of your current standing in the course, the MyStatLab gradebook shows your projected final percentage based on work you have completed thus far and weighted as per the totals that will be available in each category when the course is completed. Students near a cutoff may receive the higher grade at the discretion of the instructor.

# Tentative Course Outline and Schedule:

| Date | Day | Topic |  |
| --- | --- | --- | --- |
| 08-Jan-24 | M | Introduction and Objectives |  |
| 09-Jan-24 | T |  |  |
| 10-Jan-24 | W | 1.2 Sample Versus Population |  |
| 11-Jan-24 | R |  |  |
| 12-Jan-24 | F | 1.2 / 2.1 |  |
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|  |  |  |  |
| 15-Jan-24 | M | NO CLASS - MARTIN LUTHER KING JR. DAY |  |
| 16-Jan-24 | T |  |  |
| 17-Jan-24 | W | 2.1 Different Types of Data LAST DAY TO ADD/DROP A FULL SEMESTER CLASS |  |
| 18-Jan-24 | R |  |  |
| 19-Jan-24 | F | 2.2 Graphical Summaries of Data |  |
|  |  |  |  |
|  |  |  |  |
| 22-Jan-24 | M | 2.2 / 2.3 |  |
| 23-Jan-24 | T |  |  |
| 24-Jan-24 | W | 2.3 Measuring the Center of Quantitative Data |  |
| 25-Jan-24 | R |  |  |
| 26-Jan-24 | F | 2.4 Measuring the Variability of Quantitative Data |  |
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| 29-Jan-24 | M | 2.4 / 2.5 |  |
| 30-Jan-24 | T |  |  |
| 31-Jan-24 | W | 2.5 Using Measures of Position to Describe Variability |  |
| 01-Feb-24 | R |  |  |
| 02-Feb-24 | F | 3.1 The Association Between Two Categorical Variables |  |
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|  |  |  |  |
| 05-Feb-24 | M | 3.1 / 3.2 |  |
| 06-Feb-24 | T |  |  |
| 07-Feb-24 | W | 3.2 The Association Between Two Quantitative Variables |  |
| 08-Feb-24 | R |  |  |
| 09-Feb-24 | F | EXAM 01 |  |
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| 12-Feb-24 | M | 3.3 Predicting the Outcome of a Variable |  |
| 13-Feb-24 | T |  |  |
| 14-Feb-24 | W | 3.3 / 5.1 |  |
| 15-Feb-24 | R |  |  |
| 16-Feb-24 | F | 5.1 How Probability Quantifies Randomness |  |
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|  |  |  |  |
| 19-Feb-24 | M | NO CLASS - PRESIDENT'S DAY |  |
| 20-Feb-24 | T |  |  |
| 21-Feb-24 | W | 5.2 Finding Probabilities |  |
| 22-Feb-24 | R |  |  |
| 23-Feb-24 | F | 5.2 / 6.1 |  |
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|  |  |  |  |
| 26-Feb-24 | M | 6.1 Summarizing Possible Outcomes and Their Probabilities |  |
| 27-Feb-24 | T |  |  |
| 28-Feb-24 | W | 6.2 Probabilities for Bell-Shaped Distributions |  |
| 29-Feb-24 | R |  |  |
| 01-Mar-24 | F | 6.2 / 6.3 |  |
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|  |  |  |  |
| 04-Mar-24 | M | 6.3 Probabilities When Each Observation Has Two Possible Outcomes |  |
| 05-Mar-24 | T |  |  |
| 06-Mar-24 | W | 7.1 How Sample Proportions Vary Around the Population Proportion |  |
| 07-Mar-24 | R |  |  |
| 08-Mar-24 | F | EXAM 02 |  |
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|  |  |  |  |
| 11-Mar-24 | M | NO CLASS - SPRING BREAK |  |
| 12-Mar-24 | T | NO CLASS - SPRING BREAK |  |
| 13-Mar-24 | W | NO CLASS - SPRING BREAK |  |
| 14-Mar-24 | R | NO CLASS - SPRING BREAK |  |
| 15-Mar-24 | F | NO CLASS - SPRING BREAK |  |
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| 18-Mar-24 | M | 7.1 / 8.1 |  |
| 19-Mar-24 | T |  |  |
| 20-Mar-24 | W | 8.1 Point and Interval Estimates of Population Parameters |  |
| 21-Mar-24 | R |  |  |
| 22-Mar-24 | F | 8.2 Constructing a Confidence Interval to Estimate a Population Proportion |  |
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| 25-Mar-24 | M | 8.2 / 9.1 |  |
| 26-Mar-24 | T |  |  |
| 27-Mar-24 | W | 9.1 Steps for Performing a Significance Test |  |
| 28-Mar-24 | R |  |  |
| 29-Mar-24 | F | NO CLASS - EASTER HOLIDAY |  |
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|  |  |  |  |
| 01-Apr-24 | M | 9.2 Significance Tests About Proportions |  |
| 02-Apr-24 | T | LAST DAY TO WITHDRAW |  |
| 03-Apr-24 | W | 9.2 / 10.1 |  |
| 04-Apr-24 | R |  |  |
| 05-Apr-24 | F | 10.1 Categorical Response: Comparing Two Proportions |  |
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| 08-Apr-24 | M | 7.2 How Sample Means Vary Around the Population Mean |  |
| 09-Apr-24 | T |  |  |
| 10-Apr-24 | W | 7.2 / 8.3 |  |
| 11-Apr-24 | R |  |  |
| 12-Apr-24 | F | EXAM 03 |  |
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|  |  |  |  |
| 15-Apr-24 | M | 8.3 Constructing a Confidence Interval to Estimate a Population Mean |  |
| 16-Apr-24 | T |  |  |
| 17-Apr-24 | W | 9.3 Significance Tests About Means |  |
| 18-Apr-24 | R |  |  |
| 19-Apr-24 | F | 9.3 / 10.2 |  |
|  |  |  |  |
|  |  |  |  |
| 22-Apr-24 | M | 10.2 Quantitative Response: Comparing Two Means |  |
| 23-Apr-24 | T |  |  |
| 24-Apr-24 | W | Catch Up and Review |  |
| 25-Apr-24 | R |  |  |
| 26-Apr-24 | F | Wrap Up and Conclusions |  |
|  |  |  |  |
|  |  |  |  |
| 29-Apr-24 | M |  |  |
| 30-Apr-24 | T |  |  |
| 01-May-24 | W | FINAL EXAM 8:00 – 10:00 am |  |
| 02-May-24 | R |  |  |
| 03-May-24 | F |  |  |

# Student Success Services and Supports:

## ADA Accommodations:

Dakota State University strives to ensure that physical resources, as well as information and communication technologies, are reasonably accessible to users to provide equal access to all. If you encounter any accessibility issues, you are encouraged to immediately contact the instructor of the course and Dakota State University's Office of Disability Services, which will work to resolve the issue as quickly as possible.

DSU's Office of Disability Services is located in the Learning Engagement Center and can be contacted by calling 605-256-5121 or emailing [dsu-ada@dsu.edu](mailto:dsu-ada@dsu.edu). Students seeking ADA accommodations (such as non-standard note taking or extended time and/or a quiet space taking exams and quizzes) can access the DSU website <https://dsu.edu/student-life/disability-services/index.html> for additional information and the link to the Disability Services Request Form. You will need to provide documentation of your disability and the ADA Coordinator must confirm the need before officially authorizing accommodations.

## DSU Knowledge Base:

The DSU Knowledge Base contains links and resources to help students by providing information about the following topics: User Accounts & Passwords, Academic Tools & Resources, Software & Apps Support, WiFi & Network Access, Campus Emergency Alert System, Campus Printing, IT Security & Safe Computing, and the Support Desk (which is there to help both on and off-campus students). The Knowledge Base can be accessed through the link below:

* [DSU Knowledge Base](https://support.dsu.edu/TDClient/KB/)

## D2L Support for Students:

The D2L Support for Students site is designed to provide DSU students a D2L support resource center that contains user guides, tutorials, and tips for using the D2L learning environment. The D2L Support for Students site can be accessed through the link below:

* [DSU D2L Support Resources for Students](https://d2l.sdbor.edu/d2l/home/606414)

# Classroom Policies:

## Attendance and Make-up Policy:

While there is no policy of required attendance of lectures in this course, it is unlikely that you will be able to earn a good grade without regularly attending the lectures. When you miss class, whatever the reason, you really miss important material from three lectures not one. Obviously, the lesson covered that day is missed but you also miss out on important connections of that day’s material with the previous day’s lesson and the following day’s lesson. Also, if you are on academic probation or are an at-risk student, you are required to attend every class meeting. You are expected to arrive at lecture on time and to remain for the entire class period. If for some reason you must arrive late or leave early, please do so quietly. Talking or other behavior that disrupts lecture will not be tolerated. If for any reason I am late for the start of class and you have not received official notification that the class has been canceled, you are expected to remain for 15 minutes before “assuming" that the lecture has been canceled for the day. Above all else, show respect for your classmates. Your attendance, behavior, and participation in the class have effects on others beside yourself.

# DSU Policies:

## Complaint Procedure

Dakota State University seeks to resolve student concerns and complaints in a fair and prompt manner. Students may file a complaint using the [DSU Concerns and Feedback form](https://dsu.wufoo.com/forms/dsu-concerns-and-feedback/). SARA complaints from out-of-state students may be filed using the procedures noted [here](https://catalog.dsu.edu/content.php?catoid=35&navoid=1632&hl=complaint&returnto=search#student-complaints).

## Grade Appeal Policy

If a student believes the final grade assigned in a course was inappropriate, he/she may appeal that grade by filing a formal grade appeal within 15 days of the start of the next academic session. Please see the [Undergraduate Catalog](https://catalog.dsu.edu/content.php?catoid=35&navoid=1614&hl=grade+appeal&returnto=search#Grade_Appeal_Process) or [Graduate Catalog](https://catalog.dsu.edu/content.php?catoid=36&navoid=1666#grade-appeal-process) for the required process to appeal a final grade.

# South Dakota Board of Regents Policy Statements

## Freedom in Learning Statement:

Under Board of Regents and Regental Institutions policy, student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Discussion and debate are critical to education and professional development. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. While the exploration of controversial topics may be an important component of meeting the student learning outcomes in a course, no student will be compelled or directed to personally affirm, adopt, or adhere to any divisive concepts (as defined in SDCL 13-1-67). Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact their home institution to initiate a review of the evaluation.

## ADA Statement:

The Regental Institutions strive to ensure that physical resources, as well as information and communication technologies, are reasonably accessible to users to provide equal access to all. If you encounter any accessibility issues, you are encouraged to immediately contact the instructor of the course and the Office of Disability Services, which will work to resolve the issue as quickly as possible. Please note: if your home institution is not the institution you are enrolled at for a course (host institution), then you should contact your home institution’s Office of Disability services. The disability services at the home and host institution will work together to ensure your request is evaluated and responded to in a timely manner.

## Academic Dishonesty and Misconduct:

Cheating and other forms of academic dishonesty and misconduct run contrary to the purposes of higher education and will not be tolerated. Academic dishonesty includes, but is not limited to, AAC Guideline 5.3.A – Syllabi BOR Required Policy Statements (Last Revised 01/2023) Page 2 of 2 plagiarism, copying answers or work done by another student (either on an exam or an assignment), allowing another student to copy from you, and using unauthorized materials during an exam. The Regental Institution’s policy and procedures on cheating and academic dishonesty can be found in your home institution’s Student Handbook and the governing Board of Regents policies can be found in BOR Policy 2:33 and BOR Policy 3:4. The consequences for cheating and academic dishonesty are outlined in policy.

All forms of academic dishonesty will result in a grade of 0 for the assignment, project, quiz, or exam in question. In addition, I may forward evidence of cheating to the Academic Integrity Board on campus for their consideration. Students found guilty of a second offense of academic dishonesty in this class will also receive a course grade of F.

## Acceptable Use of Technology:

Acceptable Use of Information Technology Resources: While Regental Institutions strive to provide access to computer labs and other technology, it is the student’s responsibility to ensure adequate access to the technology required for a course. This may include access to a computer (not Chromebooks, iPads, etc.), webcam, internet, adequate bandwidth, etc. While utilizing any of the information technology systems students, faculty and staff should observe all relevant laws, regulations, BOR Policy 7.1, and any institutional procedural requirements.

## Emergency Alert Communication:

In the event of an emergency arising on campus under BOR Policy 7:3, your Regental Home Institution will notify the campus community via the emergency alert system. It is the responsibility of the student to ensure that their information is updated in the emergency alert system. The student’s cell phone will be automatically inserted if available and if not, their email address is loaded. Students can at any time update their information in the student alert system.

# The instructor reserves the right to amend this syllabus.