

## Sensory Processes

Fall 2008

### Course Outline

**Course Instructor:** Dr. Ullal, G.

**Contact:** Department of Psychology, Neuroscience and Behaviour.

Tel. 21331; email: [ullalg@mcmaster.ca](mailto:ullalg@mcmaster.ca) Room #: 108 (Psych. Bldg.)

Office Hours: *There are no specific “Office Hours”. Please feel free to email any one of us and make an appointment for any day during the week. Around the mid-term examinations and before the final examination special time-slots will be provided.*

**Lectures:** Mondays and Wednesday 8:30 am -9:20 am and Fridays 10:30 am -11:20 am. Lectures will be in TSH/B128.

#### **Teaching Assistants:**

1. Carew Caitlin. Email: [carewcl@mcmaster.ca](mailto:carewcl@mcmaster.ca)
2. Spencer Justine. Email: [spencjmy@univmail.mcmaster.ca](mailto:spencjmy@univmail.mcmaster.ca)
3. Stanojcic Mile. Email: [stanojm@mcmaster.ca](mailto:stanojm@mcmaster.ca)
4. Wollaston Lori. Email: [wollasl@mcmaster.ca](mailto:wollasl@mcmaster.ca)

#### **Course Description and Objectives:**

Basic survival of an organism relies upon its knowing the world that surrounds it. The fundamental system that underlies this knowing is what “Sensory Processes” is all about. Perhaps, it may not be an exaggeration to state that in sensory mechanisms one sees the ‘constant endeavor’ of human consciousness to explore the world around. Exploring this is indeed an exciting task. The ever-growing tools of investigation make this attempt even more fascinating. Further, the clinical vignettes serve as ‘road-maps’ for our exciting and ambitious journey towards understanding the brain through Sensory Processes.

**Textbook:**

The text that may offer a helpful support for the course is “*Sensation and Perception*” –E B Goldstein (7<sup>th</sup> Edition) Wadsworth Publication.

NOTE: Examinations are based on lectures. The lectures will cover material from the textbook as well as from outside sources. Important PowerPoint slides for the lecture will be posted prior to every class. Students are advised to make their own notes in class.

**Journal Articles for Home-Assignment:** Besides the textbook, two journal articles will be reviewed in the course. The PDF format of the papers will be posted at an appropriate time during the course.

**Assignment #1:** Hillis A. Neurobiology of unilateral spatial neglect. *Neuroscientist*. 12(2), 153-163, 2006.

**Assignment #1 is due for submission on: 26<sup>th</sup> September 2008**

**Assignment #2:** Grabenhorst F, *et al.* How pleasant and unpleasant stimuli combine in different brain regions: Odor mixtures. *J Neurosci*. 27 (49). 13532-13540. 2007.

**Assignment #2 is due for submission on: 22<sup>nd</sup> October 2008**

**NOTE:**

- a. Students are required to study the article and address a few questions pertaining to it in the form of home-assignments. The questions will be provided.
- b. Both the assignments **together**, will be worth **20%** of the final grade.
- c. **The assignments must be submitted prior to the specified dates.** They may be submitted in class. A penalty of 10% /day will be applied for delayed submission. By 3<sup>rd</sup> day, the assignment will get a zero. In the event of an illness or

any legitimate reasons, an official permission should be routed through the Administration excusing the delayed submission.

- d. The assignments must be typed, with double-line spacing. Emailing of assignments is not permitted.
- e. Language will not be an issue in the marking. Point-form of answers would do.

### **Evaluations**

1. **First midterm examination:** The midterm examinations will be worth **20%** of the final grade. Only material covered in class in all the lectures prior to 1<sup>st</sup> midterm examination will be on 1<sup>st</sup> midterm examination. Besides **multiple choice questions** there will be a few **short answer** type questions comprising of definitions and some important concepts discussed in class.
2. **Second midterm examination:** The midterm examinations will be worth **20%** of the final grade. Only material covered in class in all the lectures after the 1<sup>st</sup> midterm examination and prior to 2<sup>nd</sup> midterm examination will be tested. Besides **multiple choice questions** there will be a few **short answer** type questions comprising of definitions and some important concepts discussed in class.
3. **Final examination:** It will be worth **40%** of final grade. It will test the material covered in the entire course with a greater emphasis on what is covered after the 2nd midterm examination. It will be worth **40%** of final grade. It will test the material covered in the entire course. Besides **multiple choice questions** there will be a few **short answer** type questions comprising of definitions and some important concepts discussed in class. Dates for the midterm examinations are indicated in the List of Lectures below. Date for the final examination will be determined by the Registrar's Office.
4. **Assignments:** There will be **TWO** home assignments, **together** worth **20%** of the final grade. They will be based on two journal articles listed above. **They have to be submitted by the absolute deadline indicated above as well as in the table of schedule provided below.**

**NOTE:** A penalty of 10% /day will be applied for delayed submission. By 3<sup>rd</sup> day, the assignment will get a zero. In the event of an illness or any legitimate reasons, an official permission should be routed through the Administration excusing the delayed submission.

**Remarking of Assignments or Short Answers:** Requests for remarking of an Assignment or a Short Answer is only considered after a student provides a written request giving the reasons for the request to either, Dr. Ullal or the TAs.

**MISSED EXAMINATIONS:** There will **NOT** be a re-examination for missing any of the midterm examinations. However, if a student misses any examination owing to an illness or any other legitimate reason, the final examination will be rated proportionately higher provided an official permission is routed through the University Administration. No examination will be re-scheduled unless there is cancellation of the class by the University.

**CONFLICT OF EXAMINATIONS:** Both the midterm examinations are conducted during the regular class-hour. If any other examination conflicts with this examination, please contact the authorities conducting the other examination.

**“IMPORTANT ANNOUNCEMENTS”:** Important announcements regarding the course will be periodically posted in the **Announcement Box** of the course. Please remain updated.

**MCMASTER UNIVERSITY GRADING SCALE:**

Grade	Equivalent Grade Point	Equivalent Percentages
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
C+	6	67-69
C	5	63-66
C-	4	60-62
D+	3	57-59
D	2	53-56
D-	1	50-52
F	0	0-49

## Schedule of lecture topics and reading

### NOTE

1. **First midterm examination will cover the entire material taught in class from first day of class till the last lecture (inclusive) before the 1<sup>st</sup> midterm examination.**
2. **Second midterm examination will cover all material taught after the 1<sup>st</sup> midterm examination till the last lecture (inclusive) before the 2<sup>nd</sup> midterm.**
3. **Final examination is cumulative of entire material taught in the course.**
4. **The topics listed for the lectures below will follow the dates against them approximately.**
5. **Only what is taught in class will be tested.**

	<u>Learning Objectives</u>	<u>Helpful readings from the text</u>
<u>Lecture 1</u> 5 <sup>th</sup> September	1. Course Objectives 2. Evaluation Strategies	
<u>Lecture 2</u> 8 <sup>th</sup> September	Introduction to sensory mechanisms	pp. 3-12
<u>Lecture 3 and Lecture 4</u> 10 <sup>th</sup> and 12 <sup>th</sup> September	Macro-organization of sensory system	
<u>Lecture 5</u> 15 <sup>th</sup> September	Micro-organization of sensory system	pp. 22-28

<u>Lecture 6</u> <u>and</u> <u>Lecture 7</u> 17 <sup>th</sup> and 19 <sup>th</sup> September <i>1<sup>st</sup> Assignment will be posted</i>	Investigation of sensory system	pp. 12-19
<u>Lecture 8</u> 22 <sup>nd</sup> September	Vision 1: Introduction, Eye-ball, Refractory media, Errors of refraction, Accommodation.	pp. 28-31
<u>Lecture 9</u> 24 <sup>th</sup> September	Vision 2: Retinal architecture and ERG	pp. 32-33 and pp. 46-47
<u>Lecture 10</u> 26 <sup>th</sup> September <i>1<sup>st</sup> Assignment is due for submission</i>	Vision 3: Visual pathway	
<u>Lecture 11</u> 29 <sup>th</sup> September	Vision 4: ON-OFF receptive fields	pp. 57-59 and pp. 48-57
<b><u>LECTURE 12</u></b> <b>1<sup>st</sup> October</b>	<b>1<sup>st</sup> Midterm Examination</b> <b>During the class hour (Venue will be posted)</b> <b>All material covered till lecture 11 (including lecture 11)</b> <b>will be tested</b>	

<u>Lecture 13</u> 3 <sup>rd</sup> October	Vision 5: Light-Dark Adaptation and the Rhodopsin cycle	pp. 33- 37
<u>Lecture 14</u> 6 <sup>th</sup> October	Vision 6: Projections of retina	pp. 71-75
<u>Lecture 15</u> 8 <sup>th</sup> October	Vision 7: Organization of the visual cortex	pp. 75-77 and pp. 59-69
<u>Lecture 16</u> <u>and</u> <u>Lecture 17</u> 10 <sup>th</sup> and 15 <sup>th</sup> October <b>2<sup>nd</sup> Assignment will be posted</b>	Vision 8: Vision for survival and vision for cognition	pp. 77-82 and pp. 204-209
<u>Lecture 18</u> 17 <sup>th</sup> October	Vision 9: Colour perception	pp. 141-165
<u>Lecture 19</u> <u>and Lecture 20</u> 20 <sup>th</sup> and 22 <sup>nd</sup> October <b>2<sup>nd</sup> Assignment is due for submission on the 22nd</b>	Vision 10: Depth perception	pp. 167-193



<u>Lecture 21</u> 24 <sup>th</sup> October	Vision 12: Face perception	pp. 85-89
<u>Lecture 22</u> 27 <sup>th</sup> October	Vision 11: Mapping for space and optical flow	pp. 216-219
<b><u>LECTURE 23</u></b> <b>29<sup>th</sup> October</b>	<b>2<sup>nd</sup> Midterm Examination</b> <b>During the class hour (Venue will be posted)</b> <b>Only material covered after the 1<sup>st</sup> Midterm Examination till lecture 21 (including) will be tested</b>	
<u>Lecture 24</u> 31 <sup>st</sup> October	Audition 1: External and middle ear	pp. 233-243
<u>Lecture 25 and Lecture 26</u> 3 <sup>rd</sup> November	Audition 2: Structure of internal ear and the Cochlear Microphonics	pp. 243-249
<u>Lecture 27</u> 5 <sup>th</sup> November	Audition 3: Mechanism of hearing	pp. 249-253
<u>Lecture 28</u> 7 <sup>th</sup> November	Audition 4: Auditory pathways and sound localization	pp. 253-261 and pp. 265-275
<u>Lecture 29</u> 10 <sup>th</sup> November	Vestibular mechanisms and sense of posture	
		Contd.

<u>Lecture 30</u> 12 <sup>th</sup> November	Somatosensations-1: Structure of skin and properties of cutaneous receptors, dermatomes.	pp. 303-318
<u>Lecture 31</u> 14 <sup>th</sup> November	Somatosensations-2: Pain sensation	pp. 318-325
<u>Lecture 32</u> <u>and</u> <u>Lecture 33</u> 17 <sup>th</sup> and 19 <sup>th</sup> November	Chemical sense: Olfaction and Taste	pp. 327-349
<u>Lecture 34 to Lecture 36</u> 21 <sup>st</sup> to 28 <sup>th</sup> November	Leftover topics; Special topics; Review. (Subject to time constraints)	

**NOTE ABOUT THE FINAL EXAMINATION**

- Dates for the final examination will be announced by the University.
- The final examination is **cumulative**. It will cover the **entire material** covered in the lectures.
- Final examination follows similar pattern as the midterm examinations. There will be both **multiple choice questions** as well as **short answer** type questions on the final examination.

## **ACADEMIC INTEGRITY LANGUAGE FOR COURSE OUTLINES**

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <http://www.mcmaster.ca/academicintegrity>

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group-work.
3. Copying or using unauthorized aids in tests and examinations.

### **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.