

**PSYC23:  
Developmental Psychobiology**

**Course Meetings:** Thursdays, 3:00 – 5:00 pm  
**Course Location:** Science Wing, Room HW 216

**Professor**

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**Course Web site**

Blackboard, U of T Portal  
<https://weblogin.utoronto.ca/>

**Course texts**

The course readings are available at the Course website. You can also find them in the library, online.

**Teaching Assistants**

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**Course Description**

The course will provide a cutting-edge research perspective on several interdisciplinary topics in the field of developmental psychobiology, offering an overview of the developing interplay between psychology and biology in humans and animals and considering how social and biological mechanisms contribute to mental and physical health. The course examines the reciprocal interactions among experience, genes, hormones, brain, and behavior in humans and in other species across the lifespan. You will learn about the following topics, grouped loosely into three units:

**Unit I**

- a) Developmental systems theory
- b) Neuroendocrine foundations of social bonding

**Unit II**

- c) Caregiving and the reciprocal interactions between children and parents
- d) The parenting brain and the inherent stress of parenting

**Unit III**

- e) The development and evolution of the stress system and its role in social behavior
- f) The role of stress in learning and memory

Week	Meetings	Units	Topic	Readings	Assignments and Exams
1	Jan 10	I	Background: Appreciating the type of questions addressed in the field.	Michel (1999)	
2	Jan 17	I	History of developmental systems and key questions in the field of developmental psychobiology	Lickliter & Honeycutt (2010)	
3	Jan 24	I	Why do children prefer their parents? How do parents influence children? How do relationships get under your skin?	Hofer (2006) Amato (2009)	Mini Lab #1
4	Jan 31	I	What are the neuroendocrine processes that mediate social affiliation and bonding? What are the learning mechanisms involved in making emotional bonds?	Carter & Getz (1993)	
5	Feb 7	II	The caregiving system: Why do parents care?	Swain (2012)	<b>Exam I (Unit 1)</b>
6	Feb 14	II	Development of parent-infant interactions and their impact on child development in different cultures.	Feldman (2012) Bornstein (2012)	Mini Lab #2
7	Feb 21		<b>Reading Week</b>		
8	Feb 28	II	Changes in the parental brain. What are the many changes in cognition and behavior that help make us become better parents?	Lambert & Kinsley (2012) Kinsley & F	
9	March 7	II	Why do parents abuse their children and what effect does it have on development?	Pollak (2012)	
10	March 14	III	How does stress get under your skin? When is stress good and/or bad for the brain?	Sapolsky (2003)	<b>Exam II (Unit 2)</b>
11	March 21	III	What are the autonomic components of the stress system, and how did they evolve? How does autonomic activity affect learning and social behavior?	Porges & Furman (2011)	
12	March 28	III	Memory development and memory consolidation across the lifespan.	Carey (2008)	Mini Lab #3
13	April 4	III	The emerging field of epigenetics. New mechanisms to address the old questions of gene by environment interactions.	van IJzendoorn (2011)	<b>Guest lecturer</b>
14	April 11		<b>Study Week</b>		

## Reading

You are responsible for reading all of the assigned articles. Some but not all of the material in the lectures is also in the text. Also, there is material in the text that is not covered in lectures. You should spread out your reading of the text over the course of the semester, according to the schedule given on the previous page. The exams are based on both the readings and lecture material. PowerPoint slides for the lectures will be posted on Blackboard in advance but there may be some additional slides that are added to lectures and the updates will be made on Blackboard following the lecture. The slides are meant to contain all the important material from the lecture for which you are responsible, and they are made available for your convenience and to enhance your learning of the material. If you try to learn the material only by reading the PowerPoint slides and do not come to lecture, you will miss explanations, illustrations, and elaborations that enhance understanding and retention of the course material. Similarly, if you come to lecture without having done the reading, you'll be less able to follow the lecture. You also miss the important learning activities of active listening and note-taking, which also greatly facilitate understanding and retention.

A good way to consolidate your knowledge and understanding of the material is to 1) attend all classes and take notes; 2) print out the PowerPoint slides of the lecture after class and compare your notes with them, so that you can see if you are catching all the important information in your note-taking; and 3) look in the textbook for material corresponding to the lecture—keeping in mind that not all material covered in lecture is in the articles (and vice versa). The organization of the lectures is independent of the text although reading assignments are placed next to the lecture for which they are most relevant. It is strongly recommended that you do the reading assigned for a meeting *before* the meeting. To facilitate your studying of the material in the text, brief review sessions in class will be held the week before the final exam.

If you are struggling with the course material, you should come to office hours or send me an e-mail message to set up another time to meet. You should also ask your TA for help. The worst things you can do if you are struggling are to fail to ask for help, to stop coming to class, and to give up trying.

## Evaluation

EVALUATION	PERCENT
Three mini-lab reports (Jan 24 <sup>th</sup> , Feb 14 <sup>th</sup> , and March 28 <sup>nd</sup> )	20%
Term Exam I (Feb 7th)	20%
Term Exam II (March 14th)	20%
Final Exam (date TBD)	40%
Extra Credit	1%
<b>Total</b>	<b>101%</b>

**Assignments: Mini lab reports**

The mini lab reports are short assignments designed to help you explore and consolidate course material into a meaningful written narrative. More specifically, some of the assignments will be geared towards learning how to write an abstract, and a couple of the assignments will aim to integrate real-world experience with course material. Below is a brief description of the individual assignments. For due dates, see the schedule grid on page 2 of this syllabus. Mini Labs #1 and #2 are each worth 5% and Mini Lab#3 is worth 10%

**Mini Lab #1** Statement of interest: What is your research topic? In your statement, please write 1–2 sentences stating the topic and related phenomena; 1–2 sentences summarizing what is written in the literature about it; and 1–2 sentences on what questions remain to be answered about your topic.

**Mini Lab #2** What is your hypothesis, and what methods (design and measures) would you use to test it? This can be up to 6–9 sentences.

**Mini Lab #3** Rewrite, integrate, and develop assignments #1 and #2 above into a 200-word abstract.

**Term and Final Exams:** The term and final exams will consist of True/False and multiple choice questions along with a few short answer and long essay questions. Practice questions for the exam will be posted on Blackboard.

**Extra Credit (up to 1%):** Generating your own exam questions and preparing answers for them is a good way to learn the course material. Accordingly, from anyone who would like extra credit, I will accept three exam questions, each of which should be accompanied by a ¼- to ½-page answer; these questions must be received by me no later than one week prior to the midterm or final exam. For more information about this option, please speak to a TA. I will grant up to (and a maximum of) 1% extra credit to students who complete these assignments for both the midterms (.25% each) and final (.5%) exams.

**Course Web Site:** I will make the syllabus and all readings, lecture notes, announcements, and exam review materials available on the course Web site (log in to the U of T Blackboard portal at <https://weblogin.utoronto.ca/>). Please check this Web site regularly for announcements and messages. Also, please ensure that your current e-mail address is correctly linked to your Blackboard account.

**Getting Help with Course Materials:** If your question is not answered here in this syllabus or on the course Web site, you may post the question in the online discussion forum (on Blackboard; see above), bring the question to the TAs' weekly office hours, or discuss it with me during my office hours. You may also send an e-mail message to one of our TAs, but please allow *two working days' time* for a reply. Major questions relating to course content can be addressed in far greater depth in person.

**Exams:** Course requirements include two term exams and one final exam. The first term exam is worth 20% and the second term exam is worth 25%. The final exam is worth 40%. I will post short exam review sheets and sample test questions on the course Web site at least a week before the exams. Each exam will comprise approximately 80% multiple-choice questions and 20% short-answer essay questions and will cover reading and lecture materials.

**Missed Term Exam:** Since the final exam is cumulative if you miss one of the term exams the final can be reweighed from 40% to 60% or to 65%. There are no make-up exams.

**Missed Final Exams:** Professors and TAs are not authorized to negotiate changes to the final exam schedule. Please consult the university calendar for more information.

**AccessAbility:** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals, and arrange appropriate accommodations. They can be reached at (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca).

**Academic Integrity:** Academic integrity is essential to the pursuit of learning and scholarship in a university and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offenses. Potential offenses include, but are not limited to:

*In papers and assignments:*

- Using someone else's ideas or words without appropriate acknowledgement
- Submitting your own work in more than one course without the permission of the instructor
- Making up sources or facts
- Obtaining or providing unauthorized assistance on any assignment

*On tests and exams:*

- Using or possessing unauthorized aids
- Looking at someone else's answers during an exam or test
- Misrepresenting your identity

*In academic work:*

- Falsifying institutional documents or grades
- Falsifying or altering any documentation required by the University, including (but not limited to) doctors' notes

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic

integrity from your instructor or from other institutional resources (see <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html>).

## Readings

**Unit I covers readings from Weeks 1-4**  
**Unit II covers readings from Weeks 5-9**  
**Unit III covers readings from Weeks 10-13**

### Week 1

Michel, G. F. (1999). *Developmental Psychobiology: An Interdisciplinary Science*. Cambridge, Mass.: The MIT Press. Selections from Chapter 1: pages 1-46.

### Week 2

Lickliter, R. & Honeycutt, H. (2010). Rethinking epigenesis and evolution in light of developmental science. In *Oxford Handbook of Developmental Behavioral Neuroscience*, M. S. Blumberg, J. H. Freeman, & S. R. Robinson (Eds.). Oxford: Oxford University Press. Chapter 3: pages 30-36.

### Week 3

Hofer, M. A. (2006). Psychobiological roots of early attachment. *Current Directions in Psychological Science*, 15, pages 84-88.

Amato, I. (2009). Genes Take A Back Seat : Epigenetics, the molecular framework that controls genes' expression, takes its cues from both nature and nurture. *Chemical & Engineering News*, 87, pages 28-32.

### Week 4

Carter, S. C. & Getz, L. L. (1993). Monogamy and the Prairie Vole. *Scientific American*, 100-106.

### Week 5

Swain, J. E. Konrath, S., Brown, S. L., Finegood, E. D., Akce, B. L., Dayton, C. J., & Ho, S. S. (2012). Parenting and Beyond: Common Neurocircuits Underlying Parental and Altruistic Caregiving. *Parenting: Science and Practice*, 12:2-3, 115-123.

### Week 6

Feldman, R. (2012): Bio-behavioral Synchrony: A Model for Integrating Biological and Microsocial Behavioral Processes in the Study of Parenting. *Parenting: Science and Practice*, 12:2-3, 154-164

Bornstein, M. H. (2012). Cultural Approaches to Parenting. *Parenting: Science and Practice*, 12:2-3, 212-221

### Week 7 Reading Week

### Week 8

Pollak, S. D. (2012). The Role of Parenting in the Emergence of Human Emotion: New Approaches to the Old Nature-Nurture Debate, *Parenting: Science and Practice*, 12:2-3, 232-242

**Week 9**

Kinsley, C. H. & Franssen, R. A. (2010). The Pregnant Brain as a Revving Race Car: Mothers-to-be get better at recognizing emotions. *Scientific American*, January, pages 1-2.

Lambert & Kinsley (2012): Brain and Behavioral Modifications That Accompany the Onset of Motherhood, *Parenting: Science and Practice*, 12:1, 74-88

**Week 10**

Porges, S.W. & Furman, S. A. (2011). *Infant and Child Development*, 20, pages 106-118.

**Week 11**

Sapolsky, R. (2003). Taming stress. *Scientific American*, pages 86-95.

**Week 12**

Carey, B. (Sept 5, 2008). For the brain, remembering is like reliving. *New York Times*: <http://www.nytimes.com/2008/09/05/science/05brain.html?ex=1378699200&en=5cba4dad4056c7c4&ei=5124&partner=permalink&expod=permalink>

**Week 13**

van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., and Ebstein, E. B. (2011). Methylation Matters in Child Development: Toward Developmental Behavioral Epigenetics. *Child Development Perspectives*, 5, pages 305-310

**Supplemental Readings**

Fleming, A.S., Grusec, J. E., and Haley, D.W. (2012). The Arc of Parenting from Epigenomes to Ethics : An overview of papers in this Special Issue. *Parenting : Science and Practice*, 12.

Parker-Pope, T. (September 5, 2008). Delivery Method Affects Brain Response to Baby's Cry. Well blog, *New York Times*: <http://well.blogs.nytimes.com/2008/09/05/delivery-method-affects-brain-response-to-babys-cry/>