Psychology 2F03E  
Fundamentals of Neuroscience  
Tuesdays and Thursdays: 19:00 – 22:00  
Instructor: Dr Gautam Ullal  
(Room 227 ;Psychology; email: ullalg@mcmaster.ca)

The objective of this course will be to provide a comprehensive coverage of nervous system function, including some of the ways that things can go wrong. This knowledge will facilitate the understanding of more advanced topics in brain and behavioural sciences.

The book recommended for this basic course is *Physiology of Behavior* by Neil R. Carlson. The chapters in this book provide a good introduction to the fundamentals of neuroscience in normal and diseased states.

**Assessment:**  
Class performance and grasp of the material will be assessed using a variety of measures:  
1. One Seminar: 15 points  
2. Two Home Assignments (5 points each) 10  
3. Six 1 page essays in class (5 points each) 30  
4. Five Multiple Choice tests (5 points each) 25  
5. One Oral Test 10  
6. One Poster Presentation 10  

**TOTAL** 100 points
Grades:
Finally, all the points will be consolidated, and Grades assigned according to the following conventional scheme:

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A+</td>
</tr>
<tr>
<td>85-89</td>
<td>A</td>
</tr>
<tr>
<td>80-84</td>
<td>A-</td>
</tr>
<tr>
<td>77-79</td>
<td>B+</td>
</tr>
<tr>
<td>73-76</td>
<td>B</td>
</tr>
<tr>
<td>70-72</td>
<td>B-</td>
</tr>
<tr>
<td>67-69</td>
<td>C+</td>
</tr>
<tr>
<td>63-66</td>
<td>C</td>
</tr>
<tr>
<td>60-62</td>
<td>C-</td>
</tr>
<tr>
<td>57-59</td>
<td>D+</td>
</tr>
<tr>
<td>53-56</td>
<td>D</td>
</tr>
<tr>
<td>50-52</td>
<td>D-</td>
</tr>
<tr>
<td>0-49</td>
<td>F</td>
</tr>
</tbody>
</table>

Based on individual’s overall performance and special circumstances, the Instructor reserves the right to scale the final marks up or down.

Message from the Chair of Psychology
The instructor cannot be responsible for returning long distance calls from students. Any student wishing to reach an instructor is invited to e-mail the instructor.

Policy Reminder
Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.
COURSE PLAN

Lecture 1: Introduction
Lecture 2: Organisation of nervous system
Lecture 3: Neuron-Synapse
Lecture 4: Sensory processing
Lecture 5: Visual Apparatus and focussing
Lecture 6: Retinal processing and theories of vision
Lecture 7: Mechanism of hearing
Lecture 8: Motor System (the pyramidal)
Lecture 9: Motor System (the extra pyramidal system)
Lecture 10: Emotion
Lecture 11: Learning
Lecture 12: Speech
Lecture 13: Sleep & Oral Test Batch 1
Lecture 14: Abnormal Behaviour & Oral Test Batch 2

Required Text:

SCHEME / BREAK UP OF EVERY SESSION:
7 to 10 PM
7.00 PM - 8.15 PM: Lecture
8.15 PM - 8.30 PM: Break
8.30 PM - 9.15 PM: Seminars (3 presentations of 10+5=15 min each)
9.15 PM – 10 PM: Tests/ Discussion of Home assignment
SEMINAR TOPICS
Each presenter will have 15 minutes to talk followed by question-answer session of 5 minutes. The topics will be assigned on Day-1 by lots.
1. Membrane potentials
2. McCulloch Pitts Neuron
3. Myelin
4. Signal Transduction
5. Neurotransmitter functions
6. Rhodopsin cycle
7. Retinal Processing
8. Theories of Colour vision
9. Theories of hearing
10. Cortical representation of sensations
11. Agnosia
12. Hemiplegia
13. Apraxia
14. Functions of Basal Ganglia
15. "Servo mechanism" of cerebellum
16. Theories of emotions
17. Learning mechanisms
18. LTP
19. Amnesia
20. Aphasia
21. Autism
22. Parkinsonism
23. Laterality in brain functions
24. Dementia
25. Schizophrenia
26. Affective Disorders
27. Frontal Lobe Syndrome
28. Thalamic Syndrome
29. Sleep Disorders
30. Genetics in Neurosciences & Psychiatry
31. EEG.