Spring 2016
Probability and Statistics (MATH/STAT 352) 3 credits
Ansari Business Building (AB) Room 102
MW 2:30 – 3:45PM

Instructor: Ilya Zaliapin  Office: Davidson Math & Science (DMS), Room 221
Office hours: MW 1:00-2:15PM + by appointment
Phone: (775) 784-6077  E-mail: zal@unr.edu

The course website is maintained at WebCampus (https://wcl.unr.edu/)

Intro: The use of probability models and statistical methods for data analysis has become common practice in virtually every scientific discipline. This course provides an introduction to the theory and practice of probability and statistics emphasizing their language, essential ideas, and concepts. We will discuss the foundations of probability theory, basic description statistics, graphical representation of data, point and interval estimation, hypothesis testing, correlation, and regression analyses. Working with a statistical package MINITAB will give you an opportunity to see how the concepts discussed in the class are applied to the real data sets.

Catalog description:
Probability experiments; sample spaces, conditional probabilities, random variables, mathematical expectation, variance, Central Limit Theorem, confidence intervals, hypothesis testing and linear regression.

Prerequisites: MATH 182 with a “C-“ or better

Required textbook:

Tentative list of topics:
- Probability experiments
- Random events, sample spaces
- Random variables, discrete and continuous distributions
- Quantitative measures of location and variability
- Exploratory data analysis, statistical plots
- Point and interval estimation
- Hypothesis testing
- Correlation analysis, Linear regression

Student Learning Outcomes: Students will be able to
- Perform basic statistical analysis of a given data set, including summary statistics and plots, point estimation, confidence interval computation, and hypothesis testing.
- Perform basic probability analyses using conditional probabilities, Bayes theorem, and Central Limit Theorem in a variety of practical situations.
- Construct and estimate models using correlation and linear regression techniques.
- Perform statistical analyses using a professional software package and prepare illustrated technical reports.

Required statistical package:
- MINITAB – available free of charge in the Math Center (WRB 1003; http://www.unr.edu/math-center) or via the UNR Citrix Server (http://www.knowledgecenter.unr.edu/dataworks/citrixinfo.html). You also can
install it on your computer for $30 per 6 month from www.minitab.com. The package is an integral part of the course and will be required for homeworks.

**Required scientific calculator:**
- A calculator that will add, subtract, multiply, divide, compute factorials, and raise numbers to powers is required for the course. You **do not** need built-in statistical functions.

**Grading:** Your letter grade is determined by the score accumulated during semester:

<table>
<thead>
<tr>
<th>Letter</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>D+</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. Score</td>
<td>93%</td>
<td>90%</td>
<td>87%</td>
<td>83%</td>
<td>80%</td>
<td>77%</td>
<td>70%</td>
<td>67%</td>
<td>60%</td>
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</tbody>
</table>

*How to calculate your score:*
- Before Monday, May 2, 2016 the score is calculated as follows:

  - HW: 20%
  - Minitab: 15%
  - Midterms: 50% (=2x25%)
  - Attendance: 10%
  - Quizzes: 5%
  - Extra Points: 5%

If on Monday, May 2, 2016 your score is 83% or higher (i.e., your letter grade is B or higher) you may skip the final. In this case, your letter grade for the course will be determined by your score as of May 2.

If on Monday, May 2, 2016 your score is 83% or higher, you still have a right to attend the final. In this case, your score will be calculated **after the final** as described below and **only** that new score will be used to determine your course letter grade. You **may not** go to final and then request to use your pre-final score.

If on Monday, May 2, 2016 your score is below 83%, you **must** attend the final.

- After the final, the score is calculated as follows (lower weight for HWs and midterms, final is added):

  - HW: 10%
  - Minitab: 15%
  - Midterms: 40% (=2x20%)
  - Final: 20%
  - Attendance: 10%
  - Quizzes: 5%
  - Extra Points: 5%

**Midterms:** There will be two midterms scheduled tentatively on Wednesday, March 9 and Wednesday, April 27. There will be a review session on Monday before each midterm.

**Final exam (comprehensive):** Wednesday, May 11, 12:30-2:30PM.

**Exam policy (for midterms and final):** Closed books, closed notes. Calculator is required on exams. There will be no **make-ups** for exams, except legitimate medical reasons. In case of participating in University-related activities or in any other special circumstances, contact instructor in **advance.** If you miss a midterm for a legitimate reason, your final will cost 40%. If you miss both midterms for a legitimate reason, your final will cost 60%.
**Home works** that consist of solving textbook problems will be given and graded weekly. **Minitab computer assignments** will be given and graded approximately every second week (there will be no Minitab assignments when we discuss Probability); you will need to solve problems involving statistical computing and prepare an illustrated report. You are encouraged to discuss HW and Minitab assignments between each other, with TA, and with instructor during office hours; but your work must be written individually. To get the full HW/Minitab credit, the assignments are due by the end of Monday lecture. A late homework results in zero score. E-mails with HW/Minitab reports cannot be accepted.

**Quizzes:** There will be occasional pop quizzes given via WebCampus. Quizzes contribute 5% to your overall performance.

**Extra Points** will be given for extra problems announced during the lectures.

**Re-grading:** If you find that your grade for exam, HW, or quiz is incorrect, contact instructor with a rational justification. All re-grading requests must be submitted to instructor within one week after a grade is announced; late requests will not be granted. The final decision about the new grade is made by the instructor.

**Lecture attendance** is strongly encouraged but not required. It is your responsibility to know the material covered and announcements made in class.

**Recitation attendance** is required. You earn 1 point by attending each recitation section, with 10 points maximum. Thus, you can miss several recitations without lowering your score.

**Course web site** will be maintained at [http://wcl.unr.edu](http://wcl.unr.edu)

It will show the course progress, post homework assignments and important announcements. You are responsible for being familiar with the site content. Also, you are required to check your WebCampus e-mail, which will be used for communication between instructor and students. It will be **not possible** to request instructor to contact you at an alternative e-mail (you can use mail forwarding in WebCampus to receive mails via alternative mail services.)

**Classroom Policy:** Any successful learning experience requires mutual respect on behalf of the student and the instructor. In particular, it is assumed that we are coming to the class for the total duration of a lecture. Should there be a need to come later or leave earlier, choose a seat closest to the door. Switch phones to silent mode. No food or drinks.

**Class Absence Policy:** It is the personal responsibility of the student to consult with the instructor regarding absence from class. Students are responsible for material covered in class, and it is the student’s responsibility to arrange for the completion of all missed classroom work. University-approved extracurricular activities are defined as those sanctioned by a college dean and/or the provost, and may include, but are not limited to, intercollegiate athletics, band, drama, forensics, and recruitment. It is the responsibility of the student to arrange for written notice from the appropriate college dean or the Office of the Provost to their instructor of their participation in official University activities in advance and as soon as the student is aware of the potential need to miss class. In cases of absences due to extended illness, family emergency, bereavement, or other compelling reason, students should notify their instructors as soon as possible and within one week of the start of the absence, and work with them to develop plans, including appropriate deadlines, to make up missed coursework. Faculty have the right to request formal, written documentation in such cases as appropriate. For university policy regarding class absence, see [UAM 3.020](http://www.unr.edu/math-center), [Tutoring Center](http://www.unr.edu/tutoring), and [University Writing Center](http://www.unr.edu/writing_center). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

**Academic Dishonesty** will not be tolerated and will lead to an F grade. Academic dishonesty is defined as: cheating, plagiarism or otherwise obtaining grades under false pretenses. Plagiarism is defined as submitting the language, ideas, thoughts or work of another as one’s own; or assisting in the act of plagiarism by allowing one’s work to be used in this fashion. Cheating is defined as (l) obtaining or providing unauthorized information during an examination through verbal, visual or unauthorized use of
books, notes, text and other materials; (2) obtaining or providing information concerning all or part of an examination prior to that examination; (3) taking an examination for another student, or arranging for another person to take an exam in one’s place; (4) altering or changing test answers after submittal for grading, grades after grades have been awarded, or other academic records once these are official.

For more information see [http://www.unr.edu/stav/acdispol.html](http://www.unr.edu/stav/acdispol.html)

**Class recording policy:** Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.

**Disability Statement:** Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center (Thompson Building, Suite 101) as soon as possible to arrange for appropriate accommodations.

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**Tentative schedule (may vary as course progresses)**

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<thead>
<tr>
<th>Week</th>
<th>Mondays</th>
<th>Wednesdays</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Date</td>
<td>Topic</td>
</tr>
<tr>
<td>1</td>
<td>Jan 18</td>
<td>MLK day</td>
</tr>
<tr>
<td>2</td>
<td>Jan 25</td>
<td>1.1, 1.3</td>
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<tr>
<td>3</td>
<td>Feb 1</td>
<td>2.1</td>
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<tr>
<td>4</td>
<td>Feb 8</td>
<td>2.3</td>
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<tr>
<td>5</td>
<td>Feb 15</td>
<td>President’s day</td>
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<tr>
<td>6</td>
<td>Feb 22</td>
<td>2.5</td>
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<tr>
<td>7</td>
<td>Feb 29</td>
<td>4.2-4.3</td>
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<tr>
<td>8</td>
<td>Mar 7</td>
<td>Review</td>
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<tr>
<td>9</td>
<td>Mar 14</td>
<td>4.5</td>
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<tr>
<td>10</td>
<td>Mar 21</td>
<td>Spring break</td>
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<tr>
<td>11</td>
<td>Mar 28</td>
<td>4.12</td>
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<tr>
<td>12</td>
<td>Apr 4</td>
<td>5.2</td>
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<tr>
<td>13</td>
<td>Apr 11</td>
<td>6.1-6.3</td>
</tr>
<tr>
<td>14</td>
<td>Apr 18</td>
<td>7.1-7.2</td>
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<tr>
<td>15</td>
<td>Apr 25</td>
<td>Review</td>
</tr>
<tr>
<td>16</td>
<td>May 2</td>
<td>Final Review</td>
</tr>
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