

SYLLABUS: BSC 413 / 513 PRINCIPLES OF ORGANIC EVOLUTION

Department of Biological Sciences, College of Science, Marshall University

ONLINE COURSE SUMMER I, 2018

This course begins on Monday, May 14, 2018 and ends on August 3, 2018 (12 weeks)

Please note that all times are Eastern.

INSTRUCTOR: Dr. Victor Fet, email: fet@marshall.edu

Office: **Science** 206, phone: 304-696-3116.

University Policies: By enrolling in this course, you agree to the University Policies listed below:

Academic Dishonesty / Excused Absence Policy for Undergraduates / Computing Services Acceptable Use / Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment. Please read the full text of each policy at www.marshall.edu/academic-affairs/policies/

Plagiarism and cheating (such as copying material from the Web) will NOT be tolerated, and could result in immediate dismissal (F grade). You are absolutely and solely responsible for any material covered or announcements made.

COURSE MATERIALS:

Textbook (required): D. Futuyma, M. Kirkpatrick. 2016. *EVOLUTION*. Sinauer, 4th Ed.

ISBN: 978-1605356051

(or D. Futuyma, 2013. *EVOLUTION* 3d Ed)

ISBN: 978-1605351155

The book can be ordered from Marshall University Bookstore or at any other book seller of your choice (or rented on Amazon).

Publisher's website: <https://evolution4e.sinauer.com/>

Technical Requirements & Minimum Skills: Current word processing software (MS Word), the latest version of Adobe Reader; Internet access; Edge/Explorer or Firefox for Windows; Safari or Explorer for Apple computers. Please see MUOnline for details.

COURSE DETAILS

Description (from University Catalog): Facts and possible mechanisms underlying the unity and diversity of life with emphasis on neo-Darwinian concepts of the role of species in evolutionary phenomena. **3 credit hours.**

Prerequisites: BSC 302, or BSC 320, or BSC 322, or BSC 324, or an equivalent. You are also **expected** to know basic material of Introductory Biology at the level of BSC 120 or an equivalent.

Course Requirements & Assessment: four **online TESTS** (including final) (response time **120 min, one attempt**) @ 100 pts= 400 pts; 10 **online QUIZZES** @ 20 pts (response time **30 min, 2 attempts**) = 200 pts; four **homework assignments** @ 25 pts=100 pts. **ALL THESE ASSIGNMENTS ARE POSTED ONLINE A WEEK BEFORE THEY ARE DUE, so you have an ample time.**

NO LATE SUBMISSIONS will be accepted.

In addition, you will write a **term paper** = 100 pts, total 800 pts. See **Schedule** for more details.

Grading Policy: (%): 90-100 A; 81-89 B; 71-80 C; 60-70 D; < 60 F.

NO EXTRA CREDIT WILL BE GIVEN.

CLASS INTERACTION: Communication, interaction and collaboration in this online class are essential and highly encouraged. Please feel free to **communicate** with your instructor via **Course Email**. Our **Evolution Discussion Board** (a moderated forum) is another main tool for student **interaction** with the **instructor** and **with other students**. Use it individually, or **collaborate** with other students as you study for your quizzes and tests. Please **identify yourself** online, be concise, and adhere to other etiquette expectations ("netiquette") for online discussions and email; see e.g. <http://www.education.com/reference/article/netiquette-rules-behavior-internet/>

I will respond to all emails and voicemails within 24 hours on weekdays and 48 hours on weekends.

LEARNING OBJECTIVES / Expected outcomes: Students will understand and be able to explain, with relevant examples, major fundamental principles of biological *macro- and microevolution* as known to modern biological science. More specifically, students will be able to (a) interpret the data on long-term *history* of life and origin of biodiversity (documented by *fossil record* and reconstructed from *phylogeny and systematics*) and (b) understand *genetic mechanisms* involved with evolutionary change at population and species level (population genetics; mutations; natural selection; genetic drift; speciation).

INSTRUCTIONAL RESOURCES: **Course activities** include assigned readings (**Learning Materials**), aligned with learning objectives. Students are expected to keep up with the assigned class readings. **Learning Materials (based on 3d Ed of the textbook!)** include instructor's original **Lecture Notes** (13 PDF files, total 86 pages) and enhanced textbook-based **Figures** (13 PDF files, total 328 figures) to give students an overview of the (very) big picture of Evolutionary Biology. Scheduled self-study and discussion activities allow students to process this information in time.

ASSESSMENT for the stated *learning objectives* will include: **10 quizzes, four tests,** and **four homework reports** that assess student progress or mastery of learning of each particular topic covered. In addition, **a term paper** will be written (two term papers for graduate students). **Feedback** is provided to students immediately after submission of their assignments, so you will be able to track your learning progress. A **draft term paper** is requested in advance to provide feedback on final version. Tests, Quizzes, and Homeworks are **aligned** with the sequence of learning objectives; see Schedule.

Learning motivation: this class is specifically designed to generate curiosity and sustain attention of a Biology student. Evolutionary Biology is an *interdisciplinary* field; it covers large number of challenging and even controversial issues concerning evolution -- hereditary change over time, or Darwin's "descent with modification". **Course Content** includes Learning Materials and assessment activities relevant to the stated *learning objectives*. Course progresses gradually, building a body of knowledge: first on *macroevolution / history of life*, and then on *microevolution / genetics and natural selection*. This order of learning activities *sustains student confidence* in their ability to master and complete this diverse class.

SCHEDULE - BSC 413 / 513 Principles of Organic Evolution
(Summer I 2018 – May 14 to August 3)

CONTENT	Textbook Chapter		Dates when the materials are posted online	Due Dates for the assignment submissions (by 11:59 EST)
	4 th Ed 2016	3d Ed 2013		
<i>Introduction & Short History</i>	1	1		
Quiz 1			Monday, May 14	Monday, May 21
<i>Tree of Life: Classification & Phylogeny</i>	2, 16	2		
Homework 1 - PHYLOGENY			Monday, May 14	Monday, May 21
Quiz 2			Thursday, May 17	Thursday, May 24

<i>Patterns of Evolution</i>	2	3		
Quiz 3			Monday, May 21	Monday, May 28
<i>Evolution in the Fossil Record</i>	17 (part)	4		
Quiz 4			Thursday, May 24	Thursday, May 31
TEST 1			Monday, May 28	Monday, June 4
<i>A History of Life on Earth 1: Origin of Life to Paleozoic Era</i>	17	5		
Homework 2 - HISTORY OF LIFE			Monday, June 4	Monday, June 11
<i>Deadline to Choose your Term Paper subject (email me!)</i>				Monday, June 11
Quiz 5			Monday, June 4	Monday, June 11
<i>A History of Life on Earth 2: Mesozoic & Cenozoic Eras</i>	17	5		
Quiz 6			Monday, June 11	Monday, June 18
<i>The Geography of Evolution</i>	18	6		
Homework 3 – GEOGRAPHY OF LIFE			Monday, June 18	Monday, June 25
TEST 2			Monday, June 18	Monday, June 25
The Origin of Genetic Variation (Mutations)	4	8		
Quiz 7			Monday, June 25	Monday, July 2
Variation: The Foundation of Evolution (Population Genetics)	4	9		
Quiz 8			Monday, July 2	Monday, July 9
<i>First Draft Term Paper Due (for 10 bonus points)</i>				Monday, July 9
Genetic Drift: Evolution at Random	7	10 (part)		
TEST 3			Monday, July 9	Monday, July 16
Natural Selection & Adaptation; Genetical Theory of Natural Selection	3, 5 (part)	11, 12 (part)		
Quiz 9			Monday, July 16	Monday, July 23
Homework 4 - Natural Selection			Monday, July 16	Monday, July 23
Species & Speciation	9	17, 18 (part)		
Quiz 10			Monday, July 23	Monday, July 30
<i>Final Version of Term Paper Due</i>				Monday, July 30
FINAL TEST (comprehensive)			Monday, July 30	Friday, August 3