

BEP 600-003: Developmental Cognitive Neuroscience (3 cr.)

Semester: Fall 2017

Meeting Time: Tuesday 1:00pm-3:50pm

Meeting Place: Capitol Hall 1617

Instructor:	Laura Morett
Office:	Capitol Hall 1617
Office hours:	By appointment
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Course Description

This course presents a broad overview of current research and methods in the field of developmental cognitive neuroscience with a particular focus on its relevance to education. We will start with a review of how the brain develops from conception into adulthood, considering how changes in neurodevelopment affect learning. We will then discuss different theories of how the brain develops and the role of experience in this development, spending substantial time discussing the methods researchers use to study developmental cognitive neuroscience, including metabolic measures (PET, fMRI, optical imaging) and electrophysiological techniques (including EEG and ERPs). We will consider several domains of inquiry relevant to learning, including visual perception and attention, knowledge of objects, faces, number, space, and language, and affective and social development. For each of these, we will consider questions such as: How is knowledge represented in the developing brain? What kinds of developmental changes occur? What are the effects of different kinds of experience, including those presented by genetic deficits, environmental deprivation, and brain damage? What is the developmental time course within which such factors can affect cognitive development and learning? Where appropriate, we will discuss atypical (i.e., Autism, ADHD, etc.) developing populations in addition to typical development. Throughout the course, we will consider the implications of developmental cognitive neuroscience findings for educational practice.

Prerequisites

- Expected: Educational, developmental, and/or cognitive psychology; research methods.
- Recommended: Cognitive or systems neuroscience

Course Objectives

- Introduce central topics, theories, methods, and applications of developmental cognitive neuroscience
- Discuss the relevance of the tenets of developmental cognitive neuroscience to educational practice
- Provide instruction in how to write and review grant proposals effectively

Learning Objectives

- Demonstrate an understanding of central topics, theories, methods, and applications of developmental cognitive neuroscience relevant to education. This goal will be achieved through weekly readings of textbook chapters, reviews, and original research articles.
- Enhance your ability to think critically and express your views orally and in writing. This goal will be achieved through participating and leading in-class discussions, weekly 1- to 2-page thought papers, and two essay midterm exams.
- Provide an opportunity to hone your grant writing skills. This goal will be achieved by writing and presenting a final research proposal and participating in a mock peer review process.

Required Reading

- Johnson, M. H., & de Haan, M. (2014). Developmental Cognitive Neuroscience: An Introduction, 4th Edition. Wiley-Blackwell.
- Journal articles (posted on Blackboard the Wednesday before the relevant week of class).

Outline of Topics

Week	Date	Topic	Textbook
1	Aug. 29	Introduction; biology of change	Johnson 1
2	Sept. 5	Methods and populations	Johnson 2
3	Sept. 12	From gene to brain	Johnson 3
4	Sept. 19	Building a brain	Johnson 4
5	Sept. 26	Vision, orienting, and attention Discussion of final project and exam format	Johnson 5
6	Oct. 3	Perceiving and acting on the physical world	Johnson 6
7	Oct. 10	Perceiving and acting on the social world Exam 1 distributed	Johnson 7
8	Oct. 17	Learning and long-term memory Exam 1 due	Johnson 8
9	Oct. 24	Language	Johnson 9
10	Oct. 31	Prefrontal cortex, working memory, & decision-making	Johnson 10
11	Nov. 7	Cerebral lateralization	Johnson 11
12	Nov. 14	Educational neuroscience Prospectus due	Johnson 12
13	Nov. 21	No class; LM out of town	N/A

14	Nov. 28	Interactive specialization Exam 2 distributed Proposal draft due	Johnson 13
15	Dec. 5	Toward an integrated DCN; proposal review Exam 2 due Proposal reviews due	Johnson 14
	Dec. 12	Back reviews due Proposal due	

Exams and Assignments

- **Participation**

- **Thought papers:** You are required to submit a 1- to 2-page thought paper (single spaced) about the assigned readings by 5pm the night *before* the class meets (i.e., Monday). Please send the thought paper to me as well as the assigned discussion leader for the upcoming class. The thought paper does not have to touch upon all of the assigned readings but should reflect a critical reading of the paper(s), e.g., by contrasting multiple readings, critically evaluating a reading based on your background knowledge etc. You will not be responsible for writing a thought paper on weeks that you are assigned to lead in-class discussion.
- **In-class discussion:** This is a small class and active participation is mandatory. There are no stupid questions and we can only learn by asking questions all the time or commenting on other people's questions! I expect everyone to participate in every class.
- **Leading in-class discussion:** You (and potentially one other person) will be responsible for selecting the order in which we will discuss articles, summarizing them, and leading in-class discussion. You will receive your classmates' thought papers by 5am the night before the class to help you prepare for the discussion. You may also bring in additional background information that expand the topic or explain ideas only touched upon briefly in the readings.

- **Exams:** Two essay format take-home midterm exams will be administered. The exams will be non-cumulative and will focus on the material (readings/class lectures/class discussion) covered through the week of the exam. The exams will be distributed the week before the due date and due prior to the beginning of the next class.

- **Exam 1:** Covers chapters 1-7 and related readings
- **Exam 2:** Covers chapters 8-13 and related readings

- **Final project**

- **Prospectus:** To ensure that the topic of your proposal is appropriate in scope and relevance to the course, you will be required to submit a prospectus prior to submitting a draft of your proposal. The prospectus will take the form of a letter of inquiry, a component of many grant proposals. It will be due prior to the beginning of class on Nov. 14 and will be returned with feedback within a week to allow sufficient time for incorporation into the development of your proposal. More information about the format of the prospectus will be provided at a later date.
- **Peer review:** As part of the final project, you will be required to participate in a mock peer review process. In this process, you will score and review your classmates' proposals individually in writing as well as orally in class, and you will evaluate your classmates' reviews. The purpose of this exercise is not to publicly embarrass you or encourage in-class competition; rather, it is to provide you with insight into how grant proposals are evaluated and with practice writing (and evaluating) peer reviews. To this

end, your classmates' reviews of your proposal will *not* count towards its grade; however, *your* reviews of your classmates' proposals (and your back reviews of their reviews) *will* count towards your grade, as will your responsiveness to their feedback.

- **Proposal:** The final project for this course will consist of a hybrid NIH NRSA and NSF GRFP grant proposal. The proposal should describe an original research project that is relevant to developmental cognitive neuroscience; ideally, it should encompass your research interests. I will post links on the Blackboard website relevant to these two formats, and we will discuss preparation of these proposals in class. The proposal will be due by 1pm on the week following the final class session (i.e., finals week).

Grading

Component	Percent	Assignment	Percent
Participation	30%	Thought papers	10%
		In-class discussion	10%
		Leading in-class discussion	10%
Exams	30%	Midterm exam 1	15%
		Midterm exam 2	15%
Final paper	40%	Prospectus	5%
		Peer review	15%
		Proposal	20%
Course Total	100%	Total	100%

Grading scale: A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 0-60

Incomplete Grades: Incomplete grades will be given in extremely rare and extraordinary circumstances. Students are expected to plan ahead and to keep up with the coursework throughout the term. Any unusual circumstances that may impede a student's progress in the course should be discussed with me as soon as possible.

Policies

Notification of changes

I will make every effort to follow the guidelines of this syllabus as listed; however, I reserve the right to amend this document as necessary. In such instances, I will notify students in class and/or via email and will endeavor to provide reasonable time for students to adjust to any changes.

Attendance policy

In the interest of respecting my time and work, as well as that of other students, in relation to this course, if you are unable to attend class for any reason, please notify me by email as soon as possible and state which class session you will miss and why. Failure to contact me prior to the start of a missed class will result in forfeiture of all class participation credit for that class session except under documented circumstances of grave cause. Grave cause includes unforeseeable events such as serious illness, injury, family emergencies, or severe weather, but does not include routine appointments, travel, or legal issues, and is subject to approval on a case-by-case basis. If you miss class unexpectedly due to grave cause, please contact me as soon as possible, state the cause, and provide documentation.

Policy on missed exams and coursework

In the interest of maintaining equitable standards of evaluation, all assignments must be submitted by the stated deadline, and must adhere to the stated length and format. Assignments submitted after the deadline will be counted as at least one day late. For all drafts of written assignments turned in one day late, ten percent will be deducted from the grade of that assignment, and an additional five percent will be deducted for each additional day that passes. No credit will be granted for late thought papers. Extensions must be requested no later than 24 hrs. prior to the stated due date, and will be granted on a case-by-case basis. Work missed in accordance with the attendance policy guidelines will be made up on a case-by-case basis.

Academic misconduct policy

- Students are expected to be familiar with and adhere to the official [Code of Academic Conduct](https://catalog.ua.edu) provided in the Online Catalog (<https://catalog.ua.edu>)
- All students in attendance at The University of Alabama are expected to be honorable and observe standards of conduct appropriate to a community of scholars. Academic misconduct by students includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student commit an act of academic dishonesty. Academic dishonesty includes, but is not limited to, the following acts, when performed in any type of academic or academically related matter, exercise or activity:
 - Cheating: Using or attempting to use unauthorized materials, information, study aids or computer-related information
 - Plagiarism: Representing the words, data, works, ideas, computer programs or output, or anything not generated in an authorized fashion, as one's own
 - Fabrication: Presenting as genuine, any invented or falsified citation or material
 - Misrepresentation: Falsifying, altering or misstating the contents of materials related to academic matters, including schedules, prerequisites and transcripts

Academic work duplication policy

Any submission of academic work designed to meet the requirements of a particular credit-bearing course is assumed to be work completed for that course and only that course; the same material submission, or material that is substantially similar, may not be used to meet the requirements of another course. Any violation of this rule may result in a referral to the Associate Dean for Student Services and Certification for disciplinary action.

Contract of courtesy

The following contract of courtesy applies to the instructor and students alike, and is intended to create an open and respectful learning environment for everyone in this course:

- Please turn off all cell phones and electronic communication devices during class. If you must take a call for emergency purposes, please do so by placing your phone's ringer on silent or vibration and leave the room immediately to answer your phone (see below)
- Please be on time and don't leave early
- Please do not hold side conversations or engage in other types of disruptive behavior (e.g., packing your bag before the end of class)
- Please respect guest speakers, including your fellow students, during presentations
- Please be attentive during class
- Please do not eat noisy food during class (e.g., chips, carrots, candy with wrappers)

Discussion ground rules

The following ground rules for in-class discussion apply to the instructor and students alike, and are intended to create an open and respectful learning environment for everyone in this course:

- Please listen actively and respect others when they are speaking
- Please speak from your own experience instead of generalizing (use "I" instead of "they," "we," or "you")

- Please do not be afraid to respectfully challenge one another by asking questions, but refrain from personal attacks
- Please participate to the fullest of your ability; community growth depends on the inclusion of every individual voice
- Please share your own stories and experiences rather than invalidating somebody else's story with your own spin on their experience
- Please be conscious of your body language and nonverbal responses; they can be as disrespectful as words
- Please remember that the goal is not to agree; it is to gain a deeper understanding

UAct statement

- The [UAct website](#) provides an overview of the University's expectations regarding respect and civility
- As members of the University of Alabama community, all participants in this course are expected to follow the guidelines of civility outlined in UAct

Recording policy

In the interest of respecting my work in relation to teaching this course and everyone's right to privacy, use of any recording device is prohibited in this course without prior written permission by the instructor/supervisor and all subjects being recorded. When permitted to record, all of the following guidelines must be followed: (1) a single recording is to be made; (2) the recording is not to be duplicated, excerpted, transferred, placed on the internet, or shared with others; and (3) the recording is to be erased at the end of the semester or before, as requested by any of the interested parties mentioned above. Failure to abide by this policy will be considered a violation of the professional and academic codes of conduct, and will be handled in accordance with the guidelines stated in the UA academic handbook.

Personal electronics policy

In the interest of creating a classroom environment conducive to learning, please set all cell phones and other electronic communication devices to silent mode and put them away before the start of class. Any student who texts or uses a phone in any other way during class will forfeit all class participation credit for that class session. In the event of an emergency, you may leave the classroom to answer the phone or respond to a text. Please inform me of the reason afterwards to avoid losing credit for class participation for that day. Laptops or tablets are permitted for note taking as long as they do not interfere with class participation.

Severe weather policy

- Please see the latest [Severe Weather Guidelines](#) in the Online Catalog. The link for the Severe Weather Guidelines is <https://ready.ua.edu/severe-weather-guidelines/>
- Suspension of class due to severe weather (e.g., tornado, hurricane, etc.) affecting campus will be determined by official University of Alabama announcements. If severe weather off campus causes you to miss class unexpectedly, please let me know as soon as possible and provide documentation (e.g., National Weather Service announcement, photos), and we will discuss how you can make up the work for the missed class.

Religious holiday observance policy

- The University of Alabama respects the religious diversity of our academic community and recognizes the important of religious hold days and observances in the lives of our community members. For more information, please go to <http://provost.ua.edu/religious-observances.html>
- In accordance with the University of Alabama Guidelines for Religious Holiday Observances, students should notify me in writing or via email during the first two weeks of the semester of their intention to be absent from class for any religious observances. As long as it does not interfere with the academic integrity of this course, reasonable

opportunity will be provided for students observing religious holidays to complete missed work

Disability accommodation policy

- If you have a disability that requires accommodation, contact the [Office of Disability Services \(ODS\)](#) as detailed in the Online Catalog
- The Office of Disability Services (ODS) is the central contact point for UA students with disabilities. The goal of ODS is to ensure that University programs and services are accessible to qualified students with disabilities. For student who may require their services more information is available at <http://ods.ua.edu>. ODS is located at 1000 Houser Hall and their phone number is 348-4285 (voice) or 348-3081 (TTY)

Pregnant student accommodation policy

Title IX protects against discrimination related to pregnancy or parental status. If you are pregnant or have recently had a false pregnancy, termination of pregnancy, given birth, or are recovering from any of these conditions and require accommodation in this class due to them, please contact the Title IX Office by email at titleix@ua.edu, by phone at (205) 348-5496, or in person at 107 Mary Burke West to register for services.

College of Education Information

Mission of the College of Education

The mission of the Capstone College of Education is to be a leader in Alabama and across the nation in teaching, scholarship, advocacy, and service by developing professionals with pedagogic and disciplinary expertise who advance the intellectual and social conditions of all learners in a globalized society.

Vision of the College of Education

The vision of the College of Education (COE) at The University of Alabama is to develop effective, ethical, and reflective professionals who advance the theme of the COE: Unite, Act, and Lead (UA Leads). This theme undergirds the four overarching ideals of the COE: Ideals of Fairness and Equity, Reflective Stance for Professional Practice, a Commitment to Diversity, and a Culture of Collaboration. The fulfillment of these ideals calls for a commitment to academic excellence and advocacy through active engagement with shifting social and cultural contexts and advanced technological developments that shape the construction, interpretation, and dissemination of knowledge.

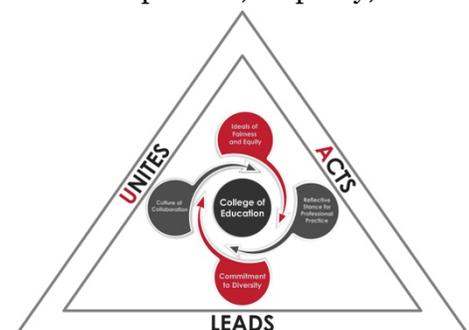
The COE will continue to develop professionals who meet the needs of all learners that may arise from differences in race, social class, language, gender, sexual orientation, gender identity, health, ability, and religious and political affiliations. By engaging in theoretically informed and intellectually advanced advocacy and effective practice our graduates will:

UNITE with the larger community to collaboratively nurture cultural competence, empathy, and a vision of equity and justice for all learners;

ACT to develop the full potential of all learners to be excellent professionals in their fields; and

LEAD through continuous research-based critical inquiry of policy and reflective practice to enable transformative change in our diverse local and global communities.

Through excellence in teaching, scholarship, advocacy, and service the COE will facilitate visibility and voice of education leaders beyond the classroom in support of democracy and social justice for all learners in our global society.



Dispositions

We strive to create programs that emphasize Fairness and Equity, Reflective Stance for Professional Practice, a Commitment to Diversity, and a Culture of Collaboration.