

Behavioral Genetics

PSY 267

ID: 2642

Fall 2011

Instructor: Elena Kosterina, MA

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Course language: English

Classes: Tue. 10-50

Office hours: by appointment

Prerequisites: PSY 122

Number of credits: 1,5

Course status: required

Description of the course: Nowadays, the study of human genetics has been developing very rapidly, providing a lot of knowledge for different disciplines. From the position of social sciences and specifically psychology, research in human genetics creates the whole subfield of *behavioral genetics*. This field of study is one of the integral parts of contemporary psychology due to the opportunity of deeper understanding of human behavioral traits and psychological conditions. The present course is an overview of theoretical knowledge in contemporary genetics of behavior.

The goal of the course is to provide students with the opportunity to explore the implications of behavioral genetics knowledge in contemporary psychological science. The course will give an overview of basic theoretical knowledge in genetics and study behavioral traits and psychological and psychopathological conditions from the position of genetics.

Core course materials:

1. Lewis, R. *Human Genetics: Concepts and Applications*. QH 431 L495 2003.
2. Johnson, R. *Biology*. HQ 308.2 R38 1989 (to be distributed)
3. Plomin, R. et al. *Behavioral Genetics*. (to be distributed)
4. Carey, G. *Human Genetics for the Social Sciences*. QH431 C243 2003 (to be distributed)
5. Hay, D. *Essentials of behavior genetics*. (to be distributed)
6. Mader, S. *Biology*. (with Student Study Guide). QH 308.2 M233 1998
7. Carson, R. A., Rothstein, M.A. 2002 *Behavioral Genetics : The Clash of Culture and Biology*. (**Ebrary** resources)
8. Malvee, S. 2010. *Principles of Genetics*. (**Ebrary** resources)
9. Clark, W. R. Grunstein, M. 2004. *Are We Hardwired? : The Role of Genes in Human Behavior*. (**Ebrary** resources)
10. Hernandez, L. M. Blazer, D. G. 2006. *Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate*. (**Ebrary** resources)

Course requirements and grading:

1. Attendance – 10%. It is recommended that students attend all the classes. Missing more than 3 classes without an excuse will effect this grade. Excuse should be supported with an official note.

2. Participation – 15%. Each class of the course is designed to cover one specific topic. During the first part of the class we will discuss the material of the previous class, and during the second part of the class we will have a lecture on the new part of material and listen to student presentations. To be able to participate in discussions and comprehend new material successfully, **students are required to be ready with the assigned readings** before the lecture.

Mini-tests. This form of activity is designed for several purposes: it will ensure that students are ready with their readings; it will help to see whether the students successfully get through the course materials and it will help the students to get prepared for the exams. Many tasks of the mini-tests will be used in the exams.

3. Presentation – 15%. Students are required to do a **15 minutes** presentation. Full list of topics is provided in the schedule section of the syllabus. **It is required that students consult with the instructor and discuss the content of the presentation before presenting in class.**

Presentations grading scale:

Informativity – 7

Comprehensible presentation of the topic – 2

Ability to answer questions and respond to opinions – 2

Consulting with instructor before the presentation – 2

Not reading from the notes – 1

Format – 1

4. Literature review – 20%. Students will be required to write a literature review on a selected topic. Students can suggest a topic of their interest or write a review of material on one of the topics below:

- 1) Benefits and risks of using genetics research in psychological science.
- 2) Psychological and social implications of determining genes for antisocial behavior (homosexuality/giftedness).
- 3) History of genetic research of IQ.
- 4) Genetic basis for depression.
- 5) Genetic basis for schizophrenia.
- 6) Genetic basis for autism/learning disabilities etc.
- 7) Genetics of personality/personality disorders.
- 8) Genetics of alcoholism/smoking/drug abuse, etc.
- 9) Genetics of antisocial behavior/APD/ODD etc.

Format of the paper: 5 pages Times New Roman, 12 font, 1,5 space, APA style formatting.

Essay grading scale:

Introduction to the topic – 2

Using several sources/authors to analyze the topic – 4

Deep analysis of information from all the sources – 4

Ability to compare opinions of different authors – 3

Providing chronological/organized analysis of information presented – 3

Ability to evaluate information obtained from different sources – 2

Format, APA style, footnotes/endnotes - 2

5. Exams – 40%. Students will be offered to take **midterm exam** after a half of the course material is covered, which will be graded out of **20%**. In the end of the course students will be offered to take **final exam** that will cover the material studied after midterm exam, which will be graded as **20%** of the final grade.

Bonus assignment – 3% bonus points. Students have an option to improve their grade for the course. Students can write a literature review on a topic of their interest or on a topic selected from a list of topics for literature review. Only in the case of successful completion of this task, a student can get additional 3% to the final grade.

X grade policy. X grade will be given to students only in the case of missing **more than 5 classes** without an excuse supported by an official note. In any other cases, including the cases of attending the classes but not completing the assignments, students will be graded according to the scale below.

Grading scale:

A	91 – 100%	C	61 – 64%
A-	86 - 90%	C-	56 – 60%
B+	80 – 85%	D+	51 – 55%
B	75 – 79%	D	46 – 50%
B-	70 – 74%	D-	41 – 45%
C+	65 – 69%	F	40 and less % of the final grade.

Course schedule:

Date	Topic	Reading	Presentation topics
23.08	Introduction. Cells structure and cycle. Chromosomes.	Carey, G. ch. 1. Johnson, R. ch. 10, 11. Lewis, R. ch. 2.	
30.08	Cells structure and cycle, mitosis and meiosis. Chromosomes: <u>chromosomal abnormalities.</u>	Johnson, R. ch. 10, 11. Lewis, R. ch. 2. Carey, G. ch 8.	Chromosomal abnormalities. (Lewis, R. p.246-259)
6.09	DNA, genetic code, protein synthesis.	Johnson, R. ch. 14-15. Lewis, R. ch. 10-11.	
13.09	Mendelian genetics. Inheritance.	Lewis, R. ch. 4. Johnson, R. ch. 12-13.	
20.09	Mendelian genetics.	Lewis, R. ch. 4.	1. Single-gene

	Inheritance.	Johnson, R. ch. 12-13.	disorders: cystic fibrosis, sickle-cell anemia, phenylketonuria, tay-sachs disease, hemophilia, Huntington's disease.
27.09	Exceptions to Mendel's laws.	Lewis, R. ch. 5. Sex-Linked Inheritance. (hand-out in your reader) Johnson, R. ch. 12, 13, 16.	2. X-linked genetic disorders.
4.10	Quantitative genetic theory. Gene-environment interaction.	Plomin, R. p.281-294. Appendix B. Plomin, R. p.30-37. Multiple-gene inheritance. Carey, G. ch. 18.	
11.10	Seminar: Review and preparation for midterm exam.		
Fall break			
25.10	Midterm exam		
1.11	Research methods in human genetics.	Hay, D. <i>Essentials of Behavior Genetics.</i> ch.6.	1. Types of research in human genetics. Research designs. 2. Social implications of research in genetics.
8.11	Genetics of intelligence.	1. Carey, G. ch. 20-21. 2. The Roles of Genetics in IQ and Intelligence. From Audiblox. (in your reader) 3. Richardson, K., Norgate, S. H. 2006 <i>A Critical Analysis of IQ Studies of Adopted Children. Human Development.</i> 4. Eckland, B. K. Genetic Variance in	Genetics of IQ.

		<i>the SES-IQ Correlation. Sociology of Education, 1979</i>	
15.11	Personality and personality disorders. Genetic bases.	<p>1. Thomas, T., Bouchard, Jr. <i>Genes, Environment and Personality. Science, 1994. (on e-course)</i></p> <p>2. Ebstein, R.P. <i>The Molecular Genetic Architecture of Human Personality: Beyond Self-Report Questionnaires. Molecular Psychiatry, 2006. (in your reader)</i></p> <p>3. Weiss, A. <i>Happiness Is A Personal(ity) Thing. Association for Psychological Science, 2008. (on e-course)</i></p> <p>4. Holden, C. <i>The Genetics of Personality. Science, 1987. (on e-course)</i></p>	Genetic basis of personality disorders.
22.11	Genetic basis for psychopathology.	<p>1. Carey, G. ch. 23. (to be distributed)</p> <p>2. Szatmari, P. <i>Heterogeneity And The Genetics Of Autism. (on e-course)</i></p>	<p>1. Genetic basis of schizophrenia.</p> <p>2. Genetic basis of mood disorders.</p>
29.11	Genetics of criminal behavior.	<p>1. Carey, G. ch. 24.</p> <p>2. Chapter 9: <u>The Genetics of Aggression. From Are We Hardwired?: The Role of Genes in Human Behavior. Clark, W. R. et.al. Oxford University Press, 2004.</u></p>	Genetics of antisocial behavior.
6.12	Genetics in health psychology. Cancer. Addictions.	<p>1. Plomin, R. Behavioral Genetics. ch. 12.</p> <p>2. Rossing, A. M. <i>Genetic Influences of Smoking: Candidate Genes. Environmental Health Perspectives, 1998.</i></p>	<p>1. Genetics of additions (alcoholism/tobacco smoking/drug abuse).</p> <p>2. Genetics of obesity.</p>
	<p>Final Exam</p> <p>Literature Review deadline.</p>		