Instructor
Dr. Li Xu, Associate Professor, Grover Center – W 229, Tel: 593-0310
Email: XuL@ohio.edu

Teaching Assistant
Becca Berger
Email: beccalberger@gmail.com

Class Meetings
Tuesday and Thursday 10:30 ~ 11:50 am
Grover Center – E218

Office Hours
Please email the instructor to schedule a meeting, or speak with the instructor any day after class.

Course Website
https://blackboard.ohio.edu

Course Description
Overview of history of cochlear implants, corporation technology in cochlear-implant industry, and contemporary speech processing strategies for cochlear implants. Discussion of surgeries, audiological evaluation procedures used pre- and post-operatively, patient performance. Hands-on experience with hardware and software used in cochlear-implant programming.

Instructor’s Course Objectives
Upon successful completion of this course, the student will be able to:
• demonstrate knowledge of the neurobiology basis for cochlear implants;
• describe technological aspects of cochlear implants including hardware and software used in current devices;
• demonstrate knowledge of candidacy for cochlear implants;
• understand issues of deaf culture and cochlear implants;
• be well prepared for graduate study on the same topics.

Expectations
Students are expected to:
• attend all class meetings;
• complete all assigned readings prior to the class meeting in which corresponding topics are discussed;
• complete any additional literature reading assignments and coordinate journal-club discussion of assigned topics;
• participate in the CI lab activities;
• discuss any problems relating to the course in a timely fashion with the Instructor or the TA.
No required text.

Exams and Grading
There will be three exams, which account for 30% 20%, and 30% of the whole course, respectively. The remaining 20% is accounted for by participation in the class and lab activities (5%) and an essay (15%) (see below). A 5% extra credit will be offered to those who will participate in the research projects in the Auditory Prostheses Laboratory (see consent form for details). There will be no opportunities to make the exam that one might miss, unless he/she has a medical excuse signed by a physician or has a death in his/her immediate family. The letter grades are determined based on your total points as shown below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>95 – 100</td>
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<tr>
<td>A−</td>
<td>90 – 94.9</td>
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<td>B+</td>
<td>87 – 89.9</td>
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<tr>
<td>B</td>
<td>83 – 86.9</td>
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<td>B−</td>
<td>80 – 82.9</td>
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<td>C</td>
<td>77 – 79.9</td>
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<td>C+</td>
<td>73 – 76.9</td>
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<td>C−</td>
<td>70 – 72.9</td>
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<tr>
<td>D</td>
<td>67 – 69.9</td>
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<tr>
<td>D+</td>
<td>63 – 66.9</td>
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<td>D−</td>
<td>60 – 62.9</td>
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<td>F</td>
<td>0 – 59.9</td>
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Course Topics

Week 1
- Brief history of cochlear implants
- Neurobiology basis for cochlear implants

Week 2
- Neurobiology basis for cochlear implants
- Cochlear implant technology: Hardware

Week 3
- Speech processing strategies for cochlear implants
- Assessment of cochlear implant candidacy

Week 4
- Practice hardware in CI Lab.
- Nucleus Technology Updates – Allison Mester, Au.D., Clinical Application Specialists from Cochlear Americas.

Week 5
- Practice hardware in CI Lab.
- Practice hardware in CI Lab.

Week 6
- Practice hardware in CI Lab
- Exam I (30%) (Covering history of cochlear implants, neurobiology basis for cochlear implants, speech processing strategies for cochlear implants, and assessment of cochlear implant candidacy)

Week 7
- MED-EL Technology Updates – Barb Luikart, Au.D., MED-EL Corporation
- Advanced Bionics Technology Updates – Jennifer Maceda, Au.D., Clinical Specialist from Advanced Bionics Corporation

Week 8
Spring break. No class.

Week 9
- Cochlear implant surgeries
- Cochlear implant technology: Software

Week 10
- Practice software in CI Lab
- Exam II (20%) (Covering cochlear implant technology: hardware, corporative technology, and cochlear implant surgeries)

Week 11
- Practice software in CI Lab.
- Practice software in CI Lab

Week 12
- Practice software in CI Lab
- Practice software in CI Lab

Week 13
- Aural Rehabilitation - Pediatric CI users
- Aural Rehabilitation - Adult CI users

Week 14
- Deaf culture and CIs (guest lecture by Dr. Lisa Koch, time TBA)
- Outcome assessment

Week 15
Review
Essay preparation

Finals Week
Final exam (30%): Tuesday, April 29, at 10:10 a.m.
Covering aural rehabilitation – pediatric CI users, aural rehabilitation - adult CI users, cochlear implant technology - software, and outcome assessment.

Essay
Pick one of the topics from the list below or design your own topic related to cochlear implants and write an essay on it. If you choose to write on your own topic, it can be any of the topics that we covered in the classroom or something beyond. You are also encouraged to discuss your topic with the Instructor before committing to it. The word limit of your essay will be 800 to 1,000 words. Use font size 12 and double space. The essay will account for 15% of the course and the hardcopy is due on April 29, 2014 at 10:10 am just before your final exam. Be sure to think about it early and work on it as early as possible.
Suggested topics are:
- The evolution of the cochlear implant technology
- Early implantation benefit prelingually deaf children’s speech and language development
- Speech outcomes of cochlear implantation in children
- Language outcomes of cochlear implantation in children
- Speech intelligibility of cochlear implantation in children
- Vocal singing ability of cochlear implantation in children
- Deaf culture and cochlear implants
- Music perception with cochlear implants
The lectures, classroom activities, and all materials associated with this class and developed by the instructor are copyrighted in the name of Li Xu on this date January 10, 2014.

Any student who suspects s/he may need an accommodation based on the impact of a disability should contact the class instructor privately to discuss the student’s specific needs and provide written documentation from the Office of Student Accessibility Services. If the student is not yet registered as a student with a disability, s/he should contact the Office of Student Accessibility Services.

**Academic Misconduct**

Academic misconduct is a Code A violation of the Ohio University Student Code of Conduct. Cheating on exams or plagiarism in any form will result in penalties ranging from an F in the course to more serious sanctions, depending on the seriousness of the offense. Refer to your Graduate Catalog for further information on academic misconduct.
Essay Assignment CSD 4900

Please read all the 10 papers. Each student will be assigned a paper at random. Please write a summary of 1 page (single-spaced, font size=12) on the assigned paper. Each student will have 10-12 minutes to present his/her paper/summary to the group. Allow 1-2 minutes for discussion or questions. Please submit your summary to me on or before April 16, 2013.

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<thead>
<tr>
<th>Papers</th>
<th>Name</th>
<th>Score</th>
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<tbody>
<tr>
<td>6. Santarelli, R. et al. (2008) Cochlear Implantation Outcome in Prelingually Deafened Young Adults</td>
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<td>8. Geers et al. (2008) Long-term outcomes of cochlear implantation in the preschool years: From elementary grades to high school</td>
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