

ADVANCED TOPICS IN PSYCHOBIOLOGY: THE ARCHITECTURE OF INTELLIGENCE



Psychology 830:410 – Spring 2017

Instructor

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Busch Psych, room 315

When and Where: Mon & Thu, 10:20-11:40 AM, at ARC-105 (Busch campus)

Textbook: Nicholas Mackintosh (2011). IQ and Human Intelligence, 2nd edition
(The first version is too outdated, so it won't do)

Office hours: Wed 4:00-5:00 PM at room 315 of the Busch Psychology building
(For simpler questions, send me an email or ask during class)

Course Description

“What is intelligence?”

This may seem a simple question to answer, but the study and measurement of intelligence (or its quantitative description, IQ) is one of the most controversial topics in the history of psychology. In this course, you will participate in an overview of the principal topics surrounding this fascinating area – including the development of intelligence, theories of intelligence, environmental effects on intelligence, the cognitive processes that regulate intelligence, the social and functional impacts of intelligence, and the neural basis for variations in intelligence.

Welcome and I hope you enjoy the ride!

Grading

I want from all of you a frequent, and meaningful engagement with the content, and the grading system for this course is based on that desire. (This is an Advanced Topics course, after all!) There are four types of evaluation: class participation, a series of assignments called “keen questions”, a group assignment called “exceptional exhibition”, and a final paper.

Keen Questions: At the end of each class topic (listed in the schedule below), you have to create your own question (related to the topic), and then write your own answer. In addition, you need to provide one scientific paper that gives relevance to either your question or your answer. The quality of the question is especially important here, and more interesting, novel questions get more points! Don't worry too much about the answers. I can help you with those.

Exceptional Exhibition: I split the class into small groups earlier in the course, and each group has to find an exceptional example of a public person or fictional character whose actions/stories are clearly related to intelligence. It could be a person who did exceptionally smart things by having high intelligence, or who did exceptionally smart things despite having low intelligence, or who did exceptionally dumb things despite having high intelligence, or who did exceptionally dumb things by having low intelligence. Then, on the week

scheduled, we have an “exhibition” where each group explains to all about your choice and how that person relates to the concepts we learned in class. Such as intelligence sub-domains/abilities, psychological correlates, hereditary factors, life experiences, practical outcomes, etc. At the end of the exhibition, each person votes for their favorite presentation (cannot be your own!), and the winner gets 10 extra points as a bonus.

Final Paper: At the end of the course, I assign you a subtopic/question related to the field of Intelligence, then you have to choose a few scientific papers on it (with my help), and write a paper.

Grade calculation

The maximum total is 300. After summing all of your points, divide the result by 3 to know your grade in percentage. I will give the final letter grades based on that percentage.

Assignment	Maximum Points
Class Participation	25
Keen Questions	125
Exceptional Exhibition	50
Final Paper	100

Points needed for each grade

A useful way to keep track of your performance is to think in terms of points below the maximum. For example: if you lose more than 30 points among all assignments, an A will be unlikely because your percentage will be below 90%.

Grade	Points	Percentage
A	270-300	90-100%
B+	255-269	85-89.9%
B	240-254	80-84.9%
C+	225-239	75-79.9%
C	210-224	70-74.9%
D	180-209	60-69.9%
F	0-179	0-59.9%

Course Schedule

Like any other complex phenomenon, the development of this course has a considerable degree of uncertainty. Therefore, the course schedule might change. Keep up!

Topic	Days	Topic	Relevant chapter from book
1	January 16	Introduction to the course	Chapter 1
	January 19	Definitions of intelligence and the progress on IQ testing	
2	January 23	The two (or more) factors of intelligence Factor analysis	Chapter 2
	January 26		
	January 30		
	February 2		
3	February 6	Intelligence as the efficiency of information processing	Chapter 3
	February 9		
4	February 13	Fluid intelligence, or what intelligence really means	Chapter 4
	February 16		
5	February 20	Genetics, heritability, and the malleability of intelligence	Chapters 11 and 13
	February 23		
6	February 27	Psychological processes that contribute to intelligence	Chapter 5
	March 2		
7	March 6	Animal studies of intelligence	Chapter 6
	March 9	Intelligence and the brain	
-	March 13	Spring Break! Enjoy!	-
	March 16		
8	March 20	Intelligence and the brain (again) Theories of g	Chapter 7
	March 23		
	March 27		
	March 30		
-	April 3	Exceptional Exhibition	-
	April 6		
9	April 10	Intelligence and development	Chapters 8 and 12
	April 13	Neuronal effects of working memory training	
	April 17		
10	April 20	Application and limits on IQ testing	Chapter 9
	April 24	Artificial intelligence	
	April 27		
-	May 1	Final Paper due	-

Additional Stuff

If you want to do extra work in order to get a better grade, do it during the course, not after it is over. Study, ask questions, prepare for the assignments, and get engaged! A grade is not something given to you; it is something you earn.

If you miss any assignment, you need to provide me with a reasonable explanation in order to replace it. Please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Beware of bogus notices on change of classroom! Changes in classroom times and room locations are announced only by me via Sakai. Ignore notices on classroom doors.

At last, because you had the patience to read this syllabus, here is a scientific article with tips about how to do well in college courses. Some of these tips might be old news to you, but I bet you don't know them all! (And if you do, the article is still useful to give you some confirmation from science.)

<http://journals.sagepub.com/doi/full/10.1177/1745691616645770>