BIOL 111 —Concepts of Biology (4 credits)

Alexey Shipunov

Spring 2017

SYLLABUS

Class Dates: January to May 2017

Description:

Biology is the largest of all sciences, and develops most rapidly. It is simply impossible to cover BIOLOGY in one-semester course. I choose a strategy to elucidate the most important biological concepts from the standpoint of the **History of Life**. We will go through the major events in this history and learn basic chemistry of life, cell construction, genes and DNA, organization of animal body and other fundamental biological ideas.

Instructor: Dr. Alexey Shipunov

Office: Moore 229 and University greenhouse (small glass building attached to Cyril Moore)

Office Hours: Mondays and Wednesdays, 1 pm to 2:50 pm.

Phone: 858-3116

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

Lectures: Mondays, Wednesdays and Fridays, 12:00 pm to 12:50 pm, Moore 16

Laboratories: see lab manual.

Textbook: (draft, continuously updated) http://ashipunov.info/shipunov/school/biol_111/ph_key/ph_key.pdf

Web site: http://ashipunov.info/shipunov/school/biol_111

Grading:

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

To prepare for the exam, you should: (a) go through lecture slides; (b) clarify remaining questions with a textbook; (c) use external sources to explore the rest. Exam sheets will consist of multiple choice questions; we will use scantron.

I strongly recommend to attend lectures regularly. There are only 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.

A total of ≈ 580 points can be earned (grading points may vary): four best exams: 400 points; laboratories: 180 points (15 points per lab).

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

Academic Honesty: Honesty and integrity are central to academic life at Minot State University. Cheating may severely affect the student as Biology 111 will be considered as **failed** 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.

Minot State University interpersonal abuse statement (Title IX): Minot State University strives to create a campus community free from interpersonal abuse including sexual misconduct. In working to achieve this intent, Minot State University commits to: taking action to stop sexual misconduct; taking action to remedy its effects by providing advocacy, support and appropriate referral services for recipients of the behavior; taking action to prevent recurrences; educating individuals and promoting discussions on interpersonal abuse and violence; and conducting impartial investigation of all reports/notices of sexual misconduct through fair, equitable and prompt procedures. Investigations will be independent of and separate from law enforcement investigations of criminal activity.

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

Week 1 Jan 11, 13 4,500 Mya* Origin of Earth – Intro test – Scientific methods – Basic chemistry lab Week 2 Jan 18, 20 3,850 Mya Origin of life – Proofs of evolution – RNA, proteins, DNA and more branes; Lab 1
Week 3 Jan 23, 25, 27 2,400 Mya First life; <i>Lab 2</i>
1st exam: Jan 30
Week 4 Feb 1, 3 1,800 Mya First life, oxygen revolution, prokaryotic cell – Photosynthesis <i>Lab</i>
Week 5 Feb 6, 8 " Eukaryotes and symbiogenesis, Precambrian life – Structure and fund of cell, mitosis; Lab 4
Week 6 Feb 13, 15, 17 650 Mya Multicellular life, Ediacarian biota – Tissues; Lab 5
Week 7 Feb 22, 24 550 Mya Cambrian explosion; no lab
2nd exam: Feb 27
Week 8 Mar 1, 3 500 Mya Origin of animals; Lab canceled
Week 9 Mar 6, 8 485 Mya Animal organs and organ systems; Lab 6
Week 10: Spring break
Week 11 Mar 20, 22, 24 450 Mya Animal diversity; <i>Lab</i> 7
3rd exam: Mar 27
Week 12 Mar 29, 31 400 Mya Plants are going terrestrial – Structure and function of plants; Lab
Week 13 Apr 3, 5, 7 350 Mya Meiosis and life cycle – Reproduction, genetics and inheritance; La
Week 14 Apr 10, 12 200 Mya Vertebrates are going terrestrial; no lab
4th exam: Apr 19
Week 15 Apr 21 66 Mya Seed and seed plants – Jurassic park – Diversity of tetrapods; Lab
Week 16 Apr 24, 26, 28 20 Mya Mass extinctions – Natural selection and speciation – Ecology and lution; Lab 12
Week 17 May 1, 3, 5 0 Mya Age of beasts – Main biomes on Earth – Future evolution; no lab
5th exam: May 11 , 12:00–12:50 Moore 16

^{* &}quot;Mya" stands for "million years ago".