SAN JOSE STATE UNIVERSITY
EDAUD 115
INTRODUCTION TO HEARING SCIENCE
FALL 2009

Dr. J.K.MCCULLOUGH

CLASS MEETING TIMES: T Th 12 – 1:15 pm
OFFICE HOURS: T TH 10 12 am; please make appointment.
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Mission of the College of Education, SJSU:

The mission…is to prepare educators who have the knowledge, skills, dispositions and ethics that ensure equity and excellence for all students in a culturally diverse, technologically complex, global community.

Mission of the Department of Communicative Disorders and Sciences, SJSU:

The mission of CD&S is to provide a high quality program for speech-language pathologists to meet the communicative needs of our increasingly diverse multilingual/multicultural population. The program follows an academic and clinical curriculum, based on a sound theoretical framework and research findings that promote competent practitioners who participate in lifelong learning experiences. The program is enhanced through faculty, academic, and clinical expertise, trans-disciplinary and family collaboration and technological advancements in assessment and intervention.

CALIFORNIA COMMISSION ON TEACHER CREDENTIALING STANDARDS
SPEECH-LANGUAGE PATHOLOGY SERVICES CREDENTIAL

Standard 19 Speech, Language and Hearing Mechanism
Knowledge of the underlying mechanisms of speech, language, and hearing is a prerequisite for providing effective speech-language-hearing services and is consistent with current practices within the profession.

Standard 19.1 Each candidate demonstrates knowledge of the anatomy, physiology, and neurology of the speech, language, and hearing mechanism.

Standard 19.3 Each candidate demonstrates comprehension of the acoustics or physics of sound, phusiological and acoustic phonetics, perceptual processes, and psychoacoustics imvolved in speech and hearing.

1. Course Description:

The purpose of this course is to provide the student with knowledge of anatomy, physiology, and psychoacoustics of normal auditory systems. The course is also intended to familiarize the students with the profession of audiology.

11. Knowledge Base:

The knowledge base for this course includes the science of acoustics, including physical principles of sound waves and sound transmission; mathematics, including exponential notation, decibel notation and decibel manipulation; anatomy and physiology of the auditory mechanism, including

basilar membrane mechanics, hair cell and neuron physiology, and central auditory system organization; and psychoacoustics, including theories of pitch perception, loudness, masking, critical bands, fatigue and adaptation, and binaural phenomena.

III. Student Learning Objectives:

The following competencies are to be developed during the semester:

1. Knowledge of acoustics of sound and stimulus parameters in hearing science.

2. Knowledge of anatomy and physiology of the outer ear, middle ear, inner ear, auditory nerve, and ascending auditory pathways.

3. Knowledge of the psychological correlates of auditory stimuli, including absolute and differential threshold, masking and critical bands, loudness, pitch, temporal integration, adaptation and fatigue, and binaural hearing.

4. Knowledge of the profession of Audiology and clinical applications of hearing science.

IV. TEXTS:

Lass, Norman and Woodford, Charles (2007) Hearing Science Fundamentals. Mosby Elsevier Press.

Yost, WA, Fundamentals of Hearing: An Introduction (Fourth Edition), Elsevier Academic Press. Supplemental Text; not required

Supplemental websites for alternative approaches to the material will be announced in class.

V. COURSE REQUIREMENTS:

The course is primarily a lecture course, although there will be periodic laboratory demonstrations. The students are responsible for reading all assignments, and should be prepared to participate in class discussions as they arise.

Two examinations will be given during the semester, at about the middle and end of the semester. These examinations will consist of multiple choice, fill-ins, and short answers. The examinations will cover primarily lecture material; the readings are intended to be supplemental in nature. No make-up examinations are allowed

In addition, short quizzes will be given on six dates throughout the semester, or approximately every other week. The purpose of the quizzes is three-fold: 1) to encourage students to keep up with the material at regular intervals; 2) to assist in studying for the exams, and 3) to be used in determining the final course grade.

Each quiz will be worth 10 points toward the final course grade, and one quiz may be dropped from consideration at the end of the year. Quizzes may not be made up since you are allowed to drop one quiz.

VI. Grading Policy:

Grades will be determined in the following manner:

Exam One: 50 points.
Exam Two (NOT cumulative): 50 points.
Quizzes: 50 points.
Total Points: 150
90% - 100% - A
80% - 89% - B
70% - 79% - C
60% - 69% - D
less than 60% - F

VII. Grievance Procedures: Information regarding grievance procedures is available in the CD&S office (SH 115).

VIII. Academic Integrity: "Your own commitment to learning, as evidenced by your enrollment at SJSU, and the University's Academic Integrity Policy requires you to be honest in your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at http://sa.sjsu.edu/student_conduct."

IX. Americans with Disabilities Act: "If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability."

X. Course Lecture and Exam Schedule:
Week One: Course overview; the profession of audiology; acoustics; specifying acoustic stimuli.
Week Two: More acoustics; Decibels.
Week Three: Finish acoustics; Begin anatomy and physiology of external and middle ear.
Week Four: Anatomy and physiology of inner ear.
Week Five: Continued.
Week Six: Continued. Begin auditory nerve responses and central auditory pathways.
Week Seven: Exam One (Approximate date)
Week Eight: Psychoacoustical methods.
Week Nine: Absolute threshold and differential threshold.
Week Ten: Beats and nonlinearities.
Week Eleven: Masking.
Week Twelve: Loudness.
Week Thirteen: Pitch.
Week Fourteen: Binaural listening.
Week Fifteen: Auditory Fatigue

Exam Two: final exam week.

Course Readings:

Lass and Woodward:

Acoustics Sessions: Chapter 1.
Outer and Middle Ear: Chapter 2.
Inner Ear: Chapter 3.
Central Auditory Nervous System: Chapter 4
Psychophysical Methods: Chapter 5
Differential Sensitivity: Chapter 8
Masking: Chapter 6
Loudness and Pitch: chapter 7
Binaural Hearing: Chapter 5.

Supplemental readings or problems will be posted on the Blackboard.