PSYC 438: Behavioral Genetics *(#52625 – 4 units) - Fall 2021*

**Fall 2021 – Meeting Time:** T Th 2-3:50 **Location:** VPD 107

**Instructor**: Professor Laura A. Baker, PhD **Email**: lbaker@usc.edu

**Office hours:** Online - ZoomW 2-3:30 and by appointment

**Meeting ID: 937 6121 4379 Passcode: 036532**

**Course Description**

This course surveys the multidisciplinary field of Behavioral Genetics, which concerns the evolution and inheritance of behavior in both human and non-human species. Research designs and statistical methods used to disentangle the effects of genes and environment are explained, and recent literature is reviewed in substantive areas in both cognitive and social domains of behavior.

**Learning Objectives**

1. **Examine research methods and designs** **used in Behavioral Genetics**: Twin, adoption and family studies and animal models to investigate the influence of genes and environment on individual differences in behavior; molecular genetic approaches to identify specific gene-environment pathways to behavior.
2. **Obtain basic practical skills for analyzing data from genetically informative designs.** Using freely available software (R), analysis of existing datasets will be performed to increase understanding of statistical methods used in the study of genes and environment and their influences on behavior.
3. **Read and critically evaluate current research** investigating gene-environment interplay in behavior, including domains of cognitive ability and disability, personality, psychopathology and social interactions.

**Preparation**: Familiarity with basic concepts in statistics is required, such as would be obtained in the prerequisite PSYC 274 (Statistics). Other courses may be substituted with permission.

**Textbook:** Behavioral Genetics by Valerie Knopik, Jenae Neiderhiser, Robert Plomin, John C. DeFries, (2017). 7th edition, MacMillan Publishers. ISBN-10: 1-4641-7605-1; ISBN-13: 978-1-4641-7605-0; Format: Cloth Text, 560 pages

**Other Readings**: Selected journal articles and chapters outside of textbook to be posted online.

**GRADING:** Course grades will be based on *quiz and exam* performance, a *written paper* and *oral presentation* summarizing recent research, and class participation. *Class participation* will involve both synchronous (in-class) and asynchronous (Blackboard discussion forum) contributions. *Quizzes and exams* will be completed asynchronously online via Blackboard. Final grades will be determined as follows:

 Quizzes 15%

 Midterm examination 25%

 Final examination 25%

 Research Paper/Presentation 20%

 Class participation 15%

**Additional Notes:** Assigned readings should be completed prior to class meetings. Discussion Forum posts will be used to generate questions and discussions of readings, to be completed the day before class.

**Schedule of Topics, Readings and Assignments**

|  |  |  |  |
| --- | --- | --- | --- |
| DATE | TOPIC | READING | ASSIGNMENT/Due Date\* |
| WEEK 1 |
| Aug 24 | Introduction and overview – Top Ten Findings in BG | Ch 1; Plomin et al. 2016 | Discussion Forum (DF) / Wed Aug 25  |
|  26 | Mendel’s Laws: From Peas to People | Ch 2-3  | Quiz 1 / Fri Aug 27  |
| WEEK 2 |
|  31 | Statistics review: Individual differences and family resemblance | Appendix, Sect. 1  | DF\*\* / Mon Aug 30  |
| Sep 2 | Twin, family and adoption studies; Heritability estimation | Ch 6 | Quiz 2 / Fri Sept 3 |
| WEEK 3 |
|  7 | Quantitative Genetics: Beyond ACE | Ch 7; Appendix Sect. 2  | DF / Mon Sept 6 |
|  9 | Multivariate Analysis; GE correlation; GxE interaction | Ch 8 | Quizzes 3+4 / Fri Sept 9  |
| WEEK 4 |
|  14 | Biological Basis of Heredity | Ch 4; Appendix Sect. 3 | DF / Mon Sept 13 |
|  16 | Identifying Genes in Human Behavior | Ch 9 | Quiz 5 / Fri Sept 16  |
| WEEK 5 |
|  21 | Pathways from Genes to Behavior (*Guest Speaker: Patrick Turley)* | Ch 10; Lee et al. 2018 | DF / Mon Sept 21 |
|  23 | Film: Three Identical Strangers |  | Quiz 6 / Fri Sept 24 |
| WEEK 6 |
|  28 | *Guest Speaker: Nancy Segal, CSUF* |  | DF / Mon Sept 27 |
|  30 | Animal Models *(Guest Speaker: Manal Tabbaa)* | Ch 5 | Quiz 7 / Fri Oct 1 |
| WEEK 7 |
| **Oct 5** | **Midterm Exam** |  |  |
|  7  | Cognitive abilities | Ch 11 |  |
| WEEK 8 |
|  12 | Cognitive disabilities *(Guest Speaker: Linda Griffith)* | Ch 12 | DF / Mon Oct 11Quiz 8 / Wed Oct 13 |
|  14 | *Fall Recess – no class* |  |  |
| WEEK 9 |
|  19 | Psychopathology | Ch 13 | DF / Mon Oct 18 |
|  21 | Psychopathology | Ch 14 | Quiz 9 / Fri Oct 22 |
| WEEK 10 |
|  26 | Childhood Disorders | Ch 15 | DF / Mon Oct 25 |
|  28 | Addictions | Ch 17 | Quiz 10 / Fri Oct 29 |
| WEEK 11 |
|  Nov 2 | Personality | Ch 16 | DF / Mon Nov 1 |
|  4 | Personality Disorders |  | Quiz 11 / Fri Nov 5 |
| WEEK 12 |
|  9 | Health Psychology and Aging | Ch 18-19 | DF / Mon Nov 8 |
|  11 | Antisocial Behavior |  | Quiz 12 / Fri Nov 12 |
| WEEK 13 |
|  16 | Social Science Genetics Guest Speaker; Titus Galama, *Senior Economist, USC Center for Economic and Social research (CESR); Director, Center for Study of Inequality* | [*Marees et al. 2021*](https://www.nature.com/articles/s41562-021-01053-4.pdf?origin=ppub) |  |
|  18 | Class presentations | *TBD* | DF / Wed Nov 17 |
| WEEK 14 |
|  23 | Class presentations | *TBD* | DF / Mon Nov 22 |
|  25 | *Thanksgiving recess – no class* |  |  |
| WEEK 15 |
|  30 | Class presentations | *TBD* | DF / Mon Dec 29 |
| Dec 2 | Class presentations | *TBD* | DF / Wed Dec 1 |
|  **Research Paper Due / Thursday Dec 2** |
| FINAL EXAM WEEK |
|  **9** | **Final Exam 2-4 pm** |

\*\* DF = Discussion Forum

NOTES: All assignments due by 11:59 pm on assigned date unless otherwise noted.

Chapters are from textbook. Other readings will be made available on Blackboard

Please note that class meetings will be recorded and made available to all students throughout the semester. **Additional video or audio recordings of lectures by participants are not permitted and will be considered a violation of intellectual property rights.**

**COVID-19 Policies and Guidelines**

All students are expected to read, understand and adhere to the USC guidelines for returning to campus which may be found at: <https://we-are.usc.edu/wp-content/uploads/2021/08/2021-Fall-Guide.pdf>

**Statement on Academic Conduct and Support Systems**

**Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b/). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](https://policy.usc.edu/research-and-scholarship-misconduct/). 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 <https://sjacs.usc.edu/students/academic-integrity/>

**Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](http://osas.usc.edu/). You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

**Support Systems:**

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling/)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org/)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault/)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086*

[eeotix.usc.edu](https://eeotix.usc.edu/)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

[usc-advocate.symplicity.com/care\_report](https://usc-advocate.symplicity.com/care_report/)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

*The Office of Student Accessibility Services (OSAS) - (213) 740-0776*

[osas.usc.edu](http://osas.usc.edu/)

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

*USC Campus Support and Intervention - (213) 821-4710*

[campussupport.usc.edu](https://campussupport.usc.edu/)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity, Equity and Inclusion - (213) 740-2101*

[diversity.usc.edu](https://diversity.usc.edu/)

Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu/), [emergency.usc.edu](http://emergency.usc.edu/)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu/)

Non-emergency assistance or information.

*Office of the Ombuds* - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

[ombuds.usc.edu](http://ombuds.usc.edu/)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

*Occupational Therapy Faculty Practice - (323) 442-33*40 or otfp@med.usc.edu

[chan.usc.edu/otfp](http://chan.usc.edu/otfp)

​Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.