Department of Psychology – Columbia University

Neuroscience of Imagination

GU44XX – Fall 2023

4 points

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Office: SCH 315

Class Meets: Tuesday: 4.10PM – 6PM

Office Hours: Tuesday 2 – 4PM

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Course Bulletin Description

Visual Mental Imagery (VMI) is perceptual processing in the absence of direct sensory input – a quintessentially human faculty. It is our "Mind's Eye" - the faculty we use to relive our memories, enjoy a novel, create a painting, or predict whether our car will fit in a parking spot. As William Blake famously stated: "The imagination is not a state: it is the human existence itself". In short, VMI simulates the content of perceptual experiences, perhaps by translating conceptual knowledge into a visual format. Nobody has yet provided a convincing theory as to how to explain the subjective nature of our mental lives in objective physical terms. In this seminar, we will get a detailed understanding of the underlying neural processes responsible for conscious processing and awareness - one of the hottest topics in contemporary neuroscience

Discussion will be related of current issues in the scientific studies of mental imagery, particularly in the visual modality, including the search for the neural correlates of visual imagination, and the various kinds of impairments of VMI in clinical and non-clinical cases.

A crucial aspect of this seminar is to help students develop their ability to critically read and evaluate the latest published research in this field.

Prerequisites

Open to Ph.D. students in the Psychology department and graduate students in other related departments, with instructor's permission. Open to advanced undergraduate students who have taken an introductory course in neuroscience or cognitive psychology (e.g., UN2430), with instructor's permission.

Full Description:

Close your eyes and think of Leonardo da Vinci's Mona Lisa. Is she looking at you? Is her hair curly? In voluntary Visual Mental Imagery (VMI) we use our mind's eye to visualize things that are not in our direct

line of sight (or that do not exist at all: imagine Mona Lisa frowning at you). VMI is perceptual processing in the absence of direct sensory input - the capability we use when we relive our memories, enjoy a novel, create a painting, or predict whether our car will fit in a parking spot.

Individuals vary in the subjective vividness of their voluntary VMI. Some experience extremely vivid quasi-visual imagery (hyperphantasia); others have less vivid imagery; in a few, otherwise healthy individuals – around 4% of the general population – VMI is completely absent (aphantasia).

After briefly reviewing the historical philosophical debate that dominated the study of visual conscious perception and imagination (weeks 1 and 2), this seminar will then focus on contemporary investigations of mental imagery, including major challenges and pitfalls. By the end of the seminar, students should have learned about major theories of VMI and contemporary neuroscientific methodologies that allows us to study this cognitive function.

Specifically, the course will:

- introduce theories, research, and experiments that provided the basis for most debates on consciousness perception, whether seen or imagined;
- Provide overview of structure and function of sense organs and discussion on the role of psychophysical and neurophysiological experiments in providing insights in our understanding of consciousness.
- introduce case studies from neuropsychological patients for discussion, with the goal of demonstrating how data from patients with specific types of brain damage provide important insights into the neural bases of normal cognitive functioning.
- tream through a variety of cognitive functions which are important to achieve and maintain a “conscious imager” over time, from attention, to episodic memory, to semantic processing
- Meld together the data from both the behavioral and neurobiological sources for each topic to show our current thinking on how VMI is instantiated in the brain, and how it is mapped onto specific brain networks and the nature of the calculations performed in the different nodes within these networks.

Learning Objectives:

By the end of the course, students are expected to demonstrate their knowledge of:

- The structure of the major sensory systems.
- The history and methods used in the science of mental imagery.
- Behaviorally-based models and theories of mental imagery.
- The neurobiological bases of normal and abnormal conscious states.

Role in the Psychology curriculum

PSYC GU44xx is an advanced seminar, designed particularly for undergraduates who are majoring in Psychology or in Neuroscience and Behavior, for students participating in the Post-bac Psychology Program, and for Psychology Graduate Students. Students with a background in the computational sciences and philosophy are also welcome to apply. In covering the cognitive and neural bases of mental imagery, the course provides an integrated perspective on topics of current interest in the fields of psychology and cognitive neuroscience.

The seminar fulfills the following degree requirements

- For Psychology Graduate Students, PSYC GU44xx will apply toward the "two seriously graded seminars" requirement of the Master's degree.
- For the Psychology major or concentration in the College and in G. S., and for the Psychology Post-bac certificate, PSYC GU44xx will meet the Group II (Perception and Cognition) distribution requirement.
- For the Neuroscience and Behavior joint major, PSYC GU44xx will fulfill the 5th Psychology requirement: "one advanced psychology seminar from a list approved by the Psychology Department advisor to the program."
- For the Psychology post-bac certificate, PSYC GU44xx will fulfill the 7th (advanced seminar) requirement
- For the science requirements of the College and GS, PSYC GU44xx is numbered among the group of courses (3200s, 4200s, 3400s, 4400s) that are not designed for non-science majors but that do fulfill one term of the requirement. Graduate students, and students who are majoring in Psychology or in Neuroscience and Behavior, will have priority over students who wish to take the course for the science requirement, and we anticipate that it will rarely be used for that purpose.
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Readings: There is no textbook required for this course: Readings will comprise scientific articles from peer - reviewed journals, literature reviews, and commentaries in the fields of attention and perception. The readings listed in the Schedule below are divided into three categories: **History & Review, Original Research, Method,** labels that briefly describe each article. All readings will be posted in PDF form on CourseWorks. Each week you will be asked to *thoroughly* read one article from each category (three articles per week). Although this may sound like a lot, it is the **best and easiest** way to learn about science, while at the same time improving your writing skills by delving into other authors' writing and to expand your background knowledge. Trust me, it works!

Course Requirements:

1. **Class preparation:** The assigned readings are designed to expand your knowledge on the latest advancement in the field of cognitive neuroscience of imagination and to hone your critical thinking skills. The topics discussed during the seminars are complex, leaving plenty of space to discuss and debate. Strong preparation and participation will enable us to have high-level, thought-provoking discussion.

2. **Participate in Discussion:** Thorough reading enables thoughtful discussion. It is important to engage with the material during class discussions, since your active participation in these discussions will contribute to your final grade. If you feel that regularly contributing to class discussions is difficult for you, you should raise this issue with me as soon as possible. In such cases, we might be able to work out a way for you to participate thoughtfully through your reading responses.

   Generally speaking, effective class preparation and participation can be divide into five components:

   - Asking insightful or clarifying questions.
   - Connecting the reading to other reading we've done in the course or reading you've done on your own, drawing parallels and/or contrasts among findings.
   - Actively listening to fellow classmates and responding to their ideas.
   - Offering thoughtful critiques of the research methodology and providing suggestions for how it might be improved.
   - Bringing in outside sources – potentially from the news media or other sources – that shed light on neuroscience findings or that illustrate ways in which these findings are interpreted and applied.

Participating in class discussion is particularly important in an upper-level seminar course. To make sure that a clear and transparent grading scheme is in place, each one of the five components will be worth 1 point. To fulfill this requirement, students are expected to engage in at least three of the five components (3/5 points per class; see *Contribution to Class Discussion* in *Grading* below).

3. **Reading Response:** The day before each class period you will be asked to submit a short (one-paragraph per article read) reading response to CourseWorks: due Mondays at 8pm. Goals of these reading responses are to help you keep current on course topics and to help me understand where students may have had difficulty with the readings and which topics students were most intrigued by and, therefore, which areas may warrant more focus during class time. Each reading response should be no more than a short paragraph per article read, either discussing something interesting you found in the readings or asking substantive questions about concepts in the reading you found challenging. As the goal of these assignments is to keep you up to speed and to help guide my teaching and our class discussions, the assignments will just be graded on a pass/fail basis. Reading responses submitted after the deadline will receive only half credit.
4. **Presentation and Leading discussions:** You will be responsible for presenting two articles and leading the follow-up class discussions and Q&A during those meetings. I will be sharing a google doc for self sign ups, please sign up within the first week of class. The first presentation should happen between week 3 and 7; the second presentation between week 8 and 14. I'll provide more information and give a demonstration of the sort of presentation I'm looking for in the first week of class. Briefly, you'll walk us through your assigned article, describing the methods and results, highlighting any strengths or weaknesses of the study design, and giving your thoughts on the meaning and importance of the findings. Note important info below:

a. You must send your presentation to the instructor ahead of time (deadline for full credit is the Tuesday before your presentation day at 8PM), so that I can provide feedback in advance of your actual presentations.

b. You are expected to implement that feedback in your presentation, therefore making your slides clearer and more accessible. Save time in your schedule for this.

c. Upload the slides on Courseworks the night before class, so that everyone has the slides available during class.

d. Your presentation will be graded by the Instructor AND by your peers. You will receive a cumulative score and some comments about what went well / what could be improved in your presentation style.

As the goal is for you to become more skilled in presenting research findings and leading discussions, in calculating grades, the second presentation will be weighted more heavily than the first (see grading scheme).

5. **Research manuscript:** The culmination of this course is the creation of a novel research proposal relating to the material of the class. Good writing is good thinking, and a primary goal of this assignment is to help students enhance writing and critical thinking skills by deepening their understanding of a course-related topic of their choice. The research manuscript assignment is composed of the 4 main steps of the scientific writing process:

    a. Topic Proposal (max 1 page)

    b. Full Paper Submission (8-10 pages)

    c. Anonymous Peer Review

    d. Paper Re-submission (8-10 pages)

a) **Topic Proposal** (deadline Week 7 – Tuesday October 17th at 8PM): Early in the course students will be asked to identify a topic related to the class and submit the proposal on the Courseworks Assignment Page. The Instructor will promptly approve the topic or give some suggestions for changes if needed (e.g., if the topic chosen does not fit with the course's content). Good topic proposals define literature searches that a student is planning to conduct, explaining why that topic is relevant / important.
Structure your topic proposal as:

- Title of the topic
- Your name and last name and affiliation
- A paragraph (about 150 words) describing the motivation for conducting this research proposal

- A preliminary list of references that the student is planning on reading to write the assignment.

b) **Submission** (deadline week 11 – November 14th at 8PM): Once your topic is approved, students can begin work on their paper. Generally, good submissions are about 10 pages manuscripts (excluding references).

   - Title page
     i. Title of the topic
     ii. Your name and last name and affiliation
   - The body of the submission
     iii. Clearly identify what is the topic you are working on
     iv. Briefly summarize the state of the art of the literature and why the topic is important
     v. Identify the constructs / concepts you want to study and methods used
     vi. Identify a scientific question that justify the need for your scientific investigation
     vii. Critically discuss the relevant literature
     viii. Discuss limitations of the relevant studies discussed/gap in the literature
     ix. Propose your study / experiment
     x. Why your study fills the gap you identified / answers the question you identified?
     xi. Conclusions and future directions
   - The list of references cited in the assignment (not included in the 10 page limits).

Note: think about this submission as a **final** submission. Mimicking what happens in scientific writing, when you submit your work to a *Journal* that means that you consider it as *good enough to be published*. You have 6 full weeks to work on it after the topic proposal submission, so make sure that you allocate enough of your time to this assignment. The better your writing, the higher the chance that your peers will be able to provide effective feedback (see the next point). I will NOT provide comments and suggestions on the first draft, but submissions will be checked for clarity and file readability.

c) **Anonymous peer review** (deadline week 13 – Tuesday November 28th at 8PM): In order to make this activity also an opportunity for students to actively learn, one of the steps in the revision process will be a round of "anonymous peer review," in which each student will be asked to review the drafts of at least two of their colleagues. This will put each student in the position of the "reviewer," by critically analyzing and understanding pitfalls, shortcomings, but also strengths of the writing of their peers; this is expected to influence also the student's own writing by adjusting the focus and clarifying potential issues. Students will be randomly assigned to anonymously peer review the drafts written by two other students. Comments and suggestions from the peer-review process should be appropriately considered when writing the

final paper, based on the student's judgment. Students will be evaluated on their own writing, their feedback provided to other students, as well as their ability to incorporate the feedback into their work. Make sure you provide valuable feedback to your peers in order to get full points on the final writing assignment.

d) **Re-submission** (deadline week 16 – Tuesday December 12th at 8PM): The final draft of the paper will be graded not only as a standalone paper but also in how it demonstrates improvement upon the earlier draft.

- Title page
    i. Title of the topic
    ii. Your name and last name and affiliation
- Response To Reviewer
    iii. Discuss how you addressed reviewer's comments
        1. List each one of the comments from reviewers you received
        2. Discuss whether or not and how you addressed each one of them
        3. In the body of the re-submission mark in red font the parts that you added in the re-submission to address a reviewer's comment.
- The re-submission itself (maximum 10 pages)
    iv. Clearly identify what is the topic you are working on
    v. Briefly summarize the state of the art of the literature and why the topic is important
    vi. Identify the constructs / concepts you want to study and methods used
    vii. Identify a scientific question that justify the need for your scientific investigation
    viii. Critically discuss the relevant literature
    ix. Discuss limitations of the relevant studies discussed/identify a gap in the literature
    x. Conclusions and future directions
- The list of references cited in the assignment (not included in the 10 page limits).

While writing, think about the following prompts:

- Include relevant information about what you read
- Why did you choose to write about this?
- What was the potential advancement in the literature that you are thinking about?

- What is the main take home message you want to convey?
- What are potential future research ideas that articles you read inspired in you
- What are the potential societal contributions or effects of this line of research? Are those new?

More detailed information about how to successfully write this assignment will be discussed in class during *Practice Writing* sessions. There will also be a folder called "Writing Assignment Rubrics" on Courseworks with additional material for you to read.

Formatting requirements:

A. Page length: between 8 and 10 pages, references excluded;

B. Double spaced;

C. One-inch margins.

Grading

Grades will be calculated based on the percentages outlined below.

- Class preparation and participation……..…….20%
  - Reading responses 50%
  - Contribution to class discussion (at least 3 points / class; see above) 50%
- Presentation and Discussion leading……..…….40%
  - First presentation 40%
  - Second presentation 60%
- Research Manuscript……..…….40%
  - Proposal 10%
  - Submission 20%
  - Peer Review 20%
  - Re-Submission 50%

Letter Grade Assignment

A+: 99-100	**A:** 94-98	**A-:** 90-93
B+: 87-89	**B:** 84-86	**B-:** 80-83
C+: 77 - 79	**C:** 74-76	**C-:** 70-73
D: 60 - 69	**F:** <60	

Late Submissions Policy: a penalty worth of 50% of an assignment's grade will be applied to late submission (i.e., presentations, reading responses, components of the writing assignment).

Note: to avoid the penalty for late submission try to work on the assignments ahead of time. It is often the case that Canvas glitches happen during the process of submitting an assignment. The best way to avoid incurring the late submission penalty is giving yourself enough time *before* the actual deadline. In other words, submitting an assignment at 7:59PM is a risky decision and we recommend you avoid doing that or you might incur in the late submission policy.

Unreadable file submission: a penalty worth of 100% of an assignment's grade will be applied to unreadable file submissions. It is a student's responsibility to make sure that submissions are done in a proper manner and double check that files are readable and accessible to the teaching team.

Note: to avoid the penalty for unreadable file submission try to work on the assignments ahead of time and give yourself enough time to check that the files submitted are accessible. It is very rare that Canvas glitches are responsible for this type of issue.

Schedule

The calendar below details topics, readings, and assignments for each class period. It may be subject to changes to reflect interests of students. Students are responsible to be prepared to discuss the assigned readings for each class period. Typically, each class period will begin with a short lecture providing the background in neuroscience necessary to better explore the issue of the day, conducted by the Instructor. The majority of class time will be devoted to student presentations and student-led discussions (detailed in Course Requirements).

- **Week 1: Tuesday, September 5th**
  - **Introduction to the Seminar:** review of Syllabus and overview of the topic
- **Week 2: Tuesday, September 12th:** Introduction to Cognitive Neuroscience of Conscious Perception
  - **History & Review:** Bassett Haggard Farah Poldrack et al 2020 - Reflections on the past two decades of neuroscience. *NatNeuro Viewpoints*
  - **Original Research:** Pins D, Ffytche D (2003) The neural correlates of conscious vision. Cereb Cortex 13(5):461–474
  - **Method:** Juavinett 2021 - The next generation of neuroscientists needs to learn how to code, and we need new ways to teach them. *Neuron*
- **Week 3: Tuesday, September 19th:** The Classical Model of VMI - part I

- **History & Review:** Pearson, J., Naselaris, T., Holmes, E. A. & Kosslyn, S. M. Mental Imagery: Functional Mechanisms and Clinical Applications. *Trends in Cognitive Sciences* **19**, 590-602, (2015).
- **Original Research:** Dijkstra, N., Bosch, S. E. & van Gerven, M. A. Vividness of Visual Imagery Depends on the Neural Overlap with Perception in Visual Areas. *J Neurosci* **37**, 1367-1373, (2017).
- **Method:** Bandettini, P. A. (2012). Twenty years of functional MRI: the science and the stories. *Neuroimage*, *62*(2), 575-588

- **Week 4: Tuesday, September 26th:** The Classical Model of VMI - part II
  - **History & Review:** Pearson, J. The human imagination: the cognitive neuroscience of visual mental imagery. Nat. Rev. Neurosci. 20, 624-634, (2019).
  - **Original Research:** Dijkstra, N., Mostert, P., Lange, F. P. D., Bosch, S., & van Gerven, M. A. (2018). Differential temporal dynamics during visual imagery and perception. Elife, 7, e33904.
  - **Method:** Baillet, S. (2017). Magnetoencephalography for brain electrophysiology and imaging. Nature neuroscience, 20(3), 327.
- **Week 5: Tuesday, October 3rd:** Challenges to the classical model of VMI - part I
  - **History & Review:** Bartolomeo, P., Hajhajate, D., Liu, J., & Spagna, A. (2020). Assessing the causal role of early visual areas in visual mental imagery. Nature Reviews Neuroscience, 21(9), 517-517.
  - **Original Research:** Spagna, A., Hajhajate, D., Liu, J., & Bartolomeo, P. (2021). Visual mental imagery engages the left fusiform gyrus, but not the early visual cortex: A meta-analysis of neuroimaging evidence. Neurosci & Biobehavioral Reviews, 122, 201-217.
  - **Method:** Fox, P. T., Lancaster, J. L., Laird, A. R., & Eickhoff, S. B. (2014). Meta-analysis in human neuroimaging: computational modeling of large-scale databases. Annual review of neuroscience, 37, 409-434.
- **Week 6: Tuesday, October 10th:** Challenges to the classical model of VMI - part II
  - **History & Review:** Spagna, A. (2022). Visual mental imagery: Inside the mind's eyes. Handbook of Clinical Neurology, 187, 145-160.

- **Original Research:** Liu, J., & Bartolomeo, P. (2023). Probing the unimaginable: The impact of aphantasia on distinct domains of visual mental imagery and visual perception.
- **Method:** Edlow, B. L., Mareyam, A., Horn, A., Polimeni, J. R., Witzel, T., Tisdall, M. D., ... & Tirrell, L. S. (2019). 7 Tesla MRI of the ex vivo human brain at 100 micron resolution. *Scientific data*, *6*(1), 1-10.

- **Week 7: Tuesday, October 17th**
  - Discussion and Practice session over Topic Proposal Writing
- **Week 8: Tuesday, October 24th** Using Neuroimaging to study Imagination
  - **History & Review:** Spagna, A., Heidenry, Z., Lambert, C. J., Miselevich, M., Eisenstadt, B., Trembley, L., ... & Bartolomeo, P. (2023). Heterarchy in Visual Mental Imagery: a review of methods and neurobehavioral findings.
  - **Original Research:** Liu, J., Zhan, M., Hajhajate, D., Spagna, A., Dehaene, S., Cohen, L., & Bartolomeo, P. (2023). Ultra-high field fMRI of visual mental imagery in typical imagers and aphantasic individuals. bioRxiv, 2023-06.
  - **Method:** Vu, A. T., Jamison, K., Glasser, M. F., Smith, S. M., Coalson, T., Moeller, S., ... & Yacoub, E. (2017). Tradeoffs in pushing the spatial resolution of fMRI for the 7T Human Connectome Project. Neuroimage, 154, 23-32.
- **Week 9: Tuesday, October 31st** Auditory Mental Imagery and Intracerebral Recordings
  - **History & Review:** Vaidya, A. R., Pujara, M. S., Petrides, M., Murray, E. A., & Fellows, L. K. (2019). Lesion studies in contemporary neuroscience. *Trends in Cognitive Sciences*, *23*(8), 653-671.
  - **Original Research:** Martin, S., Mikutta, C., Leonard, M. K., Hungate, D., Koelsch, S., Shamma, S., ... & Pasley, B. N. (2018). Neural encoding of auditory features during music perception and imagery. Cerebral Cortex, 28(12), 4222-4233.
  - **Method:** Parvizi, J., & Kastner, S. (2018). Human intracranial EEG: promises and limitations. *Nature neuroscience*, *21*(4), 474.

Week 10: Tuesday, November 5th Academic Holiday

- **Week 11: Tuesday, November 14th:** White Matter bundles supporting VMI

- **History & Review:** Liu, J., Spagna, A., & Bartolomeo, P. (2022). Hemispheric asymmetries in visual mental imagery. Brain Structure and Function, 1-12.
- **Original Research:** Hajhajate, D., Kaufmann, B. C., Liu, J., Siuda-Krzywicka, K., & Bartolomeo, P. (2022). The connectional anatomy of visual mental imagery: evidence from a patient with left occipito-temporal damage. Brain Structure and Function, 227(9), 3075-3083.
- **Method:** Catani, M., & De Schotten, M. T. (2008). A diffusion tensor imaging tractography atlas for virtual in vivo dissections. cortex, 44(8), 1105-1132.

- **Week 12: Tuesday, November 21st** Multimodal mental Imagery and Causality Inference
  - **History & Review:** Nanay, B. (2018). Multimodal mental imagery. Cortex, 105, 125-134.
  - **Original Research:** Thorudottir, S., Sigurdardottir, H. M., Rice, G. E., Kerry, S. J., Robotham, R. J., Leff, A. P., & Starrfelt, R. (2020). The architect who lost the ability to imagine: The cerebral basis of visual imagery. Brain Sciences, 10(2), 59.
  - **Method:** Parkin, B. L., Ekhtiari, H., & Walsh, V. F. (2015). Non-invasive human brain stimulation in cognitive neuroscience: a primer. *Neuron*, *87*(5), 932-945.
- **Week 13: Tuesday, November 28th**
  - `Discussion and Practice session over Anonymous Peer Review in Science
- **Week 14: Tuesday, December 5th** Challenging the whole filed: What are we talking about?
  - **History & Review:** Buzsáki, G. (2020). The Brain–Cognitive Behavior Problem: A Retrospective. *eNeuro*, *7*(4).
  - **Opinion:** Pessoa, L., Medina, L., & Desfilis, E. (2022). Refocusing neuroscience: moving away from mental categories and towards complex behaviours. Philosophical Transactions of the Royal Society B, 377(1844), 20200534.
  - **Review:** Dijkstra, N., Kok, P., & Fleming, S. M. (2022). Perceptual reality monitoring: Neural mechanisms dissociating imagination from reality. Neuroscience & Biobehavioral Reviews, 135, 104557.

Class policies: Important Information below – please read carefully!

- Special needs: If you are a student with special needs and require any type of accommodation, please make an appointment with me before the first class to discuss your needs. You should also contact the office of Disability Services (https://health.columbia.edu/disability-services) before the first class to register for specific accommodations. If you have problems reading specific kinds of text

(e.g., based on font or text size), please see me so I can make you exams (and a syllabus, and anything else you need) that you can more easily read.

- Religious observances: If you are going to miss class(es) due to religious holidays, you must notify me during the first week of class so that accommodations may be made.

- Academic integrity: As members of this academic community, we are responsible for maintaining the highest level of personal and academic integrity: "Each one of us bears the responsibility to participate in scholarly discourse and research in a manner characterized by intellectual honesty and scholarly integrity.… The exchange of ideas relies upon a mutual trust that sources, opinions, facts, and insights will be properly noted and carefully credited. In practical terms, this means that, as students, you must be responsible for the full citations of others' ideas in all of your research papers and projects… [and] you must always submit your own work and not that of another student, scholar, or internet agent" (from the Columbia University Faculty Statement on Academic Integrity) http://www.college.columbia.edu/academics/academicintegrity .

- Cheating and plagiarism – whether intentional or inadvertent – is a serious violation of academic integrity. Plagiarism is the practice of claiming or implying original authorship of (or incorporating materials from) someone else's written or creative work, in whole or in part, without adequate acknowledgement. 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. Similarly, if you put yourself in a situation in which you think your best option might be to cut some corners, see me. If you feel like you are falling behind, don't understand the material, or are not confident about your ability to take tests, talk to me as soon as possible instead of taking measures that go against principles of academic integrity. We are here to learn, not to merely judge. It is a far better option to come talk to me than compromise your academic integrity and potentially put your academic standing in jeopardy.

- Sexual Respect: Any form of gender-based misconduct will not be tolerated. Columbia University is committed to fostering an environment that is free from gender-based discrimination and harassment, including sexual assault and all other forms of gender-based misconduct. Visit this website for more information: http://sexualrespect.columbia.edu/

- Attendance: Coming to class is meaningless if class time is spent inappropriately. Chatting with friends, watching videos online, and browsing social media are not appropriate activities for the classroom. Also, remember to silence your cell phone before class. Generally, eliminate distractions as much as possible to respect your classmates, as well as increase your chance of staying focused and learning the material during class.

Changes to the Syllabus might happen during the course. The most recent version will always be posted on the Courseworks page.