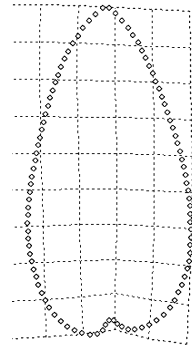


# BIOL 240 —Biometry (4 credits)

Alexey Shipunov

Spring 2019



## SYLLABUS

**Class Dates** : January to May 2019

### Course Description :

Course will cover introductory statistic concepts in a form designed specifically for biology majors, its goal is to strengthen Biology students with statistical knowledge and abilities. It is a practical, software-based examination of the concepts. Only biological, real-world data will be used. Course will concentrate on underlying principles, applicability and practical use of methods covered. R statistical environment will be used as a main tool.

The course relies on the **computer literacy**: file system and basic file operations, basic text operations, spreadsheets, vector and raster graphics, Internet file formats and protocols.

**Learning Outcomes** You will learn methods and principles of sampling, hypotheses testing (non-parametric and parametric), descriptive statistics, contingency, correlation, analysis of variation, linear models and basic multivariate techniques.

**Instructor** : Dr. Alexey Shipunov

**Office** : Moore 229 and University greenhouse

**Office Hours** : Mondays (preferable) and Wednesdays 1–2:50 pm.

**Phone** : 858-3116

**E-mail** : [alexey.shipunov@minotstateu.edu](mailto:alexey.shipunov@minotstateu.edu), this is the preferable way of communication.

**Seminars** : Mondays and Wednesdays, 3 pm to 4:15 pm, Moore 213

**Textbook** : Shipunov A., and many others. Visual statistics. Use R! [Electronic book, continuously updated].

**Web site** : [http://ashipunov.info/shipunov/school/biol\\_240/](http://ashipunov.info/shipunov/school/biol_240/)

**Laboratories** : Tuesdays, 1 pm to 3:50 pm, Moore 213

### Grading :

The class is strictly practical. “Lectures” are not lectures but **seminars** where every student works under the guidance. Sometimes, the seminar will end with a short quiz. On **labs**, students work independently but instructor’s help is provided. Finally, on **exams** students work by themselves, without human help. Typically, lab and exam results are accepted via email.

**Four** exams are given. Missed exams count zero points. There is a possibility for **one make-up** exam. *Receiving zero points for more than one laboratory or for more than one exam results in a failed course.* However, there are five legitimate reasons for absence: (1) emergency situations, (2) attested medical conditions, (3) military duty, (4) participation in MSU sports events, and (5) dependent sick leave. In all these cases, the absence must be announced via e-mail **in advance**.

Points are distributed as follows (grading points may vary):

**Seminar quizzes** :  $\approx 10$  points (1–3 points per question)

**Four exams** :  $\leq 400$  points (assuming 100 points per exam)

**Laboratories** :  $\leq 240$  points (20 points per Lab  $\times$  12 labs)

**Letter Grades** : A  $\geq 90\%$ , B  $\geq 80\%$ , C  $\geq 70\%$  D  $\geq 60\%$ , F  $< 60\%$ .

**Tentative Course Schedule** (subject to change, only exam dates are fixed!):

Week 1	Data and data processing
Week 2	Basics of computer literacy, R basics; Lab 1
Week 3	How to process the data; Lab 2
Week 4	R graphics; Lab 3
Week 5	Types of data; Lab 4
1st exam: <b>February 4th</b> (Monday)	
Week 6	One-dimensional data, descriptive statistics; Lab 5
Week 7	One-dimensional data, descriptive statistics; Lab 6
Week 8	Hypotheses testing; Lab 7
2nd exam: <b>March 4th</b> (Monday)	
<i>Week 10: Spring break</i>	
Week 11	Two samples; Lab 8
Week 12	Two samples, ANOVA; <i>no lab</i>
Week 13	ANOVA; Lab 9
3rd exam: <b>April 8th</b> (Monday)	
Week 14	Contingency tables; Lab 10
Week 15	Correlation; regression; Lab 11
Week 16	Data mining; <i>no lab</i>
Week 17	Data mining; Lab 12
4th exam: <b>May 7th</b> (Tuesday)	

*Please note that the schedule is a subject to change.*

## University Policies

### University Sanctioned Events Policy

Minot State University has a commitment to students who represent the University in official capacities. University-sanctioned activities include events that are required or encouraged by a class, program, club, or athletic team. When a student has a scheduled absence due to a university-sanctioned activity, it is the student's responsibility to communicate with the faculty member prior to his or her absence.

Faculty members should have a procedure for student absences in each syllabus that details the method and advance time for students to communicate their absence. If a student notifies the professor in accordance with the faculty member's policy, students should be allowed to complete class work. If a student does not communicate with the faculty member in advance of the absence, it is up to the faculty member's discretion whether to allow the student to complete the work. If disputes arise with this policy within the semester, students should contact in progressive order, the faculty member, department chair, Assistant Vice President for Academic Affairs, and Vice President of Academic Affairs.

## Academic Honesty Policy with Penalty for Violating the Policy

*See the information in the Undergraduate Catalog and in the Graduate Catalog; also see the Student Handbook.*

## Disability Statement

In coordination with the Access Services, reasonable accommodations will be provided for qualified students with disabilities (LD, Orthopedic, Hearing, Visual, Speech, Psychological, ADD/ADHD, Health Related, TBI, PTSD and Other). Please meet with the instructor during the first week of class to make arrangements. Accommodations and alternative format print materials (large print, audio, disk or Braille) are available through the Access Services, located on campus in the lower level of Lura Manor, or by calling 701-858-3371 or by e-mail at [evelyn.klimpel@minotstateu.edu](mailto:evelyn.klimpel@minotstateu.edu).

## Non-discrimination Statement

Minot State University subscribes to the principles and laws of the state of North Dakota and the federal government pertaining to civil rights and equal opportunity, including Title IX of the 1972 Education Amendments. Minot State University policy prohibits discrimination on the basis of race, gender, religion, age, color, creed, national or ethnic origin, marital status, sexual orientation, gender identity, or disability in the recruitment and admission of students and the employment of faculty, staff, and students, and in the operation of all college programs, activities, and services. Evidence of practices which are inconsistent with this policy should be reported using the Student Complaint and Anti-Discrimination Form located here: <https://form.jotform.com/72996849416981>.

## Title IX Statement

Title IX policies help protect/assist students who have experienced sexual discrimination or violence.

In the event that you choose to write or speak about having survived sexualized violence, including rape, sexual assault, dating violence, domestic violence, or stalking, Minot State University policy requires that, as your instructor, I share this information with Lisa Dooley, Title IX coordinator. Lisa or one of the Deputy Title IX coordinators will contact you to let you know about accommodations and support services at MSU as well as options for holding accountable the person who harmed you. You are not required to speak with them.

If you do not want the Title IX coordinator notified, instead of disclosing this information to your instructor, you can speak confidentially with the following people on campus and in the community. They can connect you with support services and help explore your options now, or in the future:

- MSU Counseling Center, 701 858 3371
- 24-7 Crisis Center and Shelter: Domestic Violence Crisis Center, 701 548 2480
- 24-7 Rape Crisis Line: Domestic Violence Crisis Center, 701 857 2500
- Campus Ministry (Wellness Center, 2nd floor)