

**Columbia University**  
**Spring 2025 Syllabus**  
**PSYC 3434 PRENATAL PROGRAMMING**  
**Wed 4:10-6pm at 116 KNOX**

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**Instructor:** Elif Aysimi Duman, Ph.D. (ead2145@columbia.edu)

**Office hour:** TBA

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**Course description and learning objectives:** This seminar course will focus on the impact of the prenatal period in programming lifelong health and development through altering physiology starting from the molecular level.

We will start by defining the characteristics of the prenatal period and discuss history and perspectives related to developmental programming. As our first main theme, we will continue with discussing the effects of this developmental programming on lifelong health and developmental outcomes. As the second main theme, we will cover the physiological mechanisms underlying prenatal programming by focusing on the changes in the nervous, endocrine and immune systems. As our third main theme, we will further go into the molecular mechanisms associated with these physiological changes, including epigenetic mechanisms and their potential intergenerational transmission. We will end with discussing more recent topics in the field together with policy implications of the topics discussed during the semester.

By covering these topics, students are expected to gain a better understanding of a) how our physiology, behavior and health is programmed starting from the prenatal period, b) the mechanisms of prenatal programming, and c) the impact of prenatal programming on our perspective on the prenatal environment. With this, the students are expected to place behavior and health in a lifelong perspective with potential intergenerational effects.

**Prerequisites:** PSYC 1001 Introduction to Psychology is required. An introductory knowledge in neuropsychology (e.g. Behavioral Neuroscience (PSYC 2450)/Cognitive Neuroscience (PSYC 2430)) and statistics is recommended but not required.

**Role in the Curriculum:**

This seminar is designed for undergraduates majoring in Psychology or Neuroscience & Behavior, and for students participating in the Psychology Post-Baccalaureate Certificate program. It fulfills the following degree requirements:

- For the Psychology major or concentration in Columbia College and in the School of General Studies, and for the Psychology Post-Baccalaureate Certificate program, this course meets the Group 2 (Psychobiology & Neuroscience) distribution requirement.
- For the Neuroscience & Behavior joint major, it will fulfill the Psychology requirement for an advanced psychology seminar.
- For Psychology Post-Baccalaureate students and for Psychology majors, it will fulfill the seminar requirement.

**Course readings:** For every class, we will have readings from books and scientific articles that will be posted on Courseworks. For some weeks, we will also cover slides that will also be posted after class.

**Course format, policies and grading:**

The course consists of 3 main themes that will build upon each other. For each theme, we will start with covering the background, followed by a discussion of assigned articles and book chapters. In many of the classes, students will be presenting related empirical articles and lead the class discussion on them. In many classes, you will have four readings, two will be discussed as part of the class, and two will be empirical studies selected (from a provided list) by students who will present and lead the discussion on these papers.

For the individual empirical paper presentations, each of you will present one paper. Your presentation will be 14-15 minutes, in which you will summarize the article (7-8 min) followed by facilitating class discussion over the article and its connection to course topics (7-8 min). Further details, grading rubric and suggested articles will be posted on Courseworks and we will talk about these presentations in detail in our first class.

For more focused group work, we will also have 3 group discussion days at the end of each theme, in which we will discuss some leading questions related to that theme in smaller groups, and then discuss your responses with the whole class. Participation in these discussions, together with other in-class activities throughout the semester, will be worth 20% of your final grade.

In classes with assigned readings, students will submit reading responses as 2 questions/comments on Courseworks a day before class by 5pm. Detailed information and examples of these reading responses will be provided at the beginning of the semester. In essence, these responses should demonstrate that you have read and evaluated the articles in detail, so that you can comment on different aspects (e.g. evaluation of findings, connections to theory, limitations, implications) as well as question parts that were not clear or well-understood. You are expected to submit these

responses at least 5 times during the semester (out of approx. 8 times) that will be worth 20% of your grade (4% each). If you submit more, your top 5 grades will be considered. Late submissions will not be accepted.

As a final assignment, you will write an APA-style literature review (10 pages excluding references) on a course-related topic including the review of at least 8 articles (40%). We will talk about your potential topics throughout the semester and discuss your proposals in class to receive feedback from me and your peers. You will also be provided with instructions and a detailed rubric for this review together with earlier assignments related to topic selection and outline.

<b>Participation, in-class activities, discussions</b>	<b>20%</b>
<b>Paper presentation &amp; leading discussion</b>	<b>20%</b>
<b>Reading responses</b>	<b>20%</b>
<b>Final literature review</b>	<b>40%</b>

**Attendance, academic integrity and support:**

**Attendance & participation:** Students are expected to attend all classes and participate in discussions. In case you will not be able to attend, you should notify me asap to guide you on how to catch up with the class/assignments missed.

For reading responses, since they are time sensitive and you only need to submit them 5 times (out of 8-9 times) during the semester, there will be no late submissions.

For other assignments, if you miss a class/assignment, you should send me an email detailing the reason why you could not submit, preferably with evidence (e.g. Doctor's note). If you are experiencing any difficulty that influences your attendance and/or performance in the course, please notify me asap to find a solution together.

**Academic integrity:** Please review Columbia's policy on academic integrity at [www.college.columbia.edu/faculty/resourcesforinstructors/academicintegrity/statem](http://www.college.columbia.edu/faculty/resourcesforinstructors/academicintegrity/statem). All students are expected to avoid plagiarism in all submitted work. All essay assignments will be checked for plagiarism. If you have questions about avoiding plagiarism, please contact me at the beginning of the semester. In case of plagiarism, you will receive 0 points for that assignment, and you will be reported to the Dean of Student Affairs. If you need assistance in writing, I highly recommend contacting the Writing Center ([www.college.columbia.edu/core/uwp/writing-center](http://www.college.columbia.edu/core/uwp/writing-center)). In case you experience any difficulties or time pressure, please contact me to find a solution rather

than violating your academic integrity to prevent its serious consequences on your academic career.

**Academic support:** If you request any consideration regarding a disability, please inform me and Office for Disability Services (ODS) at the beginning of the semester and we would be happy to accommodate all the necessary arrangements. You can find how to register with ODS from <https://health.columbia.edu/content/disability-services> or 212-854-2388.

<b>PSYC 3434 Tentative Course Schedule*</b>		
<b>Week</b>	<b>Date</b>	<b>Content</b>
1	Jan 22	Course overview / Prenatal Period - Developmental Programming
2	Jan 29	Developmental Programming - History & Perspectives
3	Feb 5	Developmental Programming - Health Effects
4	Feb 12	Developmental Programming - Developmental Effects
5	Feb 19	<b>Course Discussion #1</b>
6	Feb 26	Prenatal Programming & Physiology - Nervous System
7	Mar 5	Prenatal Programming & Physiology - Endocrine System
8	Mar 12	Prenatal Programming & Physiology - Immune System
9	Mar 19	<i>Spring break</i>
10	Mar 26	<b>Course Discussion #2</b>
11	Apr 2	Prenatal Programming Mechanisms - Epigenetics
12	Apr 9	Prenatal Programming Mechanisms - Intergenerational Effects
13	Apr 16	<b>Course Discussion #3</b>
14	Apr 23	Looking ahead: Recent topics & policy implications
15	Apr 30	Looking ahead: Recent topics & policy implications
* <i>Schedule is subject to change anytime during the semester.</i>		