UN1021 Science of Psychology: Explorations and Applications

3 points
Summer-A 2021
TR 9a-12:10p US Eastern time (calculate time zone offset here)
Location: online & synchronous

Instructor: Dr. Caroline Marvin
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Office hours by appointment (Wednesdays 2-4pm)
[If these times don't work, you are also welcome to sign up for an appointment during my DUS office hours (Fridays 2-4pm).]

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Teaching Assistant: TBA

Bulletin description:

UN1021 offers a broad introductory survey of psychological science, discussing relations between the brain, behavior, and experience, with regard to topics including: sensation and perception; learning, memory, language, and cognition; emotions and motivation; development, personality, health and well-being, and social behavior. The course emphasizes science as a process of discovering both new ideas and new empirical results – and the ways in which psychological research can be used to address real-world challenges.

Learning objectives:

- Core concepts and themes in psychology: Identify basic concepts and research findings, and give examples of psychology's integrative themes.
  - Biological, psychological, social, and cultural factors continually influence mental processes and behavior.
  - Our minds interpret the outside world using many shortcuts, both helpful and harmful.
  - We learn a great deal about psychological processes from investigating how they develop, change with experience, and are disrupted.
  - Psychology is a science *of people, by people, for people,* and thus comes with a unique set of ethical concerns.
- Collecting, assessing & synthesizing empirical research:
  - Identify the kinds of questions psychologists ask at different levels of analysis. Find, identify, and appropriately cite relevant empirical research in psychology

- o Evaluate the ability of a study design to address a particular research question. Evaluate the methods, results, limitations, and broader implications of research findings and communicate these findings in oral, written, and graphical form.
  - o Evaluate the accuracy of popular news reports about empirical research and the appropriateness of graphs and other visualizations of data.
- Applications of psychology:
  - o Apply psychological principles of learning, memory, social cognition, etc. to work effectively in this class, both individually and in groups.
  - o Apply scientific reasoning to make sense of our daily lives, including things like habits, decisions, and social relationships.
  - o Evaluate the applicability of research findings to real-world scenarios and leverage those findings to inform our understanding and decision-making related to: social justice, education, public policy, and the health and well-being of individuals and societies.

Prerequisites:

None. [If you have already taken PSYC UN1001 Science of Psychology, you should not take this course, as the content is overlapping and you can only obtain credit for one of the courses.]

Role in the Psychology Curriculum:

UN1021 covers many of the same topics as UN1001, but uses a different course structure; students should take one or the other but cannot receive credit for both. Like UN1001 The Science of Psychology, UN1021 can serve as a prerequisite for further coursework in the Psychology department. For the Psychology major and concentration and for the Psychology post-baccalaureate program, it can fulfill the introductory psychology requirement. Similarly, for the Neuroscience & Behavior major, it can fulfill the P1-introductory psychology requirement. And the Committee on Science Instruction has determined that this course can be used to partially fulfill the science requirement.

Course format:

While this course will explore many of the same topics explored in UN1001 The Science of Psychology, it is structured somewhat differently. We will be using a problem-based learning model, such that the course will be structured around several challenges that are relevant in the world right now, and students will work in teams of ~4 to figure out ways that psychological research might inform these challenges. So, while some portion of synchronous class time will include overviews of key concepts, much of the time will be devoted to deeper dives into current literature and unanswered questions in psychological research.

These challenges may change from year-to-year, but the summer 2021 challenges are as follows:
1. Recommending strategies for academic success in the first year of college
   [drawing on research on the learning, memory, motivation, and metacognition]

2. Creating a policy regarding in-person vs. remote learning in a preschool-elementary school setting
   [drawing on research on visual perception, hearing, language, child development, and emotion]
3. Recommending changes to social media platforms to promote well-being
   [drawing on research on adolescent development, decision-making, emotion, stress, personality, social psychology, and mental health & well-being]

Communication with Instructor & TAs:

We are very much looking forward to the opportunity to get to know you this semester. We each hold weekly office hours, so please make an effort to attend. You don't need to have a specific question! We're happy to talk about course-related material, but we can also talk about lab research, course planning, etc. If you have the option of either emailing or signing up for office hours, please do everything you can to visit office hours. You'll get an immediate answer to your question, and we'll have the chance to get to know each other. If you do need to email, please help us not to miss your email by writing the subject line as "UN1021: [topic of email]." We can't always respond to emails right away, so if you haven't heard back from us after a few days, please feel free to ping us again – or, better yet, come to office hours!

Course materials:

In addition to textbook readings, this course will rely heavily on the empirical literature and academic reviews, as well as the occasional popular science article, podcast, and video. Pdfs and/or links to these materials will be posted under the relevant Module on Canvas. The textbook is available for purchase as an e-book:

> **Textbook**: Introducing Psychology: Brain, Person, Group by Stephen M. Kosslyn & Robin S. Rosenberg (FlatWorld):
> https://students.flatworldknowledge.com/course/2594569
> [The eBook is $29.95. You also have the option to purchase pdf/downloadable access for additional $20 or a physical copy of the textbook for an additional $25.]

Course Components:

Before-class preparation:

We will spend our time in class tackling big questions in psychology, working together as a class and with our individual teams to discuss empirical and review articles and their implications for public policy, education, justice, etc. In order to be able to fully participate in these discussions, we need to make sure that we come to class prepared, having spent some time reading (/watching/listening to) the materials and generating questions for discussion. To help facilitate this preparation, we'll have short, open-book quizzes on Canvas on the assigned class materials before each class session. These quizzes will give you a chance to check your understanding and enable you to engage with the sometimes complex material multiple times in order to better facilitate your understanding. As the goal is for you to learn the material, you will be allowed

two attempts for each quiz. Quizzes are due the day before class, and, as the goal is to prepare you for that day's class, there are no make-up quizzes.

Introduction to the Psychology Department:

As this is likely your first class in the Psychology department, we aim to use this opportunity to introduce ourselves. Towards that end, we will post video interviews with faculty members about their areas of research, their career trajectories, and the pressing questions and challenges in their respective fields of study, for your optional viewing. During some class periods, we will also have the opportunity to hear short lectures from PhD students and postdoctoral scholars at Columbia, who are doing research relevant to our challenges.

Team-based challenges:

While class time will incorporate some more traditional lecture-focused teaching, some portion of synchronous class time will be devoted to working in your assigned teams on the particular challenge for the unit. More detailed directions will be provided in class, but, briefly, each challenge is structured such that it includes daily subcomponents and culminates in a larger team project. For each day of the challenge, one team member will be the "expert," meaning they will come to class having read a related article that no one else on the team has read. The expert will be responsible for not only reading that article but also submitting a written response to a short prompt relating the article to the case (due the day before class). Additionally, teams will be given a short prompt related to the topic of that day and the challenge. Your team will work together to respond to this short prompt during class, and it will be due by the end of the same day. On the last day of the unit, teams will have the opportunity to work more on their final projects. It is expected that much of the work on these challenges will happen during class, but these final case projects will be due a few days after the unit concludes to give teams a little extra time to finalize everything. So, for each challenge, you and your team will submit the following deliverables:

- Each expert will submit their response related to their assigned article the day before their assigned class
- Each team will submit a response to the daily team prompt either at the end of class or by the next day
- Each team will submit a final project for the challenge, typically due a day after the last class of the unit.

Final individual project:

Early in the course, you will be asked to come up with a real-world issue of your own -- a societal, legal, educational, public policy, etc. question that can be somehow addressed by psychology research. You will find scientific literature addressing different aspects of the question and synthesize it in a final project that can take the form of a literature review, a policy paper, an amicus brief, proposed intervention, etc. This assignment will be scaffolded such that you will first submit a topic proposal, then an annotated bibliography, then a rough draft, and then a final draft. You will receive feedback on your project throughout these stages, and we are happy to meet during office hours to talk more about your ideas.

Grading:

Our goal in this course is for you to achieve the rigorous learning outcomes we have set. For this reason, we will be using a version of what is called specification grading. In this approach, we will clearly describe a series of specifications (specs) required in order to successfully complete an assignment, and then we will assess whether those requirements were met *in full* or not. In other words, every assignment is credit/no credit, and there is no partial credit or docking of points. For each assignment, you will receive a credit/no credit determination of whether you met the specs for that assignment. In addition, we will either provide substantive individual feedback on your submission, or we will review a few submissions together as a class. This feedback is designed to help you meet specs and earn credit on future assignments. We will discuss this in more detail in class, if you have questions beyond what is written here.

Course components:
- Daily Canvas quizzes: Score of 80% or higher meets standards for each quiz
  - You will have two attempts to achieve that score. Quizzes are open book and open note.
- Expert papers: Over the course of the semester, you will write 3 short papers as the expert for your group. We will clearly describe specs you will need to meet to receive credit for each paper.
- Daily team activities: Each day, you will have a team prompt to respond to. We will clearly describe specs your team needs to meet to receive credit for your responses.
- Team projects: For each unit, your team will submit one final product to complete the unit challenge. We will clearly describe specs your team needs to meet to receive credit for your project.
- Final project: Detailed specs will be provided for each subcomponent (topic proposal, annotated bibliography, rough draft) and for the final paper.
- Metacognition journal: In order to facilitate your learning and growth, throughout the course, we will ask you to complete reflections, to provide constructive feedback to your team members and to your instructional team, and to respond thoughtfully to feedback you receive.

Your end-of-semester grade will be determined by which standards you met. In the table below, each row outlines the standards that must be met in order to achieve that letter grade. For example, to receive an A in the course, you will need to have 1) scored an 80% or higher on at least 10 of the 12 quizzes, 2) met specifications for all 3 expert papers, 3) met specifications for at least 8 of the 9 daily team prompts, 4) met specifications for all 3 team projects, 5) met specifications for all 3 final project subcomponents (topic proposal, annotated bibliography, rough draft), and 6) met specifications for an A-level final project. Because the aim of this course is to support your growth and to enable you to achieve all of the learning outcomes we have set, in order to obtain the letter grade listed in the leftmost column, you will need to meet *all* of the standards described in that row.

	Quizzes	Expert papers	Daily team activities	Team projects	Final project components	Final project

A	Meet specs on at least 10 of the 12 quizzes	Meet specs on all 3 papers	Meet specs on at least 8 of the 9 team prompts	Meet specs on all 3 team challenges	Meet specs on all 3 final project components	Meet specs for A-level final project
B	Meet specs on at least 8 of the 12 quizzes	Meet specs on 2 of the 3 papers	Meet specs on at least 6 of the 9 team prompts	Meet specs on 2 of the 3 team challenges	Meet specs on 2 of 3 final project components	Meet specs for B-level final project
C	Meet specs on at least 6 of the 12 quizzes	Meet specifications on 1 of the 3 papers	Meet specs on at least 4 of the 9 team prompts	Meet specs on 2 of 3 team challenges	Meet specs on 1 of 3 final project components	Meet specs for C-level final project
D	Meet specs on at least 4 of the 12 quizzes	Meet specifications on 1 of the 3 papers	Meet specs on at least 2 of the 9 team prompts	Meet specs on 1 of 3 team challenges	Meet specs on 1 of 3 final project components	Meet specs for D-level final project

The table above provides a breakdown of how to earn the base letter grades. The addition of + or - will be determined by the completion of the Metacognition journal assignments, according to the specs provided. More details will be provided in class, but, briefly, there will be several required metacognition journal assignments, as well as several optional assignments. Not completing all of the required assignments results in a "-", completing just the required assignments results in the letter grade alone, and completing at least three of the optional assignments results in a "+," except in the case of an A+, which is reserved for students who accomplish the following: 1) meet specs on all quizzes, 2) meet specs on all expert papers, 3) meet specs on all team prompts, 4) meet specs on all team challenges, 5) meet specs on all 3 final project components, 6) meet specs for A+ level final project, <u>and</u> 7) complete all the metacognition journal assignments.

To give you a little flexibility and to maximize your opportunities to achieve these learning outcomes, you will also be given 3 "tokens" for the course. You may use a token for any of the following:
- A revision/resubmission on an expert paper, to be submitted up to one week after you've received feedback
- A free quiz credit, to be claimed anytime *before* the deadline for that quiz
- A 24-hour extension on an expert paper or subcomponent of the individual final project, to be claimed at least 12 hours *before* the original deadline

For revisions or extensions on team assignments, *every* member of the team must agree to each spend a token to obtain any of the following:
- A revision/resubmission on a daily team assignment or on a unit team challenge, to be submitted up to one week after you've received feedback
- A 48-hour extension on any team assignment or project, to be claimed by your team at least 12 hours before the original deadline.

At the beginning of the semester, you will start with 2 tokens to spend. After spring break, you will receive a third token. You may spend a token by emailing *all members of the teaching team* by the appropriate token deadline, describing how you would like to spend that token.

Course policies:

Fostering an inclusive classroom:
Our aim is to foster a learning environment that both supports a diversity of perspectives and experiences and encourages you to expand your understanding. Please reach out to me with any concerns or suggestions you may have to better address your learning needs and to improve the effectiveness of this course. We look forward to working together to create a classroom community built on mutual respect and inclusivity.

Students who may require accommodations should contact Prof. Marvin before or during the first week of class. You should also contact the Office of Disability Services (ODS) in Lerner Hall before the start of the course to register for these accommodations. The procedures for registering with ODS can be found at https://health.columbia.edu/content/disability-services or by calling (212) 854-2388.

Health & well-being:
Many of us have periods in which our mental health and well-being suffer, especially during such difficult and uncertain times. I urge you to take care of yourselves – and of each other. Please prioritize your mental health and wellbeing and know that there are many resources available to you both within our classroom community and throughout the university:
https://health.columbia.edu/content/counseling-and-psychological-services
http://blogs.cuit.columbia.edu/nightline/
https://universitylife.columbia.edu/student-resources-directory#health
We are in this together. Please reach out for help if you need it, and, if you see others who are struggling, please make sure they know how to find the support they need.

Ensuring Academic Integrity:
As members of this academic community, we are responsible for maintaining the highest level of personal and academic integrity, which includes presenting only our own work on assignments and exams. You can find detailed definitions and examples in Columbia University's Guide to Academic Integrity (https://www.cc-seas.columbia.edu/integrity). Any questions of academic integrity will be automatically referred to Columbia's office of Student Conduct and Community Standards. The semester progresses very quickly, and there is a lot of material to learn. If you find yourself in a situation – e.g., starting an assignment too late – in which it seems like the best option may be to violate your academic integrity, please talk to me. Together, we can work out a solution. It is far better to spend a token to revise an assignment than to compromise your academic integrity and potentially put your academic standing at the university in jeopardy. Plagiarism—whether intentional or inadvertent—is a serious violation of academic integrity. If you have any questions about what constitutes plagiarism and/or how to properly cite sources, please come to me. I am more than happy to help.

Schedule:
The schedule below is preliminary and subject to minor adjustments as needed. (The textbook is referred to below as K&R.)

Date	Topic	Readings and Assignments
5/4	Introduction/ Thinking like a psychological scientist Research design	• Read K&R Ch. 1 Intro to Psychological Science, esp. focus on 1.3 The Research Process • Watch course welcome video • Complete Canvas quiz on syllabus
5/6	Neurons & neuron communication Brain	• Read K&R Ch. 2: Biology of Mind & Behavior, sections 2.1 (Brain Circuits) and 2.2 (The Nervous System), sections 2.3 (Spotlight on the Brain), and 2.4 (Probing the Brain) • Watch Short video showing directions in the brain • Watch action potential video • Complete Canvas quiz • *Optional: Watch Prof. Carl Hart's TEDMED - Talk Details - Let's quit abusing drug users*
5/11	Reading empirical articles Learning Introduction to team challenge 1: Creating a guide to academic success	• Read Turetsky et al. (2020). A psychological intervention strengthens students' peer social networks and promotes persistence in STEM. *Science Advances, 6*(45). • *Watch video interview with Dr. Kate Turetsky* • K&R, Ch. 4: Learning (entire chapter) • Complete Canvas quiz ***Topic proposal due 5/12***
5/13	Memory	• Read K&R, Ch. 5: Memory (entire chapter) • Complete Canvas quiz Each team expert reads and writes short response to one of the following: • Roediger III, H. L., & Pyc, M. A. (2012). Inexpensive techniques to improve education: Applying cognitive psychology to enhance educational practice. *Journal of Applied Research in Memory and Cognition, 1*(4), 242-248.

		• Zerr et al. (2018). *Learning efficiency: Identifying individual differences in learning rate and retention in healthy adults.* • Kornell, N., & Metcalfe, J. (2006). Study efficacy and the region of proximal learning framework. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *32*(3), 609. • Read Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological science in the public interest*, *9*(3), 105-119.
5/18	Knowledge emotions Teamwork	• Read Knowledge Emotions: Feelings that Foster Learning, Exploring, and Reflecting • Watch curiosity video • Complete Canvas quiz *Unit 1 team challenge assignment due 5/19*
5/20	Visual perception Audition Introduction to team challenge 2: Propose in-person vs. remote teaching policy for preK-Elementary school	• Read K&R, Ch. 3: Sensation & Perception, section 3.1 Vision, section 3.2 Hearing • Read Face-Blind • Complete Canvas quiz • Optional: Watch video interview with *Prof. Sarah Woolley* *Annotated bibliography due 5/21*
5/25	Language Infant & child development	• Read K&R, Ch. 6, section 6.1 Language • Read K&R, Ch. 9: Psychology over the Life Span, section 9.2 Infancy & Childhood • Complete Canvas quiz • *Optional: Watch video interview with Prof. Dima Amso* Each team expert reads and writes short response to one of the following: • Mondloch, Geldart, Maurer, & Le Grand, 2003. Developmental changes in face processing skills. *Journal of Experimental Child Psychology*.

		• Klatte, M., Bergström, K., & Lachmann, T. (2013). Does noise affect learning? A short review on noise effects on cognitive performance in children. *Frontiers in Psychology*, *4*, 578. • Kuhl, P. K. (2007). Is speech learning 'gated'by the social brain?. *Developmental Science*, *10*(1), 110-120. • Woodard, K., & Pollak, S. D. (2020). Is there evidence for sensitive periods in emotional development?. *Current Opinion in Behavioral Sciences, 36*, 1-6.
5/27	Theory of mind Teamwork	• Frith & Frith (2005). Theory of mind. Current Biology, 15(17), R644-R645. • Watch video interview with Prof. Tovah Klein • Complete Canvas quiz ***Unit 2 team challenge assignment due 5/28***
6/1	Adolescent development Emotion, motivation & stress Introduction to team challenge 3: Adapting social media to improve well-being	• [Adolescent Development	Noba](#) • K&R, Ch. 7: Emotion & Motivation, 7.1 What Causes Emotions (up to and including Positive Psychology), section 7.2 Motivation & Reward • K&R, Ch. 10: Stress, Health, & Coping, section 10.1 What is Stress, section 10.3 Strategies for Coping (skip Alcohol & Drugs section) • Complete Canvas quiz • *Optional: Watch video about some of Prof. Daphna Shohamy's research:* [*Teenage Brains: Wired to Learn	Columbia	Zuckerman Institute*](#) ***Rough draft due 6/2***
6/3	Judgment & decision-making Social psychology	• [Judgment and Decision Making	Noba](#) • K&R Chapter 13, section 3.1 Social Cognition, section 13.2 Social Organization, Yielding to Others, Helping Behavior • Complete Canvas quiz Each team expert reads and writes short response to one of the following:

		• Galván, A. (2014). Insights about adolescent behavior, plasticity, and policy from neuroscience research. *Neuron*, *83*(2), 262-265. • Yeager, D. S., Dahl, R. E., & Dweck, C. S. (2018). Why interventions to influence adolescent behavior often fail but could succeed. *Perspectives on Psychological Science*, *13*(1), 101-122. • Meshi, D., Tamir, D. I., & Heekeren, H. R. (2015). The emerging neuroscience of social media. *Trends in cognitive sciences*, *19*(12), 771-782. • Park, G., Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Kosinski, M., Stillwell, D. J., ... & Seligman, M. E. (2015). Automatic personality assessment through social media language. *Journal of personality and social psychology*, *108*(6), 934.
6/8	Personality Mental health & treatment	• K&R Personality, section 8.2 What is personality?, section 8.3 Biological Influences on personality, section 8.4 Contributions of learning and cognition to personality, 8.5 Sociocultural influences on personality • Read K&R, Ch. 11: Psychological Disorders, section 11.1 Identifying Psychological Disorders and section 11.2 Overview of Mood and Anxiety Disorders • Read K&R 12.2 Treatments that Focus on Behavior, 12.4 Biologically-Based Treatments, 12.5 Treatment Issues • Complete Canvas quiz
6/10	Well-being Team work	• [Happiness: The Science of Subjective Well-Being](#) • [Optimal Levels of Happiness	Noba](#) • Complete Canvas quiz ***Unit 3 team challenge assignment due 6/11***
6/18		***Final draft of paper due 6/18***