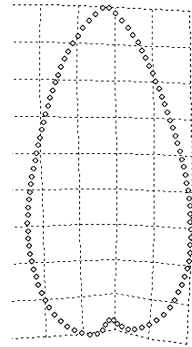# BIOL 240 —Biometry (4 credits)

Alexey Shipunov

Spring 2015

SYLLABUS

Class Dates : January 14 to May 14, 2015

Course Description :

Course will cover introductory statistic concepts in a form designed specifically for biology majors, its goal is to strengthen Biology and Chemistry students with statistical knowledge and abilities. It is a practical, software-based examination of the concepts of sampling, hypotheses testing (non-parametric and parametric), descriptive statistics, contingency, correlation, analysis of variation, linear models and basic multivariate techniques. 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 software 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.

Instructor : Dr. Alexey Shipunov

Office : Moore 229

Office Hours : Mondays, Wednesdays and Fridays, 10:00 a.m. to 11:00 a.m.

Phone : 858-3116

E-mail : alexey.shipunov@minotstateu.edu — this is the preferrable way of communication.

Lectures : Mondays and Wednesdays, 11:35 a.m. to 12:50 a.m., Moore 213

Textbook : Shipunov A., and others. Visual statistics. Use R!. DMK Press, 2012. [In Russian]. English translation of the book will be partly available on the course Web site.

Web site : http://ashipunov.info/shipunov/school/biol_330/

Laboratories : Thursdays, 9 a.m. to 12 p.m., Moore 213

Grading :

Four equal exams are given during the semester. Only the **three best exams** contribute to the final grade. Missed exams count zero points. There are **no make-up** exams.

Receiving zero points for more than one laboratory results in a failed course. However, there are five legitimate reasons for absence from labs: (1) emergency situations, (2) attested medical conditions, (3) military duty, (4) participation in MSU sports events, and (5) dependent sick leave. Absence from exams or laboratories must be announced to me via e-mail in advance. I strongly recommend to attend lectures regularly since lectures is the only source of your practical skills.

Grading of laboratories is based on reports. Written reports are prepared and finished during laboratory sessions and sent via e-mail to the instructor.

Every lecture will have a computer-based, practical part. On the lecture, I may give short test question(s) to answer.

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

Lecture tests : ≤ 30 points (1–3 points per question)

Three best exams : ≤ 300 points (assuming 100 points per exam)

Laboratories : ≤ 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%.

Academic Honesty : Honesty and integrity are central to academic life at Minot State University. Cheating may affect the student in accordance with the grading policy: a **minimum** of one letter grade will be deducted from the grade for academic dishonesty / plagiarism.

Disability Needs : In coordination with Disability Support services, reasonable accommodations will be provided for qualified students with disabilities. Please contact the instructor during the first week of class to make arrangements. Additional information is available from MSU Disability Support Services.

Tentative Course Schedule (subject to change):

Week 1	Jan 14	Data and data processing; no lab
Week 2	Jan 21	Basics of computer literacy, R basics; Lab 1
Week 3	Jan 26, 28	How to process the data; Lab 2
Week 4	Feb 2, 4	R graphics; Lab 3
"		1st exam: Feb 9
Weeks 5, 6	Feb 11, 19	Types of data; Lab 4 and 5
Week 7	Feb 23, 25	One-dimensional data, descriptive statistics; Lab 6
Week 8	Mar 2, 4	Hypotheses testing; Lab 7
"		2nd exam: Mar 9
Week 9	Mar 11	Two samples; no lab
		Week 10: Spring break
Week 11	Mar 23, 25	Contingency tables; Lab 8
Week 12	Mar 30, Apr 1	Correlation; no lab
Week 13	Apr 8	Regression; Lab 9
"		3rd exam: Apr 13
Week 14	Apr 15	ANOVA; Lab 10
Week 15	Apr 20, 22	ANOVA; Lab 11
Week 16	Apr 27, 29	Data mining; Lab 12
Week 17	May 4, 6	Data mining; no lab
Week 18		4th exam: Thursday May 14, 12:00–12:50 p.m.