**Psychobiology of Infant Development**

**Spring 2025**

**Tuesday 4:10-6pm**

**Schermerhorn 200C**

**Course Instructors:**

William P. Fifer

646-774-6242

[wpf1@cumc.columbia.edu](mailto:wpf1@cumc.columbia.edu)

Office Hours: Tuesday 6-7pm

Morgan R. Firestein

646-774-6257

[mrf2138@cumc.columbia.edu](mailto:mrf2138@cumc.columbia.edu)

Office Hours: Tuesday 3-4pm

**The reading list and weekly syllabus** – subject to revision

All readings are available online through http://courseworks.columbia.edu.

**Course Requirements and Grading**

Your final grade will be based on:

Weekly written assignments 30%

Class participation 30%

Final paper and presentation 40%

**Weekly Written Assignments**

Readings will be posted on CourseWorks and written assignments based on these readings are due every **Monday by 7pm via CourseWorks**. The written assignments should include a minimum of three (3) questions for each reading.

**Class Participation**

Class participation and engagement with the material during the weekly seminar will make up 30% of your grade. While we recognize that some students may feel less comfortable speaking during class, we would encourage you to elaborate on your own questions and those related to your classmates’ observations. It is particularly important that you give feedback to your classmates during their final presentations at the end of the semester (see below). Students are expected to contribute at every opportunity during each day of final presentations in the form of a question or suggestion. During the semester, we will schedule several opportunities for small-group/chatroom-like discussions.

**Final Paper and Presentation**

Your final paper will be aresearch proposal in the form of a mini-grant application. A detailed guideline and grading rubric will be provided. Prior to submitting your final paper, you will give a 5-7 minute presentation of your paper outline to the class. **While you will not be graded on your presentation**, you will be expected to give feedback to your classmates during their presentations. This feedback will contribute to your class participation grade.

**Important Dates**

#### Final Paper Title Due — 3/25 by midnight

#### Send Professors Fifer and Firestein a tentative title for your paper by email.

#### Presentations on 4/16 and 4/23

#### Give a 5-7 minute PowerPoint presentations of paper outline to class. *(Recommended 4-6 slides, covering the four bolded sections in the paper outline)*

#### Final Paper Due – 5/6 by midnight

12-15 pages, excluding references, to be submitted via CourseWorks

**Course Readings**

**January 21, 2025:**

**Course overview, requirements, and summary of weekly readings**

**January 28, 2025:**

**Perinatal development**

Reading Assignments:

Moon, C. M., & Fifer, W. P. (2017). Prenatal development. In G. Bremner & A. Slater (Eds.), *An*

*introduction to developmental psychology* (3rd ed., pp. 112–135). Hoboken, NJ: John Wiley & Sons.

**February 4, 2025:**

**Preterm Birth**

**Guest Speaker: Dr. Jennifer Hammond, MD**

Reading Assignments:

Burtchen, N., Myers, M. M., Lucchini, M., Ordonez Retamar, M., Rodriguez, D., & Fifer, W. P.

(2019). Autonomic signatures of late preterm, early term, and full term neonates during early postnatal life. *Early Human Development*, *137*, 104817.

Cobo, T., Kacerovsky, M., & Jacobsson, B. (2020). Risk factors for spontaneous preterm

delivery. *International Journal of Gynecology & Obstetrics*, *150*(1), 17-23.

Séassau A, Munos P, Gire C, Tosello B, Carchon I. Neonatal Care Unit Interventions on Preterm

Development. Children (Basel). 2023 Jun 2;10(6):999.

**February 11, 2025:**

**Fetal environment: effects of maternal exposures during pregnancy**

Reading Assignments:

Shuffrey, L. C., & Fifer, W. P. (2019). Prenatal Risk Factors and Neurodevelopment. *Reference*

*Module in Neuroscience and Biobehavioral Psychology*.

Shuffrey, L. C., Myers, M. M., Isler, J. R., Lucchini, M., Sania, A., Pini, N., ... & Fifer, W. P. (2020). Association between prenatal exposure to alcohol and tobacco and neonatal brain activity: Results from the safe passage study. *JAMA network open, 3*(5), e204714-e204714.

Monk C, Feng T, Lee S, Krupska I, Champagne FA, Tycko B. Distress During Pregnancy:

Epigenetic Regulation of Placenta Glucocorticoid-Related Genes and Fetal Neurobehavior. Am J Psychiatry. 2016 Jul 1;173(7):705-13.

**February 18, 2025: (Bill)**

**Sudden Infant Death: causes, prediction and prevention**

Reading Assignments:

Horne, R. S. (2019). Sudden infant death syndrome: current perspectives. *Internal Medicine Journal*, *49*(4), 433-438.

Sania, A., Myers, M. M., Pini, N., Lucchini, M., Nugent, J. D., Shuffrey, L. C., Rao, S., Barbosa, J., Angal, J., Elliot, A. J., Odendaal, H. J. & Fifer, W. P. (2022). Prenatal smoking and drinking are associated with altered newborn autonomic functions*. Pediatric Research* (2022):1-11.

Elliott, A. J., Kinney, H. C., Haynes, R. L., Dempers, J. D., Wright, C., Fifer, W. P., ... & Folkerth, R.

D. (2020). Concurrent prenatal drinking and smoking increases risk for SIDS: Safe Passage Study report. *EClinicalMedicine*, 100247.

**February 25, 2025: (Bill)**

**Maternal, Fetal, and Infant Sleep**

Reading Assignments:

Barbeau, D. Y., & Weiss, M. D. (2017). Sleep disturbances in newborns. *Children*, 4(10), 90.

Mindell JA, Leichman ES, Rotella K. Maternal beliefs and cognitions about naps in infants and

toddlers. Eur J Pediatr. 2024 Jan;183(1):263-269.

Callaghan, B., & Fifer, W. P. (2017). Perinatal attention, memory and learning during

sleep. *Enfance*, (3), 349-361.

**March 4, 2025:**

**Prenatal adverse conditions and infant outcome: Congenital heart disorders**

**Guest Speaker: Dr. Ismee Williams, MD**

Reading Assignments:

Hahn, E., Szwast, A., Cnota, J., Levine, J. C., Fifer, C. G., Jaeggi, E., ... & Williams, I. A. (2016).

Association between fetal growth, cerebral blood flow and neurodevelopmental outcome in univentricular fetuses. *Ultrasound in Obstetrics & Gynecology*, *47*(4), 460-65.

Leon, R. L., Mir, I. N., Herrera, C. L., Sharma, K., Spong, C. Y., Twickler, D. M., & Chalak, L. F.

(2021). Neuroplacentology in congenital heart disease: placental connections to neurodevelopmental outcomes. *Pediatric research*, 1-8.

Rosenberg, K. B.,. & Williams, I. A. (2010). Referral for fetal echocardiography is associated with

increased maternal anxiety. *Journal of Psychosomatic Ob & Gyn*, *31*(2), 60-69.

**March 11, 2025: (Morgan)**

**The maternal fetal placental unit and child outcomes**

Reading Assignments:

Firestein, M. R., Kliman, H. J., Sania, A., Brink, L. T., Holzer, P. H., Hofmann, K. M., ... & Fifer, W.

P. (2022). Trophoblast inclusions and adverse birth outcomes. *PLoS One.*

Vacher CM, Bonnin A, Mir IN, Penn AA. (2023) Editorial: Advances and perspectives in

neuroplacentology. Front Endocrinol.

Firestein, M. R., Romeo, R. D., Winstead, H., Goldman, D. A., Grobman, W. A., Haas, D., ... &

Champagne, F. A. (2022). Elevated prenatal maternal sex hormones, but not placental aromatase, are associated with child neurodevelopment. *Hormones and Behavior*, *140*, 105125.

**March 18, 2025: NO CLASS (SPRING BREAK)**

**March 25, 2025:**

**Covid Exposures During Pregnancy and Social Disparities in Outcomes**

Reading Assignments:

Shuffrey, L.C., Firestein, M. R., et al. (2022). Association of birth during the COVID-19 pandemic

with neurodevelopmental status at 6 months in infants with and without in utero exposure to maternal SARS-CoV-2 infection*. JAMA Pediatrics.* Advance online publication. doi:10.1001/jamapediatrics.2021.5563

Firestein, M. R., Dumitriu, D., Marsh, R., & Monk, C. (2022). Maternal Mental Health and Infant Development During the COVID-19 Pandemic. *JAMA psychiatry*.

Tesson, S., Swinsburg, D., & Kasparian, N. A. (2021). Maintaining momentum in infant mental

health research during COVID-19: Adapting observational assessments. *Journal of pediatric psychology*, *46*(3), 254-263.

**April 1, 2025: (Morgan + Bill)**

**Prenatal Risk Factors for Autism and Early Infant Markers**

Reading Assignments:

Nogueira Avelar e Silva R, Yu Y, Liew Z, Vested A, Sørensen HT, Li J. Associations of Maternal

Diabetes During Pregnancy With Psychiatric Disorders in Offspring During the First 4 Decades of Life in a Population-Based Danish Birth Cohort. JAMA Netw Open. 2021;4(10).

Maher, G.M., O'Keeffe, G.W., Dalman, C., Kearney, P.M., McCarthy, F.P., Kenny, L.C., & Khashan, A.S. (2020). Association between preeclampsia and autism spectrum disorder: a population-based study. J Child Psychol Psychiatr, 61.

McDonald N.M., Jeste S.S. (2021) Beyond Baby Siblings-Expanding the Definition of "High-Risk Infants" in Autism Research. *Curr Psychiatry Rep*. 23(6):34.

**April 8, 2025: (Bill + Morgan)**

**National and International Birth Cohort Studies**

Nelson CA, Frankeberger J, Chambers CD. An introduction to the HEALthy Brain and Child

Development Study (HBCD) study. Dev Cogn Neurosci. 2024 Oct;69:101441.

**April 15, 2025:**

**Final Presentations Day 1**

**April 22, 2025:**

**Final Presentations Day 2**

**April 29, 2025:**

**Final Presentations Day 3**

**May 6, 2025:**

**Final Papers Due**