

<b>ORIGINATOR'S SECTION:</b>														
<b>1. College:</b> <input type="checkbox"/> CHABSS <input type="checkbox"/> CoBA <input type="checkbox"/> CoEHHS <input checked="" type="checkbox"/> CSM	<b>Desired Term and Year of Implementation (e.g., Fall 2008):</b> Spring 2018													
<b>2. Course is to be considered for G.E.? (If yes, also fill out appropriate GE form*)</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No														
<b>3. Course will be a variable-topics (generic) course?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ("generic" is a placeholder for topics)														
<b>4. Course abbreviation and Number:*</b> BIOL 404														
<b>5. Title: (Titles using jargon, slang, copyrighted names, trade names, or any non-essential punctuation may not be used.)</b> Developmental Physiology														
<b>6. Abbreviated Title for PeopleSoft:</b> (no more than 25 characters, including spaces) Dev Physiol														
<b>7. Number of Units:</b> 3														
<b>8. Catalog Description:</b> (Not to exceed 80 words; language should conform to catalog copy. Please consult the catalog for models of style and format; include all necessary information regarding consent for enrollment, pre- and/or corequisites, repeated enrollment, crosslisting, as detailed below. Such information does <u>not</u> count toward the 80-word limit.)  Provides an in-depth analysis of developmental physiology. Examples of many different animal groups will be used to convey important concepts in how animal function develops, how development is influenced by the environment, and how development in other animals can inform us about human development and disease. Major topics will include the basics of developmental biology, the link between development, physiology and evolution, the interaction between the environment and physiology during development, phenotypic plasticity, and how physiological systems develop. <i>Prerequisite: BIOL 353.</i>														
<b>9. Why is this course being proposed?</b>  This is a new physiology elective course developed and taught by a new faculty member. The course will teach core concepts of developmental physiology using a range of animal groups. Developmental Physiology is an expanding field that lies at the nexus of developmental biology, ecology, evolution and medicine. This class is intended for Biology majors who have taken Comparative Animal Physiology (BIOL 353) and will be useful for a range of careers, from medicine to conservation, as the course discusses concepts ranging from the role of development in disease to how climate change may influence developmental physiology and resultant ecology and evolution of species. This course will serve as an important additional elective for those Biology majors who have declared a physiology concentration. The lecture will be offered along with a separate laboratory, which will be optional, and concurrently with the graduate version (BIOL 604).														
<b>10. Mode of Instruction*</b> For definitions of the Course Classification Numbers: <a href="http://www.csusm.edu/academic_programs/curriculumsheduling/catalogcurricula/DOCUMENTS/Curricular_Forms_Table/Instructional%20Mode%20Conventions.pdf">http://www.csusm.edu/academic_programs/curriculumsheduling/catalogcurricula/DOCUMENTS/Curricular_Forms_Table/Instructional%20Mode%20Conventions.pdf</a>														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Type of Instruction</th> <th style="text-align: center;">Number of Credit Units</th> <th style="text-align: center;">Instructional Mode (Course Classification Number)</th> </tr> </thead> <tbody> <tr> <td>Lecture</td> <td style="text-align: center;">3</td> <td style="text-align: center;">C2</td> </tr> <tr> <td>Activity</td> <td></td> <td></td> </tr> <tr> <td>Lab</td> <td></td> <td></td> </tr> </tbody> </table>	Type of Instruction	Number of Credit Units	Instructional Mode (Course Classification Number)	Lecture	3	C2	Activity			Lab		
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Activity														
Lab														
<b>11. Grading Method:*</b> <input checked="" type="checkbox"/> Normal (N) (Allows Letter Grade +/-, and Credit/No Credit) <input type="checkbox"/> Normal Plus Report-in-Progress (NP) (Allows Letter Grade +/-, Credit/No Credit, and Report-in-Progress) <input type="checkbox"/> Credit/No Credit Only (C) <input type="checkbox"/> Credit/No Credit or Report-in-Progress Only (CP)														
<b>12. If the (NP) or (CP) grading system was selected, please explain the need for this grade option.</b>														
<b>13. Course Requires Consent for Enrollment?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  <input type="checkbox"/> Faculty <input type="checkbox"/> Credential Analyst <input type="checkbox"/> Dean <input type="checkbox"/> Program/Department - Director/Chair														

\* If Originator is uncertain of this entry, please consult with Program/Department Director/Chair.



14. Course Can be Taken for Credit More than Once? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, how many times? (including first offering)	
15. Is Course Crosslisted: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, indicate which course and check "yes" in item #22 below.	
16. Prerequisite(s): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No BIOL 210, BIOL 211, BIOL 215, BIOL 353	
17. Corequisite(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
18. Documentation attached: <input checked="" type="checkbox"/> Syllabus <input type="checkbox"/> Detailed Course Outline	
19. If this course has been offered as a topic, please enter topic abbreviation, number, and suffix:* BIOL 486-5 Dev Physiol	
20. How often will this course be offered once established?* Approximately every other year	

<b>PROGRAM DIRECTOR/CHAIR - COLLEGE CURRICULUM COMMITTEE SECTION:</b> (Mandatory information – all items in this section must be completed.)			
21. Does this course fulfill a requirement for any major (i.e., core course or elective for a major, majors in other departments, minors in other departments)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  If yes, please specify: Biology students may use this lecture towards their requirement to have 19 units of upper division Biology electives toward their major.			
22. Does this course impact other discipline(s)? (If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.			
Discipline	Signature	Date	_____Support _____Oppose
Discipline	Signature	Date	_____Support _____Oppose

**SIGNATURES : (COLLEGE LEVEL) :**

1. Originator (please print or type name)	Casey Mueller	12/09/16
2. Program Director/Chair	[Signature]	12/9/16
3. College Curriculum Committee	[Signature]	2/7/16
4. College Dean (or Designee)	Theresa Dyer	2/8/17

**(UNIVERSITY LEVEL)**

5. UCC Committee Chair	_____	Date
6. Vice President for Academic Affairs (or Designee)	_____	Date
7. President (or Designee)	_____	Date

**Department of Biological Sciences  
California State University, San Marcos**

**Biology 404: Developmental Physiology  
Example Syllabus**

**Class Times:**

**Instructor Information:**

Dr. Casey Mueller  
Office: SCI 1 Room 210A  
Telephone: 760 750 8508  
Email: [cmueller@csusm.edu](mailto:cmueller@csusm.edu)

**Office Hours:**

**Course Description:**

This course provides an in-depth analysis of developmental physiology. The course takes a strong comparative approach, using examples of many different animal groups to convey important concepts in how animal function develops, how development is influenced by the environment, and how development in other animals can inform us about human development and disease. The course is taught through a combination of lectures and the use of case studies to provide an overview of the basics of developmental biology, the link between development, physiology and evolution, the interaction between the environment and physiology during development, phenotypic plasticity, and how physiological systems develop. Specific topics include embryonic gas exchange, developmental energy use, development of thermoregulation and cardiovascular function, and ecotoxicology.

**Course Learning Objectives:**

Students who successfully complete this course should:

1. Understand basic principles of developmental physiology.
2. Understand the main developmental processes and how they are influenced by the environment.
3. Appreciate the diversity of physiological mechanisms present in a wide range of animal taxa.
4. Apply physiological principles to understand different situations that animals may encounter.
5. Gain an appreciation for collaboration and discussion with fellow students.
6. Learn to read primary peer-reviewed scientific literature in the field of developmental physiology.
7. Be able to articulate their knowledge of animal physiology to others.

These course learning objectives contribute to the overall **Biological Sciences program learning objectives**, which include:

1. Use the scientific method to ask testable questions and to design and conduct laboratory, field, or theoretical investigations to address these questions.
2. Apply knowledge of the major principles from the fundamental areas of a) cellular and molecular biology, b) genetics, c) physiology, and d) ecology and evolution to biological questions.
3. Employ mathematical and computational skills to organize, analyze, and evaluate biological data.
4. Locate, determine the reliability of, critically evaluate and summarize scientific literature and other sources of biological information.
5. Communicate biological information in an appropriate written and/or oral format to both scientific and general audiences.

**Prerequisites:** BIOL 353 with a grade of C or better.

**Recommended Materials:** There is no required textbook for the course. Students should have access to online literature search engines and be able to access primary literature through the CSUSM library portal.

**Course Components:**

*Lectures:* There are two 75 min lectures each week. PowerPoint lecture files and other relevant materials for class discussion will be posted on Cougar Courses prior to or after class. In addition to lectures, students are expected to spend a *minimum* of two hours a week engaged in learning. This includes background reading, which, in addition to good note taking and participation in lectures, will help ensure success in this course.

*In class assignments/Homework:* In class assignments and homework may include answers to questions related to lecture material, paper summaries and critiques, short topic searches. These will be handed in either at the beginning or end of lectures. Attendance at lecture will ensure you do not miss out on points earned from these assignments.

*Literature review:* Students will choose a topic of interest to them that lies within one of ten broad research areas in the field of developmental physiology. They will conduct a literature search on their chosen topic and summarize the state of the field. Students are expected to move beyond a simple summary of the topic and include their opinions on the research being undertaken.

*Exams:* There will be two exams for the course that will test your understanding of key concepts. A midterm will occur during lecture time and a final exam during finals week. The exams may consist of multiple choice, free response and diagrammatic questions. Exams will cover material presented and discussed in lectures. The exams contribute to the writing requirement of this course.

*Participation:* Lecture attendance is required. Active participation in class, making use of office hours, and visiting a biology professor for advising will also contribute to your participation grade.

*University writing requirement:* This course will meet the university writing requirement for a 3 unit course through the literature review, other in class and homework writing assignments, and the free response portions of the exams.

**Assessment:**

The course will be graded based on 400 points, as follows:

	<b>Points</b>	<b>%</b>
In class assignments/homework	120	30
Literature Review	80	20
Midterm Exam	60	15
Final Exam	80	20
Participation	60	15
	<b>400</b>	<b>100</b>

Grades will be assigned approximately as a percentage of total points with:

≥92%	A	72-77.9%	C
90-91.9%	A-	70-71.9%	C-
88-89.9%	B+	68-69.9%	D+
82-87.9%	B	62-67.9%	D
80-81.9%	B-	60-61.9%	D-
78-79.9%	C+	<60%	F

If you choose to Withdraw from this course during the semester, it is your responsibility to initiate a withdrawal with the proper college office (Cougar Central). Failure to do so will result in you receiving an “F” or “FW” in this course.

### **Cougar Courses:**

This course is an in person course, but you will access many course materials on the class Cougar Courses web site (<http://cc.csusm.edu>). Cougar Courses will be used to support student-instructor communication and provide access to lecture files and support materials. If you are unfamiliar with using Cougar Courses please contact the student help desk at IITS (760 750 6505).

### **Class Policies:**

*Excused absences:* Students who know ahead of time that they will miss class, and have a legitimate and compelling reason for missing the class (this will be determined by Dr. Mueller on a case by case basis), will be granted an excused absence if they notify Dr. Mueller prior to the missed class. Students are still expected to submit assignments due that day.

*Late turn-in of assessments:* Missed in class assignments, homework and exams will receive a zero unless arrangements have been made *in advance* and a compelling reason is presented. A late Paper Review will receive a 10% deduction per day for the first 5 days, after which a grade of zero will be received.

*Academic dishonesty:* Cheating will not be tolerated in any form. You have ample opportunity to get help in this class, from your instructor and from your classmates, and you are encouraged to make use of these resources. However, any work you submit for grading must represent your own thinking, and must be in your own words. Any cheating or plagiarism that is detected will be reported to the Dean of Students. You are expected to know what plagiarism is – refer to

<https://microsites.csusm.edu/plagiarism-tutorial/>

or a tutorial on plagiarism (including “unintentional” plagiarism) and how to avoid them. The instructor reserves the right to apply appropriate penalties for cases of academic dishonesty detected, up to and including assigning an F for the class.

*Talking in class:* All students are strongly encouraged to actively, and constructively, participate during class. Questions, discussions and opinions about the class material are always welcome during lectures. In contrast, private conversations in class, or otherwise disturbing your classmates, are disrespectful and will not be tolerated. If you have to be asked repeatedly to be quiet but persist being disruptive you will no longer have the privilege of attending and will be asked to leave.

*Cell phone/laptops and other electronic devices:* Cell phone calls, texting and emailing during class will not be tolerated. Please turn off or silence cell phones and similar devices for the duration of the lecture. Laptop computers may be used during class to take lecture notes, but inappropriate use of computers during lecture (i.e., internet searches without prior instructor permission, instant messaging, or email, etc.) will not be tolerated. Students will be verbally warned at the first offense. If such abuses persist, then use of laptops and any other electronic devices in class will be banned for the offending student. However, appropriate accommodations will be made for students with disabilities properly documented by DSS.

*Disabled Student Services:* Students with disabilities who require academic accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive accommodations should meet with Dr. Mueller during office hours or by making an appointment so that she can accommodate their needs as best as she is able, within reason and in accordance with CSUSM regulations.

**Tentative Schedule (based on two 75 min lectures a week):**

<b>Week</b>	<b>Date</b>	<b>Topic</b>
1	Aug 30	Introduction to course
	Sept 1	Developmental biology
2	Sept 6	Phenotypic plasticity
	Sept 8	Phenotypic plasticity
3	Sept 13	Developmental timing (heterokairy/heterochrony)
	Sept 15	Critical windows
4	Sept 20	Epigenetics & multigenerational effects
	Sept 22	Developmental symbioses
5	Sept 27	Conspecific- & predator-induced developmental plasticity
	Sept 29	Developmental regulatory genes
6	Oct 4	Developmental mechanisms of evolutionary change
	Oct 6	Review for Midterm
7	Oct 11	<b>Midterm Exam</b>
	Oct 13	Fish and amphibian embryonic metabolism/gas exchange
8	Oct 18	Bird and reptile embryonic metabolism/gas exchange
	Oct 20	Metabolic energy partitioning
9	Oct 25	Development of endothermy
	Oct 27	Cardiovascular development ( <b>Lit. Review due Fri Oct 28</b> )
10	Nov 1	Temperature and development
	Nov 3	Hypoxia and development
11	Nov 8	Ocean acidification and development
	Nov 10	Ecotoxicology – teratogens
12	Nov 15	Ecotoxicology – endocrine disruptors
	Nov 17	Developmental origins of disease
13	Nov 22	Diseases of development
	Nov 24	<b>No Lecture (Thanksgiving)</b>
14	Nov 29	The role of developmental physiology
	Dec 1	Ethics of working with developing animals
15	Dec 6	Flex day
	Dec 8	Review for final
		<b>Final Exam Tuesday Dec 13<sup>th</sup> 11.30am – 1.30pm</b>