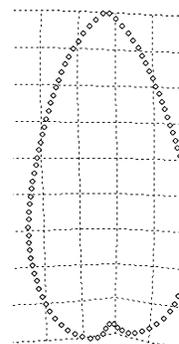


# BIOL 299 — Biometry (4 credits)

Alexey Shipunov

Spring 2012



## SYLLABUS

**Class Dates** : January 11 to May 8, 2011

### 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 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 will be accepted as substitute for Math 240.

**Instructor** : Dr. Alexey Shipunov

**Office** : Moore 229

**Office Hours** : Wednesdays and Fridays, 9 a.m. to 12 a.m.

**Phone** : 858-3116

**E-mail** : alexey.shipunov@minotstateu.edu

**Lectures** : Wednesdays and Fridays, 7:30 a.m. to 8:50 a.m., Moore 213

**Textbook** : Dalgaard, P. Introductory Statistics with R. 2nd edition. Springer, 2008.

**Laboratories** : Tuesdays, 3 p.m. to 6 p.m.

### 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.

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. Absence from exams or laboratories needs to be announced to the instructor in advance. I strongly recommend to attend lectures regularly since lectures are the main reference text.

Receiving zero points for more than one laboratory results in a failed course. Grading of laboratories is based on reports. Written reports are prepared and finished during laboratory sessions and sent via e-mail or passed to the instructor right after the particular laboratory session.

Every lecture will contain a computer-based, practical part. In addition, at the end of every lecture I will give one short test question to answer.

A total of 600 points can be earned and are distributed as follows (grading points may vary):

**Lecture tests** : 60 points (1–3 points per question)

**Three best exams** : 300 points

**Laboratories** : 240 points (20 points per lab)

**Letter Grades** : A  $\geq$  90%, B  $\geq$  80%, C  $\geq$  70% D  $\geq$  60%, F < 60%. A minimum of one letter grade will be deducted from the grade for academic dishonesty / plagiarism.

**Tentative Course Schedule** (subject to change):

Week 1	Jan 11, 13	Data and data processing; no lab
Week 2	Jan 18, 20	How to process data: R basics; no lab
Week 3	Jan 24, 25, 27	How to process data: R basics; Lab 1
Week 4	Jan 31, Feb 1	R graphics; Lab 2
"		1st exam: Feb 3
Week 5	Feb 7, 8, 10	Types of data; Lab 3
Week 6	Feb 14, 15, 17	One-dimensional data, descriptive statistics; Lab 4
Week 7	Feb 21, 22, 24	Hypotheses testing for one sample; Lab 5
Week 8	Feb 28, Feb 29	Hypotheses testing; Lab 6
"		2nd exam: Mar 2
Week 9	Mar 7, 9	Two samples; no lab
		<i>Week 10: Spring break</i>
Week 11	Mar 20, 21, 23	Contingency tables; correlation; Lab 7
Week 12	Mar 27, 28, 30	Regression; Lab 8
Week 13	Apr 3, 4	Regression; Lab 9
Week 14	Apr 11, 13	Regression; no lab
Week 15	Apr 17, 18	ANOVA; Lab 10
"		3rd exam: Apr 20
Week 16	Apr 24, 25, 27	Multidimensional data, data mining; Lab 11
Week 17	May 1, 2, 4	Multidimensional data, data mining; Lab 12
Week 18		4th exam: Wednesday May 9, 8:00–8:50 a.m.