Eye Movements and Perception  
PSYC 768: Advanced Topics in Cognitive Science  

Last updated 8/8/2011

Instructor: Matt Peterson  
2058 David King Hall  
Ph: 993-4255  
Email: mpeters2@gmu.edu  
Office Hours: Wed. 11-11:50

Time: 1:30 – 4:10pm Thursdays

Classroom: David King ArchLab Conference Room (2073a)

Text: text will be provided in class.


Prerequisites: Psychology 530, 701, or consent of instructor.

Objectives: In this course we will be exploring cognitive neuroscience of attention. Topics will include

- Neurological development
- Scene perception
- Memory and Eye movements
- Saccade targeting
- Computational models
- Eye movements and reading
- Usability

This course will be taught in a combined lecture and seminar format -- the classes will be largely discussion, with two (or more students) leading a discussion of one of the papers each week. At times, I will lead the discussion or lecture on background topics (e.g. explaining steady-state visual evoked potentials, fMRI, or neuroanatomy). I expect everyone (especially the discussion leaders!) to read the assigned articles before class.

Attendance Policy: Although I do not grade on attendance, this is a graduate level course and I expect (barring unforeseen circumstances) to see you in class each week.

GMU Honor Code: George Mason University has a code of Honor that each of you accept by enrolling as a student. My expectation is that all of the work you do for me in this class will be the work of one individual. Having said that, I fully encourage you to discuss the readings and topics raised in this class with your fellow students.

Disabilities: 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."

Exam Make-up Policy: You may take a test after (or before) the scheduled date only if you (a) receive my permission before the day of the test, or (b) have a valid excuse (note from a doctor, judge, sergeant, etc.). Papers will not be accepted beyond the due date. Homework assignments will not be accepted late.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97+</td>
<td>Anatomy Quiz</td>
</tr>
<tr>
<td>A</td>
<td>93-96</td>
<td>Discussion Lead</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
<td>Participation</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
<td>Final Presentation</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
<td>Summaries (2)</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
<td>100 points total</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0-69</td>
<td></td>
</tr>
</tbody>
</table>

Anatomy Quiz (5%): There will be a short quiz the second class meeting on naming conventions and brain anatomy.

Discussion Lead and Commentary (30%): 30% of the grade will be based on preparing, leading, presenting, and participating in class discussions. Most classes will follow a format in which the instructor will present information and conduct activities to demonstrate principles and techniques. The remainder of the class will consist of discussing the reading materials, providing feedback on the applicability and value of the techniques and concepts presented in the readings, and developing ideas that can be applied to eye movement research. All students are expected to read the assigned materials before class, and participate in the class discussion. If you miss the class, or fail to read the assigned materials, your class discussion grade will be adjusted accordingly.

To facilitate class discussion, non-presenting students will be responsible for posting, at least 24 hours prior to the date and time of the assigned discussion, a question or comment about the assignment that would be an interesting point for discussion. The presenters, of course, do not have to address each of the questions or comments, but the information from non-presenters can form the basis for some of the discussion of each article. The postings will be on edublogs.com, and the url will be given out in class.

Discussion leaders will prepare presentations to organize the class discussion and ensure that enough time is allotted for each topic. Presentations should cover the following: summary of the material, research questions under investigation, experimental techniques used, specific variables investigated, eyemovement measures used, the analysis approach to find meaning in the eyemovement measures, findings reported, applicability of the techniques to the research problem, additional research questions that can be investigated, and specific points and questions for class discussion.

Participation (20%): Part of the class time will be spent having lively discussions about the papers covered in class. If you do not participate, it will affect your grade.

Summaries (20%): Students are required to write a 2-page summary of a week's readings. Two summaries will be due – it is your choice of which weeks you wish to summarize.

Project Presentations (25%): Part of your grade will be based on team projects. Projects provide an
opportunity to apply techniques and theories from class to real research questions. Activities include the following: identifying a research question that can be investigated using eye movement measures, conducting a literature review of the relevant research in the area, designing a study to provide answers to the question, [potentially] analyzing the results, identifying shortcomings and research opportunities, and presenting the results to the class.

To ensure that all group members contribute equally to the project, each member will submit a confidential evaluation of each team member’s contribution. If there is a clear trend that an individual did not contribute equally, then the portion of the group grade for that individual will be adjusted accordingly.

Calendar:

**Note:** The schedule below is tentative, and though I will try to follow it as closely as possible changes may occasionally be necessary.

Note that February 9th is the last day to add this class and February 19th is the last day to drop this class.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignment due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Sep</td>
<td>Introduction, History, + anatomy</td>
<td></td>
</tr>
<tr>
<td>8-Sep</td>
<td>Low-level Development</td>
<td>Anatomy Quiz</td>
</tr>
<tr>
<td></td>
<td>Eye tracking Technology</td>
<td></td>
</tr>
<tr>
<td>15-Sep</td>
<td>Neural Control</td>
<td></td>
</tr>
<tr>
<td>22-Sep</td>
<td>Eye movements, Attention, &amp; Memory</td>
<td></td>
</tr>
<tr>
<td>29-Sep</td>
<td>Scene Perception</td>
<td></td>
</tr>
<tr>
<td>6-Oct</td>
<td>Neural recording and eye movements</td>
<td></td>
</tr>
<tr>
<td>13-Oct</td>
<td>Problem Solving</td>
<td></td>
</tr>
<tr>
<td>20-Oct</td>
<td>Reading</td>
<td></td>
</tr>
<tr>
<td>27-Oct</td>
<td>Modeling Eye movements</td>
<td></td>
</tr>
<tr>
<td>3-Nov</td>
<td>Usability</td>
<td></td>
</tr>
<tr>
<td>10-Nov</td>
<td>Real-world</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advanced Eye-tracking analysis</td>
<td></td>
</tr>
<tr>
<td>17-Nov</td>
<td>Presentations</td>
<td>Presentations</td>
</tr>
<tr>
<td>24-Nov</td>
<td>THANKSGIVING</td>
<td></td>
</tr>
<tr>
<td>1-Dec</td>
<td>Presentations</td>
<td>Presentations</td>
</tr>
<tr>
<td>8-Dec</td>
<td>Presentations</td>
<td>Presentations</td>
</tr>
</tbody>
</table>