Global perspectives on technological innovation in neuroscience
BME 494/598
Summer, 2016
Line Number: Pending

Course Meetings: Time and days pending.

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Course Description: Europe has made an enormous contribution to neuroscience research, e.g. The Human Frontier Science Program, Human Brain Project, etc. Although the neuroscience community at ASU is extremely active, it is extremely focused; therefore the purpose of the program is to expose students interested in careers in neuroscience, health care, engineering and other fields to the full range of technologies, foci, approaches, and philosophies that can be found globally. For this Study Abroad Experience, students will be exposed to the history, relevant ethical issues and trends in technological innovation of neuroscience research in Europe. The centerpiece of the program will be the 10th Federation of European Neuroscience Societies (FENS) forum, which will take place in Copenhagen, Denmark from 2-6 July, 2016. In addition, a side trip will be made to one of the premier European neuroscience institutions, the Institute of Cognitive Neuroscience, University College London (UCL).

Course Goals: The overarching goals of the course are:
• Instill awareness of the history of neuroscience in selected European countries and related developments worldwide
• Develop awareness of existing and emerging neural technologies and neuroscience-driven technological developments in Europe
• Instill awareness of cutting-edge basic neuroscience developments in Europe
• Develop awareness of ethical issues in neuroscience and neuroscience-related research in Europe

Learning Outcomes: By the end of this course, each student will have demonstrated that they are able to:
• Demonstrate awareness of regional history of neuroscience, with additional information about links to worldwide neuroscience developments
• Demonstrate awareness of neural technologies and neuroscience driven technological development in Europe
• Demonstrate awareness of cutting-edge neuroscience developments in Europe
• Demonstrate awareness of ethical issues in neuroscience and neuroscience-related research in Europe
Pre-requisites/Co-requisites/Anti-requisites:
Prerequisite: Minimum GPA 3.25; Exposure to neuroscience such as BME 235, BIO 360/465/467, PSY 325, KIN 421, SHS 350 or other equivalent course or research experience (approved by faculty director)

Required Course Texts/ Readings: There is no required textbook. Required readings will be provided by the instructors.

Course Format: In this course we will use a combined Direct Instruction (lecture/discussion) model, particularly at the beginning of each separate experience, and a Social Interaction model as the students work together through exposure to investigators to learn about state-of-the-art in a particular area of neuroscience. Learning outcomes will be assessed using evaluation of written journals and/or blog entries, as well as a final project focusing on one of the following four content areas: history of neuroscience, technological innovation in neuroscience, basic neuroscience, and ethical issues in neuroscience.

Coursework
Final grades for the course will be assigned on basis of the following:
• Participation: 10 pts/10 %, based on engagement during lectures and participation in lectures
• Quiz # 1: 20 pts or 20 %
• Quiz # 2: 20 pts or 20%
• Final project : 50 puts or 50%

Graduate Credit
In addition to a final project presentation, graduate students will also produce a written document to go along with their presentation. That will contribute 50% of the 50 final project points.

Final Grades
A-/ A/ A+ 89.5-92.4/ 92.5-97.4/ 97.5-100 Excellent
B-/ B/ B+ 79.5-82.4/ 82.5-87.4/ 87.5-89.4 Good
C/ C+ 69.5-77.4/ 77.5-79.4 Average
D 59.5-69.4 Passing
E <60 Failure
XE Failure due to Academic Dishonesty

Extra Credit
There will be no extra credit opportunities assigned for this course.

Late Assignments
Unexcused late assignments will not be accepted. Excuses for an assignment must be made in advance of the due date of the assignment. Requests for excuses must be written, either on paper or email, and approval must be obtained, either by an email reply or by having the paper excuse signed. In order to get credit, with the late assignment you must turn in a copy of the email approval or signed written excuse.

Course Policies
During active class, students will be expected to comport themselves respectfully, particularly with respect to time offered by the researchers that we visit at UCL and associated with the meeting in Copenhagen. There will be no tolerance for cell phone use during presentations, and laptop use will only be acceptable if it is for matters directly pertinent to the class (taking notes, working on problems, etc.). Attendance at all course related functions is mandatory. Students will be excused for missed sessions only in the case of emergencies.
Grade Appeals
ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see [http://catalog.asu.edu/appeal](http://catalog.asu.edu/appeal).

Incompletes
A mark of "I" (incomplete) is given by the instructor when you have completed most of the course and are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded on the Request for Grade of Incomplete form ([http://students.asu.edu/forms/incomplete-grade-request](http://students.asu.edu/forms/incomplete-grade-request)).

Student Standards
Students are required to read and act in accordance with the provisions of this syllabus as well as university and Arizona Board of Regents policies, including:

The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308: [https://students.asu.edu/srr](https://students.asu.edu/srr)

Academic Integrity
Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see [http://provost.asu.edu/academicintegrity](http://provost.asu.edu/academicintegrity).

If you fail to meet the standards of academic integrity in any of the criteria listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others’ work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may work with other students on assignments, however, all writing that you turn in must be done independently. If you have any doubt about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students (including yourself if submitted for a previous class).

Note: Turning in an assignment (all or in part) that you completed for a previous class is considered self-plagiarism and falls under these guidelines. Any infractions of self-plagiarism are subject to the same penalties as copying someone else’s work without proper citations. Students who have taken this class previously and would like to use the work from previous assignments should contact the instructor for permission to do so.
**Schedule of Readings and Assignments**

Readings for this class will be distributed as the course progresses. The first set of readings will consist of peer-reviewed papers to introduce students to important work that has been done at UCL. While on the ground at UCL, students will have readings from each of the UCL faculty who are participating in the course. Finally, based upon their final project, the students will have additional readings that will be chosen by the students in consultation with the instructors.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>Monday, June 13</td>
<td>Neuroscience in Europe</td>
<td>Online readings from the FENS website: <a href="http://www.fens.org/About-Neuroscience/History/Funding-for-European-Neuroscience-History-Projects/Online-projects/">http://www.fens.org/About-Neuroscience/History/Funding-for-European-Neuroscience-History-Projects/Online-projects/</a></td>
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<tr>
<td>Wednesday, June 15</td>
<td>Neuroscience in England</td>
<td>Online readings from multiple websites: <a href="http://www.neuroscience.ox.ac.uk/about/the-history-of-neuroscience-pages">http://www.neuroscience.ox.ac.uk/about/the-history-of-neuroscience-pages</a>, <a href="http://www.neuroscience.cam.ac.uk/about/history/">http://www.neuroscience.cam.ac.uk/about/history/</a></td>
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<td>Friday, June 17</td>
<td>Neuroscience in London</td>
<td>Online readings beginning with the UCL Neuroscience Wikipedia page: <a href="https://en.wikipedia.org/wiki/UCL_Neuroscience">https://en.wikipedia.org/wiki/UCL_Neuroscience</a></td>
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<td><strong>TRAVEL</strong></td>
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<td>Saturday, June 25</td>
<td>Convene in London</td>
<td>Arrive with travel instructions for London and the surrounding area, including a map of the city, and maps of the bus and subway systems</td>
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<td>Monday, June 27</td>
<td>UCL course 1: Motor control</td>
<td>Readings chosen by the principle instructors for the day</td>
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<td>Tuesday, June 28</td>
<td>UCL course 2: Sensory coding</td>
<td>Readings chosen by the principle instructors for the day</td>
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<td>Wednesday, June 29</td>
<td>UCL course 3: Encoding of space</td>
<td>Readings chosen by the principle instructors for the day</td>
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<tr>
<td>Friday, July 1</td>
<td>Convene in Copenhagen, FENS orientation course</td>
<td>Arrive with travel instructions for Copenhagen and the surrounding area, including a map of the city, and maps of the bus and subway systems</td>
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<td>Saturday, July 2 — Wednesday, July 6</td>
<td>FENS Meeting</td>
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<tr>
<td><strong>Monday July 18, Wednesday July 20, Friday, July 22</strong></td>
<td>PRESENTATIONS</td>
<td>Be prepared to give a professional level representation with accompanying PowerPoint resources.</td>
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Prohibition of Commercial Note Taking Services
In accordance with ACD 304-06 Commercial Note Taking Services, written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

Student Support and Disability Accommodations
The provisions of the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, do not apply outside of the United States, so students with disabilities may find accessibility and accommodation in a given ASU study abroad program location to be very different from what is found in the United States. Upon request, the ASU Study Abroad Office can provide information about the availability of accommodations and accessible facilities on the specific program and can help the student determine whether the student's preferred program can meet the student's accommodation needs. Students with disabilities should understand that the ASU Study Abroad Office cannot guarantee access to public transportation, buildings, or public sites on this program.

Qualified students with disabilities may be eligible to receive academic support services and accommodations during the study abroad program. Eligibility is based on qualifying disability documentation and assessment of individual need. Every effort is made to provide reasonable accommodations for qualified students with disabilities, although the nature of the accommodations that can be provided by ASU during your study abroad program will depend on a number of variables, including but not limited to availability of resources on-site, accessibility of program facilities, and any study abroad requirement of the student's degree program.

Students who believe they have a current and essential need for disability accommodations are responsible for requesting accommodations and providing qualifying documentation to the DRC at: http://www.asu.edu/studentaffairs/ed/drc/. If you are a student in need of special arrangements, we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services. Typically, once a student discloses the need for an accommodation through their study abroad application, the ASU Study Abroad Office, the academic unit, the student and DRC will develop a plan on how to best accommodate the student within the parameters available within the onsite locations.

Drop and Add Dates/Withdrawals
Please refer to the academic calendar on the deadlines to drop/withdraw from this course. Consult with your advisor and notify your instructor if you are going to drop/withdraw this course. If you are considering a withdrawal, review the following ASU policies: Withdrawal from Classes, Medical/Compassionate Withdrawal.

Please note that the ASU Academic Calendar only refers to withdrawal for the academic portion of your study abroad program. Please refer to the Study Abroad Withdrawal Policies for important dates regarding withdrawing from your Faculty Directed program.

Email Communications
All email communication for this class will be done through your ASU email account. You should be in the habit of checking your ASU email regularly as you will not only receive important information about your class(es), but other important university updates and information. You are solely responsible for reading and responding if necessary to any information communicated via email. For help with your email go to: http://help.asu.edu/sims/selfhelp/SelfHelpHome.seam?dept_pk=822 and file a help desk ticket by clicking on “My Help Center.”

Campus Resources
As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.

- Tutoring: http://studentsuccess.asu.edu/frontpage
- Counseling Services: http://students.asu.edu/counseling
- Financial Aid: http://students.asu.edu/financialaid
- Disability Resource Center: http://www.asu.edu/studentaffairs/ed/drc/
- Major/Career Exploration: http://uc.asu.edu/majorexploration/assessment
- Career Services: http://students.asu.edu/career
- Student Organizations: http://www.asu.edu/studentaffairs/mu/clubs/

Harassment Prohibited:
ASU policy prohibits discrimination, harassment or retaliation on the basis of race, sex, gender identity, age, religion, national origin, disability, sexual orientation, and veteran status. Violations of this policy may result in disciplinary action, including termination of employees or expulsion of students. Contact the Office of Student Rights and Responsibilities (480-965-6547) if you feel another student is harassing you based on any of the factors above; contact the Office of Equity and Inclusion (480-965-5057) if you feel an ASU employee is harassing you based on any of the factors above.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at http://sexualviolenceprevention.asu.edu/faqs/students.

Establishing a Safe Environment:
Learning takes place best when a safe environment is established in the classroom. Students enrolled in this course have a responsibility to support an environment that nurtures individual and group differences and encourages engaged, honest discussions. The success of the course rests on your ability to create a safe environment where everyone feels comfortable to share and explore ideas. We must also be willing to take risks and ask critical questions. Doing so will effectively contribute to our own and others intellectual and personal growth and development. We welcome disagreements in the spirit of critical academic exchange, but please remember to be respectful of others’ view points, whether you agree with them or not.

Syllabus Disclaimer:
The course syllabus is an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email, or in the Announcements section on Blackboard.

Student Conduct Statement:
Students are required to adhere to the behavior standards listed below:

- ACD 125: Computer, Internet, and Electronic Communications http://www.asu.edu/aad/manuals/acd/acd125.htm, and
Students are entitled to receive instruction free from interference by other members of the class. If a student is disruptive, an instructor may ask the student to stop the disruptive behavior and warn the student that such disruptive behavior can result in withdrawal from the course. An instructor may withdraw a student from a course when the student's behavior disrupts the educational process under USI 201-10 (http://www.asu.edu/aad/manuals/usui/usui201-10.html).

Course discussion messages should remain focused on the assigned discussion topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion.

Inappropriate discussion board messages may be deleted if an instructor feels it is necessary. Students will be notified privately that their posting was inappropriate. Student access to the course Send Email feature may be limited or removed if an instructor feels that students are sending inappropriate electronic messages to other students in the course.

**Religious Accommodations for Students:**
Students who need to be absent from class due to the observance of a religious holiday or participate in required religious functions must notify the faculty member in writing as far in advance of the holiday/obligation as possible. Students will need to identify the specific holiday or obligatory function to the faculty member. Students will not be penalized for missing class due to religious obligations/holiday observance. The student should contact the class instructor to make arrangements for making up tests/assignments within a reasonable time.