# SYLLABUS

***PSYCHOLOGY 768-001: Cognition, Stress, and Individual Differences in Performance***

***Instructor*: Gerald Matthews, Ph.D.**

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*Office Hours*: Wednesday 1:30 pm-2:15 pm or by appt.

***Course Description***: This course reviews the psychology of human performance, i.e. the factors that influence people's efficiency and style of response in performing laboratory and real-world tasks. It will focus especially on individual differences in performance. The course will cover both theory, derived primarily from cognitive science, and aspects of human factors practice. It also covers general methodological principles, including the use of experimental studies to test information-processing models of performance, and assessment of individual differences. The course will have three major themes. The first theme focuses on cognitive models of information-processing. Performance is controlled by a variety of different component processes, associated with functions such as attention, memory, response selection and so forth, and we will begin with a review of these models. The second theme for the course considers environmental factors that can cause stress and their impacts on information-processing and real-world cognitive skills. The third and major theme of the course is concerned with individual differences in performance, covering stable factors such personality and ability as well as transient mood and stress states. The course will explore the relevance of these concepts to real-world problems such as occupational selection. At the end of the course, you should have a deeper understanding of psychological theories of performance, the use of experimental methods in testing these theories, and the relevance of laboratory performance studies to human factors and occupational psychology.

**Course structure**: This course will be predominantly taught in a seminar format -- the instructor will lead the discussion for the first portion of class, and students will lead the discussion of the papers assigned for each week for the remainder of the class.   I expect everyone (especially the discussion leaders!) to read the assigned articles before class.

***Reading Assignments***: Matthews, G., Davies, D.R., Westerman, S.J., & Stammers, R.B. (2000) *Human Performance: Cognition, Stress and Individual Differences*. London: Routledge. + **reading list**

**The following texts may be helpful but are not required:**

Anderson, J.R. (2020). *Cognitive psychology and its implications* (9thed.). New York: Macmillan. Publisher's website: https://store.macmillanlearning.com/us.

Hancock, P.A., & Desmond, P.A. (Eds.) (2001)**. *Stress, workload, and fatigue*. Mahwah, NJ: Erlbaum.**

Wickens, C.D., Helton, W., Hollands, J.G., & Banbury, S. (2021). *Engineering psychology and human performance* (5thed.) New York: Routledge. Publisher's website: http://www.routledge.com/

**Attendance Policy.** Although I do not grade on or take attendance, this is a graduate level course and I expect to see you in class each week. Furthermore, your absence does not allow you to participate in course discussion and will therefore affect your participation grade.

***Grading & Evaluation***:

Your course grade will be based upon facilitation of class discussions, a final term paper, a take-home midterm, two reaction papers, and participation in class discussions. Each of these will contribute the following percentage toward your final grade:

Discussion lead: 20%

Take-home Midterm: 25%

Final Paper: 25%

Reaction papers (2 @ 10% each): 20%

Research proposal: 10%

*Grading scale*: I use a 10-point grading system (e.g., 90-100 = A, 80-89 = B, etc.) with +/- (e.g., 79.5-82 = B-, 88-89.49= B+, etc.). The highest grade that can be earned is an A.

Discussions/Readings **(20%):** Students will be assigned to lead two class discussions of the assigned readings. It may be necessary to prepare a handout or a few PowerPoint slides to help organize the discussion. **All students must read the article/chapter ahead of time and be prepared to take involvement in the class discussion. Your grade for your discussion is not based solely on your presentation/ discussion lead, but is also based on your contribution to discussions in general.**

**Some tips on a great discussion**: Ideally, what I would like to see is an interactive session that actively engages members of the class. PowerPoint slides are certainly an acceptable format for facilitating discussion, but it is recommended that you pose interesting questions to the class at various points during the discussion. Additionally, the more creative your discussion, the better! Creativity can be induced through the use of videos, demonstrations, anecdotes, a consideration of real-world applications, other literature, etc.

Reaction papers **(20%).** You are required to write two short reaction papers (300-500 words) based on two readings. Your paper should describe your views on what is important and challenging about the topic. The purpose of these papers is to give you the opportunity to express your own ideas regarding the readings for that week. The paper must be submitted to me **and the student(s) leading the discussion** at least 24 hours before the topic to be discussed and **cannot** overlap with your discussion day. You will receive full credit for your paper provided that it is relevant to the topic, clearly expresses your views, and is of adequate length. Points will be deducted only if these criteria are not met.

Paper **(25%):**  You will write an 8-10 page paper. The paper should be a unique performance/ real-world application of one of the major topics we’ve discussed. Though this paper is not meant to be a comprehensive literature review, the use of multiple references is ideal. To ensure that the topic you’ve chosen is appropriate, you should submit your topics to me at least 3 weeks before the due date of the paper. Paper topics will be due on Monday, November 7, and the paper is due Monday, December 5.

Take-home midterm **(25%):** There will be one take home exam that you will have 1 week to complete. The format of this exam will be short essay questions.

Research Proposal **(10%):** You will write an outline, high-level research proposal for a major program of study addressing a topic relevant to the course. It should be 3-4 pages. The proposal will include a justification including scientific and social impacts of the research, examples of empirical studies, and expected outcomes. You will present a 5-10 minute overview of your proposal in the final class. You should submit your proposal topic to me by Monday, November 14. The proposal, including any slides you prepared, should be provided to me before the class on Wednesday, November 30.

**Make-up policy**: If you miss the due date for the take-home midterm or paper, a well documented justification will be required, unless you received the OK from me beforehand. Other make-up assignments may be provided at my discretion.

***Important Dates***:

First day of classes: August 22

Last day to add course: August 29

Last day to drop: September 27

Full academic calendar at https://registrar.gmu.edu/calendars/fall\_2022/.

**Course Schedule**

***Week Date Topic Textbook Chapter\****

*1 24-Aug Course Intro Ch1*

*2 31-Aug Cognitive Psychology Ch2, Ch3 (3.1)*

*3 7-Sep Assessment of Individual Differences Ch14 (14.1-14.3), Ch15 (15.1, 15.5)*

*4 14-Sep Attentional Resources and Workload Ch5*

*5 21-Sep Vigilance and Sustained Attention Ch6*

*6 28-Sep Skill Acquisition Ch7*

*7 5-Oct Human Error Ch8*

*8 12-Oct No class – HFES*

*9 19-Oct Stress and Resilience (midterm due) Ch9, Ch15 (15.2,15.3)*

*10 26-Oct Stress and Skilled Performance See reading list*

*11 2-Nov Stress States and Mood Ch15 (15.4)*

*12 9-Nov Transportation Human Factors See reading list*

*13 16-Nov Human-Machine Teaming See reading list*

*14 23-Nov No class – Thanksgiving*

*15 30-Nov Research Proposals*

\*There is an additional reading list for each topic

***Term paper due 7-Dec***

Note: This schedule is subject to change.

***Other Policies*:**

***Special needs*:**

Every effort will be made to accommodate students with a disability or special needs. If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 703-993-2474.  All academic accommodations must be arranged through that office.

***University Honor Code policy*:**

George Mason University has an Honor Code, which requires all members of this community to maintain the highest standards of academic honesty and integrity. Cheating, plagiarism, lying, and stealing are all prohibited. It is every student’s responsibility to familiarize himself or herself with the Honor Code. The Honor Code is available at: http://oai.gmu.edu/the-mason-honor-code-2/ All violations of the Honor Code will be reported to the Honor Committee. The instructor for this course reserves the right to enter a failing grade to any student found guilty of an honor code violation.

***Communications:***

Official Communications must happen via GMU E-mail: Mason uses electronic mail to provide official information to students. Examples include communications from course instructors, notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason e-mail account and are required to activate that account and check it regularly. Please email me directly at [gmatthe@gmu.edu](mailto:gmatthe@gmu.edu) and include “768” in the subject line.

***Basic course technology requirements:***

Activities and assignments in this course will regularly use the Blackboard learning system, available at https://mymason.gmu.edu. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher.

***Class cancelation policy:***

If the campus closes, or if a class meeting needs to be canceled or adjusted due to weather or other concern, students should check Blackboard for updates on how to continue learning and for information about any changes to events or assignments. I will aim to communicate any cancelation via email as early as possible, but at least 2 hours before the start of class. You may expect that material to be covered on that day will be covered in a subsequent class session.

***Staying Healthy:***

Familiarize yourself with requirements and recommendations for Safe to Return to Campus (<https://www.gmu.edu/safe-return-campus>) to avoid Covid-19 infection. Be alert and responsive to any changes in Mason policies that may occur during the semester. Masks are optional; please be respectful of the choices of others. If you are, or may be infected, with Covid-19, do not come to class. Let me know and I will make whatever accommodations are necessary.

***Counseling and Psychological Services:***

Students may face a variety of issues that can impact academic progress. If you are having difficulties with this course don’t hesitate to reach out to me. In some cases you may benefit from the expert advice available from the GMU Counseling and Psychological Services ([http://caps.gmu.edu](http://caps.gmu.edu/)). They provide a wide range of free services to assist students in resolving issues that cause emotional distress and interfere with personal goals and academic success. Other resources for student support are listed at <https://caps.gmu.edu/resources-and-self-help/>. These include resources for students of color, the trans community, LGBTQ+ students, and veterans.