KINESIOLOGY AND HEALTH SCIENCE – York University
KINE 4225 3.0 – Principles of Neuro-motor learning

Winter 2018 (2018/2019)

Course learning objectives: This course reviews fundamental concepts and principles underlying how the human brain modifies and adapt movements of the body, particularly those of the arm. The course also examines motor adaptation: how the central nervous system reorganizes itself to learn new motor skills and to recalibrate reflexes and motor-control systems when growth, aging or injury alters the body and limbs.

Specific learning objectives:
- *describe the processes and brain areas involved in adapting or learning new skills*
- *describe and compare key principles/features/models of motor learning*
- *design, conduct and analyze an experiment investigating reach adaptation*

Prerequisites: AS/SC/KINE 3020.03 or permission of Course Director

Course Directors: Denise Henriques
                          305 Calumet
                          736-2100, ext. 77215
                          Office hours: By appointment
                          deniseh@yorku.ca

Course website: This course is run through moodle.

Lectures: January 3rd – April 3rd, 2019
                          2:30-4:00 pm. Tuesdays in Calumet College 108
                          2:30-4:00 pm. Thursdays in Calumet College 211

                          Lab: the Hebb Lab - BSB 159

Course reader: Course notes and reading list will be posted on Moodle.

Course Evaluation

Midterm	Thurs Jan 24th	20%
Research project proposal	Feb 5th or earlier. You can start collecting once I approve your project.	5%
Research project paper	April 22nd	45%
Research project presentation	March 19th to April 2nd	20%
Attendance and Following instructions	On Key dates	10%

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CLASS SCHEDULE: Winter 2017

This is a tentative schedule since this course is being developed for the first time. However, the lab dates are booked for us, so we should use them – there is NO Camtasia in the Hebb Lab and these times are meant for you to learn how to design and run your experiment, and then free time to recruit naïve participants (not classmates) for you to run. Be prepared to run experiments outside class hours as well.

Lectures: **Jan 3, 8, 10, 15, 17, 22**
- these lectures will cover the necessary subject matter
- Jan 23rd to explain the assignment

Lecture: **Jan 24th** MIDTERM on material covered in January

Lab (Hebb lab in BSB 159): **Jan 29th**
- I will go through how to run the program and run your own experiment, including an example. ATTENDANCE IN AN ABSOLUTE MUST.

Lab (Hebb lab in BSB): **Jan 31, Feb 5, 7**
– you should be designing and implementing your specific experiment and send me your proposal for my approval NO LATER than Feb 7th. The sooner you submit this to me, the sooner I can give feedback and the go-ahead.
- You should review the ethics documents under Topic 4 in Moodle
- Feb 7th – start running your experiment on naïve participants if you get my approval. Consider recruiting participants and running your experiment outside class hours.

Running experiments: You should be running your experiment/collecting as soon as you get the approval up until ideally March 4th (to give yourself some time to analyse your data and interpret your results). SET ASIDE AT LEAST FOUR HOURS OUTSIDE CLASS to run the necessary number of participants when the Hebb lab is free. There are too many students and not enough class time to collect all of them. The schedule for the Hebb lab is here (i.e., room 159 is free 8am to 7pm whenever there is no class schedule)

Reading week: Feb 20-23 (Hebb lab should be free, although shorter hours, for more data collecting).
http://psycentre.apps01.yorku.ca/drpl/content/lab-bookings-class-schedule

Lab (Hebb lab in BSB): Feb 12, 14, 26, 28
- I will recruit participants from the URPP for your experiment (possibly for an hour before or after classtime as well) and possible at another time that many of you are available. You should try to finish running all your experiments by March1st

Lab (Hebb lab in BSB): March 5th
- need to run one last program to prepare your data for analysis. You will get output in a .csv file (readable in Excel and other data analysis program). As described in the Handbook for Data Analysis, the first step is to start plotting and SCREENING the data, that is, look for and remove "bad" participants from your dataset. You will need my guidance for this.

Lab (Hebb lab in BSB): **March 5, 7, 12, 14, 19 (and likely appointment with instructor)**
- Now that you have an output in .csv (readable in Excel and other data analysis program) the rest can be done on your personal laptop. Again, the Head for Data Analysis should be helpful in guiding you on what plots and analysis you will need to. Since all of your projects are unique, you will also **NEED MY GUIDANCE**. So please attend classes so we can discuss how best to analyse and plot your data. This cannot be done in one day!
- Keep in mind this is not a statistics class. The expectation is that you already know how to run at least a t-test on whatever statistical package you prefer and have learnt in the past (e.g., SPSS, SAS, Excel, R).
- Lastly, for best results, please review your final plots and stats with me during class or scheduled appointments prior to the presentation.

Note: March 8^h is the last day to drop course without receiving a grade

Classroom (Calumet): **March 19, 21, 26, 28, and April 2nd**
- March 19th: Final in-class feedback
- March 21st: Presentations begin and run until last class on April 2nd. Please email me a copy of Presentation at least ONE DAY BEFORE.

Research project paper
The paper should include
1) Introduction. Describe the goal of your experiment, and background information (similar studies). 1-3 pages
2) Methods. Describe your task, your participants (see other published paper for how they do it), how you will analyse your data.
3) Results. This should include at least three main plots of your results (clearly labelled and with figure legends) and the statistical reports and description.
4) Discussion/Conclusion. You should begin by summarizing your main results. Describe how your results compared to result of those published in the literature (perhaps 2-4). Describe some of the limitations of your study.
5) Reference: Cite your references

You are invited to submit (by email) your project paper any time after your presentation (by email or dropbox link; softcopy only), but no later than April 22th. I recommend to aim for the last day of class so you don't have to work on this assignment during exams. Your submission should be sent (by email, or via dropbox link if it's large) no later than midnight April 22th. You will be penalized by 10% for lateness. Each day thereafter which it is not received, you will be penalized a further 10%.
Consent forms also need to be submitted to me (preferably on the day you present) or to my mailbox in Bethune 357 no later than April 22th or you will also be penalized.

Research project presentation
The format of the presentation will partly depend on the final class size. If we are not too many, 15 minute powerpoint presentations would be preferable, but may have to shorten to 10 min. Please email me a copy of your PPT at least 24 hours before your presentation.

Same as above in calendar format.

	Tuesday	Thursday
Jan 3,		Lecture
Jan 8, 10	Lecture	Lecture
Jan 15, 17	Lecture	Lecture
Jan 22, 24	Lecture – begin to describe goal of assignment	MIDTERM
Jan 29, 31	Hebb Lab (excl., BSB 159) – describe how to design and run your experiment using the software. ATTENDANCE mandatory.	Hebb Lab (shared) – begin designing your experiment. Submit your proposal when you are ready. ATTENDANCE mandatory.
Feb 5, 7	Hebb Lab (shared) – Finalize design (test yourself). Last day to submit your proposal. You can begin collecting (running your experiments) as soon as you receive approval, both during class hours and outside class hours.	Hebb Lab (shared) – test/run experiments both during class hours and outside class hours.
Feb 12, 14	Hebb Lab (excl.) – run experiments both during class hours and before and after class hours. ** will recruit from URPP	Hebb Lab (excl.) – run experiments both during class hours. ** will recruit from URPP
Feb 19, 21	READING WEEK. But Hebb lab should be free (except for Monday which is a national holiday) for running your experiments at "REDUCED hours"	
Feb 26, 28	Hebb (excl.) – run experiments both during class hours and before and after class hours. ** will recruit from URPP	Hebb Lab (excl.) – run experiments both during class hours and outside class hours. Ideally, you should finish up collecting so you can starting analyzing ** will recruit from URPP
March 5, 7	Hebb Lab (excl). Now that you have all your data collected, you will need to run one more Matlab function to organize your data for analysing. I will guide you how to screen and structure your data to analyse/ answer the research questions. ATTENDANCE mandatory.	Hebb Lab (shared): for analyzing your data.
March 12, 14	Hebb Lab (shared): for analyzing your data	Hebb Lab (shared): for analyzing your data, and get feedback on Presentations
March 19, 21	SC 303: for analyzing your data, and get feedback on Presentations	SC 303 : Presentations begin.
March 26, 28	SC 303 : Presentations.	SC 303 : Presentations.
April 2	SC 303 : Presentations.	

IMPORTANT GENERAL COURSE INFORMATION FOR STUDENTS

All students are expected to familiarize themselves with the following information, available at:
http://www.yorku.ca/secretariat/senate/committees/ascp/documents/CourseInformationForStudentsAugust2012.pdf

- York's academic honesty policy and procedures / academic integrity website
  http://www.yorku.ca/academicintegrity/students/index.htm
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities www.yorku.ca/disabilityservices
- Student conduct standards http://www.yorku.ca/secretariat/legislation/senate/harass.htm
- Religious observance accommodation

RE-EVALUATION POLICY

During the term:
   Any requests for remarking of assignments or in-class tests must be received by the course instructors within 7 days of the item's mark being posted, along with the "Evaluation item remark request" form, which can be found on the course website. Please note that your mark may be *raised, lowered, or confirmed.*

Re-appraisal of a final grade:
   Any requests for re-appraisal of a final mark must be received by the course instructors within 7 days of the final grade posting, along with the "Evaluation item remark request" form, which can be found on the course website. Please note that your mark may be *raised, lowered, or confirmed.* If the result is still unsatisfactory, requests for a reappraisal of the final grade for a completed course are the responsibility of the Undergraduate Director. You must submit in writing a formal request for a **final grade reappraisal** to the KINE undergraduate Office. The 'Reappraisal of Final Grades' form can be picked up at the KINE Undergraduate Office.

For further details: www.registrar.yorku.ca/policies/grade.htm
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