

Course: 830:410 *Advanced Topics; The Architecture of Intelligence*, Fall 2013 (index 32452)

Day, Time, Location: M,W, 1:40-3:00, SEC-208

Instructor: Dr. Louis Matzel (Office hours: T, 1:30-3:30, or by appointment, or if you can catch me) Busch Psychology, Rm 313 phone: 848/445-5940 email: matzel@rci.rutgers.edu

Book: Mackintosh, N.J. (2011). *IQ and Human Intelligence*, 2nd edition. For this class, my lectures will make close contact with the book, so it is *essential* that you have and read the text. Not everything that is in the text will be covered in class, and much of what we discuss in class is not covered in the book. Nevertheless, the text is a comprehensive summary of this topic, and reading the text will prepare you for our lectures, so be sure to do your reading *before* the assigned lectures. Our test will be drawn primarily from the lectures, but you are responsible for all of the assigned reading. Note that occasional supplemental readings will be posted for you online.

The 1st edition of this text is out-dated and will not be a good substitute for the present edition.

Description: “Some of us are smarter than others”. To reduce the likelihood that anyone will be offended by that comment, I’ll qualify it by stating explicitly that most of you are probably smarter than me. If it still offends you, you probably have a misunderstanding of what we mean when we talk about intelligence, and you certainly know little about the data that supports that statement. This is not surprising. “Intelligence” is a poorly defined concept that is often disparaged (particularly by some schools of academics and in the popular press) as being nothing more than a social construct with little basis in reality (or biology). If you believe this contention, you may be suffering from an undercurrent of pressure to believe that “we are all equal”. Sorry to have to state what should be obvious: We’re not. But don’t fret: To say that we vary in intelligence may not mean what you think it does.

This course will be an attempt to clarify what we mean when we refer to intelligence. We will explore the ways in which intelligence impacts our lives, from academic success, to life-time income, to social success, and even who we choose to date and ultimately marry. Furthermore, we will ask about the ways in which heredity influences intelligence, and importantly, how the environment can interact with hereditary pressures to modulate intelligence. Relatedly, we’ll try to figure out how variations in intelligence are instantiated in the brain, and how the brain might be altered to make us all smarter. All of this will make explicit contact with the psychological processes that contribute to variations in intelligence.

Speaking of the modulation of intelligence, motivation is a principal determinant of the expression of intelligence. For example, less intelligent individuals are often motivated to achieve great success (e.g., Donald Trump). Likewise (and unfortunately), highly intelligent individuals often fail because they are not motivated to succeed (remember that Einstein failed a number of his elementary classes). To understand the material that we cover in class, you should be familiar with the material in the book, as it provides a foundation for the lectures. **Much of what I will discuss in class does not appear anywhere in the book.** If you don’t understand something in the book, or want me to discuss something in the book that I haven’t covered, *please* ask during class! Discussion helps us all understand the material a little better. Additionally, I can always talk to you about the material during my office hours (or any other time that you can catch me) and I respond to email when possible (but often not on the night before an exam, and *usually* not on the morning before an exam). Again though, it is a good idea to discuss things in class. Discussion means that you are thinking, and thinking will assure you a good grade. Again, **THINKING DURING CLASS WILL ASSURE YOU A GOOD GRADE!!!** In a class this size, everyone *can* get an “A”. However, only those that are motivated to get an “A”, and make the necessary effort, are likely to do so.

Owing to the common desire or belief that “everyone is equal”, courses on intelligence are not typically offered in academic departments in the U.S. (although they are considered a core topic in much of Europe). Why should you care? This is the first time that we have offered a course like this in this department, and it’s the first time that I have taught such a course. (In all of my years of education, I was never *once* exposed to any formal discussion of intelligence.) As a consequence, I’m not completely sure

how this course will develop. Keep up with the materials, think, and participate. We'll figure it out together.

Course requirements and grading:

We will have two tests. The tests will consist partly of multiple choice questions and one or two short essays. Each test will be worth 35% of your grade. As this is designated as a "writing" course, there will also be a final paper. About half way through the semester, we will agree upon some appropriate topics for the paper, then you can start writing. (Start thinking on Day 1 about what topic you might like to write about.) These papers will be relatively short (5-8 pages), but will need to be appropriately referenced and researched. They will be worth 20% of your grade. The last 10% of your grade will be assigned based on your participation. I expect *everyone* to voice opinions, ask questions, and respond to my questions. Participation will make the class better for everyone, and it will help us all learn more. Come to class prepared to talk, and you will earn an easy 10% of your grade. It's also worth noting that if you are participating, you'll also be *thinking*. This will make you a better student and will ensure that you get good grades on the exams. There may be a couple of opportunities for extra credit throughout the semester.

For the exams, don't expect to simply memorize words or facts; you need to *understand* the material, *particularly* the concepts. This latter point is important; don't busy yourself memorizing what I say in class. Instead, **think about** what I say in class.

In a class this small, I would hope that everyone will come to every class. However, you being an adult, attendance at my lectures is your choice. But again, **much of what will be covered in class is not in your textbook**, so I *highly* recommend that you come to class. This will be an easy class if you pay attention and participate (both mentally and verbally). The bottom line is, if you make that little effort to come to class and to pay attention while you are here, you will learn a lot and get a good grade. Again, since this is a small class, we will have time for as much discussion as any topic warrants, so you should *never* leave class without understanding everything that we talk about. Of course this also means that everyone who wants to get an "A" for the semester should be able to do so.

Because of an increasing tendency of students to try to persuade me (almost exclusively by email) to change their grade after the semester is over, let me be *very explicit*. I will give anyone as much help as they need *to prepare for tests and your your paper* during the semester, and if you need to get extra help, or want to do "extra" work (i.e., prepare more, think more, study harder, talk to me more...), the time to do so is during the semester. When the semester's over, there is *nothing* you can do to change your grade, and I will *never* let you do "extra work" after the semester to improve your grade.

<u>Topic</u>	<u>Week of (all dates are tentative, and subject to change: KEEP UP!)</u>	<u>Relevant Chapters</u>
1. Definitions of intelligence; the evolution of IQ testing.	September 2	Chapter 1
2. The two (or more) factors of intelligence; Factor analysis.	September 9, 16	Chapter 2
3. Intelligence as the efficiency of information processing	September 23	Chapter 3
4. Genetics, heritability and the malleability of intelligence	September 30	Chapter 11 Chapter 13 (do a quick review of Chapter 13)
5. Fluid intelligence, or what <i>intelligence</i> really means	October 7	Chapter 4

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| 6. | October 14 | |
| | Psychological processes that contribute to intelligence | Chapter 5 |
| Test 1 | October 22 (tentative!!!) | |
| 7. | October 21, 28 | Chapter 6 |
| | Animal studies of intelligence; Intelligence and the brain | |
| 8. | November 4 | Chapter 7 |
| | Theories of <i>g</i> | |
| 9. | November 11, 18 | Chapters 8 & 12 |
| | Stability and/or malleability of intelligence | |
| 10. | November 25 | |
| | Application and limits on IQ testing | Chapter 9 |

!!CLASSES END: December 12!!

Paper Due: December 14

Test 2: December 16 or later (look it up)



Traditionally, definitions of intelligence take one of two forms. Some definitions attempt to communicate what intelligence *is*, i.e., how it “behaves” and/or influences functional outcomes. Other definitions describe intelligence by the way it is *measured*, i.e., as a score obtained on a standardized IQ test. Neither of these approaches has met with any great success, and there is no generally agreed upon definition of this trait. How would *you* define intelligence?

What does it mean when I say:

1. My dog is intelligent?
2. My son is intelligent?
4. Einstein was *very* intelligent?

Does it make any sense to say

1. Chimps are more intelligent than dogs?
2. Humans are the most intelligent animal?

(are your answers to 1 and 2 contradictory? Maybe they should be!)