Instructors:
Sergey Nuzhdin, Ph.D. (course chair)  Sarah Signor, Ph.D.
Office: RRI 304C  Office: RRI 316D
Office Hours: Thursday, 4:20-5:20pm  Office Hours: Thursday, 4:20-5:20pm
Office Phone: 213.740.5773  Office Phone: 213.740.3065
E-mail: snuzhdin@usc.edu  E-mail: ssignor@usc.edu

TA:
Meeting times:

<table>
<thead>
<tr>
<th>Lec</th>
<th>13046R</th>
<th>2:00-3:20pm</th>
<th>Tu: RRI 221</th>
<th>Th: RRI 221</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dis</td>
<td>13048R</td>
<td>3:30-4:20</td>
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Overview and Course:

Content:
The aim of this course is to introduce students to the advanced aspects of developmental biology, from the molecular level to the level of the cells, tissues, and organs, including:
* Fundamentals of gene regulation in developmental context
* Methods of manipulating developmental processes
* Systems biology
* Cell populations

Prerequisite:
Biological Sciences 220/221

Recommended preparation:
Biological Sciences 120 or 121, Introduction to Biology I
Biological Sciences 311 -or- 320, Molecular Biology
Biological Sciences 325, Genetics

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Instructor</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 14</td>
<td>Class Intro</td>
<td>Chapter 1</td>
<td>SN</td>
<td>Intro to fly genetics, collect virgins, cross, predict phenotypes.</td>
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<tr>
<td>2</td>
<td>Jan 19</td>
<td>Early Development I</td>
<td>Chapter 2a</td>
<td>SS</td>
<td>Observe larval behavioral abnormalities, describe them in light of knowledge of mutant development genes.</td>
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<tr>
<td>3</td>
<td>Jan 26</td>
<td>Early Development II</td>
<td>Chapter 2b</td>
<td>SS</td>
<td>Observe expression patterns with GFP knock-ins.</td>
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<tr>
<td>4</td>
<td>Feb 2</td>
<td>Vertebrate I</td>
<td>Chapter 3</td>
<td>SN</td>
<td>Cut cadavers at Medical Campus, Mike Habib and Biran Patel.</td>
</tr>
<tr>
<td>5</td>
<td>Feb 9</td>
<td>Vertebrate II</td>
<td>Chapter 4</td>
<td>SN</td>
<td>Visit Museum of Natural History, variation in mammal body plans, Xiaoming Wang.</td>
</tr>
<tr>
<td>6</td>
<td>Feb 16</td>
<td>Plant Development</td>
<td>Chapter 7</td>
<td></td>
<td>Exam style MIDTERM 1</td>
</tr>
<tr>
<td>7</td>
<td>Feb 23</td>
<td>Morphogenesis</td>
<td>Chapter 8</td>
<td>SS</td>
<td>Guest lecture, Andy McMahon, iP5 cells and differentiation; induce cells.</td>
</tr>
<tr>
<td>8</td>
<td>Mar 1</td>
<td>Cell differentiation</td>
<td>Chapter 10</td>
<td>SS</td>
<td>Observe and explain differences in cell types, how this variety plays role in organogenesis.</td>
</tr>
</tbody>
</table>
Permission of instructor can be requested if you have not met the prerequisites. Familiarity with basic chemistry and physics is assumed. Facility with algebra is recommended.

Text: *Principles of Development*, Lewis Wolpert, Cheryll Tickle

Web Site: Course materials and announcements will be posted to Blackboard. You are responsible for checking the website.

Course E-mails will be sent only to your official USC email address.

Course Credit:

Midterm Exam 1 30% (chapters 1, 2, 3, 4)
Midterm Exam 2 30% (chapters 7, 8, 10, 11)
Final Exam 40% (20% chapters 12, 14, 15; 20% cumulative – presentations on background and research projects)

Discussion sections will be led by Teaching Assistants and will supplement and complement lectures. Some lectures and discussion sessions will be implemented as practical hands on wet lab exercises.

The syllabus may change slightly during the semester. Exam dates are firm.

Course Policies:

1) Exam dates are firm. There are no makeup exams in the course. Performance on the final may be prorated to substitute for a missing midterm exam, if an excuse considered valid by faculty is presented in a timely fashion. An acceptable written excuse or documentation must be provided to the faculty. The final exam will be administered only on the date and time set by the University.

2) Midterm exams will be returned to students by the TAs during discussion section. The final examination will not be returned but will be retained for one semester by the faculty.

3) Regrades: If you think an answer you have provided was graded incorrectly or if there is an arithmetic error, you may seek a regrade. You must provide a written explanation of why you think your answer was graded incorrectly. Regrade requests are to be submitted to your TA. If a regrade is agreed upon, then the ENTIRE EXAMINATION may be subject to a regrade. Your grade may therefore go up, go down, or remain the same. Regrade requests must be received within one week of when the exam key is posted for midterms, or by the second week of classes the following semester for the final exam.

4) No special assignments for extra credit are permitted.
5) Academic integrity policies of the University will be strictly followed. Infractions can result in severe penalties. There may be assigned seating for exams. No student may be admitted to an exam after the first student has left the exam.

Statement on academic integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

6) Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to one of the Professors as early in the semester as possible. DSP is located in STU 301 and is open 8:30 AM – 5:00 PM, Monday thru Friday, Phone number: 213-740-0776.

7) It may be necessary to make adjustments to the syllabus during the semester. Check the course web site or class announcements on Blackboard for updates. Exam dates will not be changed.

8) Any questions or concerns regarding these policies should be addressed to the faculty.