



**Course** BIOL 3V94.001  
**Topics in Biology: Evolution and Development**  
**Professor** Elizabeth Pickett, PhD  
**Term** Spring 2013  
**Meetings** Tues & Thurs, 10-11:15am, FO 3.222

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### Professor's Contact Information

**Office Phone** 972-883-2646  
**Office Location** SLC 2.204  
**Email Address** [beth.pickett@utdallas.edu](mailto:beth.pickett@utdallas.edu)  
**Office Hours** Thursdays 1-3 or by appointment

### General Course Information

**Pre-requisites, Co-requisites, & other restrictions** Basic genetics and molecular biology knowledge is expected.

**Course Description** The objective of the course is to integrate evolutionary biology and developmental biology into a common framework, focusing on the evolution of developmental pathways in order to explain the evolution of animal morphology.

**Required Texts & Materials** *From DNA to Diversity: Molecular Genetics and the Evolution of Animal Design, 2<sup>nd</sup> Ed.* by S.B. Carroll, J.K. Grenier, and S.D. Weatherbee (Blackwell publishing)

Journal publications available online and through UTD Library Reserves

### Course Policies

<b>Grading Criteria</b>	<p>Points are allocated as follows:</p> <ul style="list-style-type: none"><li>--300 points from exams (3 non-cumulative exams at 100 points each)</li><li>--100 points from assignments/quizzes</li><li>--100 points from participation during group discussions</li></ul> <p>Grades will be based on total number of points earned:</p> <ul style="list-style-type: none"><li>485+ for A+</li><li>465 - 484 for A</li><li>450 - 464 for A-</li><li>435 - 449 for B+</li><li>415 - 434 for B</li><li>400 - 414 for B-</li><li>385 - 399 for C+</li><li>365 - 384 for C</li><li>350 - 364 for C-</li><li>335 - 349 for D+</li><li>315 - 334 for D</li><li>300 - 314 for D-</li><li>299 or less for F</li></ul>
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<b>Make-up Exams</b>	Make-up exams will be given only if: (a) you were seriously ill and have verifiable documentation from a physician, (b) you were detained the day and time of the exam, or (c) you made arrangements prior to the exam to attend an urgent family affair (e.g., funeral). In any of these cases, you must notify the professor in advance of the scheduled time of the exam (call and leave a voice-mail message if you can do nothing else). Otherwise, you will receive a 0. It is your responsibility to make sure that an exam is made up within one week of the scheduled time.
<b>Extra Credit</b>	An opportunity to earn extra credit by leading a group discussion will be available in the second half of the semester.
<b>Late Work</b>	Late work will only be accepted if due to extenuating circumstances as judged by the instructor.
<b>Class Attendance</b>	Attendance is expected and failure to attend will impact your participation score in a negative manner. Participation points will be assigned during all discussions (which will occur on days when a paper set was the assigned reading.) If you are unable to attend due to a scheduled event (interview, UTD sport/club event, etc.), notify the instructor of your absence in advance. If you are unable to attend due to illness, contact the instructor as soon as possible regarding your situation.
<b>Classroom Citizenship</b>	Please turn off your cell phones or set them to vibrate. If you must take an urgent call, step outside the classroom to answer it. You are welcome to use a computer (laptop etc.) in class, but please be considerate and refrain from playing games, videos, etc. Audio recording of lectures is permitted.
<b>UT Dallas Syllabus Policies and Procedures</b>	<i>The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.</i>  <i>Please go to <a href="http://go.utdallas.edu/syllabus-policies">http://go.utdallas.edu/syllabus-policies</a> for these policies.</i>

## Academic Calendar

Day	Date	Lecture	Reading
T	Jan 15	1 - Course policies and introduction	
R	Jan 17	2 - A brief history of animals	Preface, Chapter 1
T	Jan 22	3 - What is “evo-devo?”	
R	Jan 24	4 - The genetic toolkit for development	Chapter 2
T	Jan 29	5 - Building animals, part 1	Chapter 3
R	Jan 31	6 - Building animals, part 2	Chapter 3
T	Feb 5	7 - Evolution of the toolkit	Chapter 4
R	Feb 7	8 - Evolution of the toolkit: Case studies	Paper set 1
T	Feb 12	9 - Diversification of body plans	Chapter 5
R	Feb 14	EXAM 1 (Lectures 1-8)	
T	Feb 19	10 - Diversification of body plans: Case studies	Paper set 2
R	Feb 21	11 - Evolution of morphological novelties	Chapter 6
T	Feb 26	12 - Evolution of morphological novelties: Case studies	Paper set 3
R	Feb 28	13 - Morphological variation and species divergence	Chapter 7
T	Mar 5	14 - Morphological variation and species divergence: Case studies	Paper set 4
R	Mar 7	15 - The primacy of regulatory evolution	Chapter 8
SPRING BREAK			
T	Mar 19	16 - Stabilizing selection	Paper set 5
R	Mar 21	17 - Genetic basis of expression differences	Paper set 6
T	Mar 26	EXAM 2 (lectures 9-17)	
R	Mar 28	18 - Epigenetic basis of expression differences	Paper set 7
T	Apr 2	19 - Evolution of sex	Paper set 8
R	Apr 4	20 - Mechanisms of regulatory divergence	Paper set 9
T	Apr 9	21 - Regressive evolution	Paper set 10
R	Apr 11	NO CLASS	
T	Apr 16	22 - Developmental system drift	Paper set 11
R	Apr 18	23 - Developmental constraints	Paper set 12
T	Apr 23	24 - Structural modifications	Paper set 13
R	Apr 25	25 - Pigmentation evolution	Paper set 14
T	Apr 30	26 - Regulatory mechanisms	Paper set 15
R	May 2	Make-up day (in case of snow)	
R	May 9 8-10:45AM	EXAM 3 (lectures 18-26)	

*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the instructor.*