I. COURSE TITLE: Speech Science

II. CATALOG DESCRIPTION: An introduction to the study of speech sound production. The course introduces students to speech acoustics, the acoustical analysis of speech, instrumentation and speech perception.

III. PURPOSE: The purpose of this course is to provide the student with the relevant knowledge base necessary for solving clinical problems related to speech sound production and perception.

IV. COURSE OBJECTIVES:
   After completing this course, students will be able to
   A. Explain how the anatomy and physiology of the respiratory, phonatory, and articulatory systems facilitate the production of speech sounds; respiratory system, larynx, pharynx, oral cavity and nasal cavity (8),
   B. Explain the physics of sound (8),
   C. Identify the perceptual correlates of speech sounds (8),
   D. Explain the acoustic and physiologic characteristics of speech sounds (8),
   E. Use computer programs to analyze normal speech and simulated abnormal speech (8),

V. CONTENT OUTLINE
   Introduction, syllabus
   The Physics of Sound
   Waveforms and wave behavior; sound propagation
   Interference and reinforcement; Fourier's theorem
   Simple and complex sounds
   Resonance and filters; free vibration (natural frequency), forced vibration
   Speech acoustics; source/filter theory
   EXAMINATION (100 POINTS)

   The Nervous System
   Growth and aging of the brain
   Neurons, neural conduction, synapses, neuro-transmitters
   Peripheral nervous system, cranial nerves, spinal nerves
Central nervous system; brainstem, cerebrum, cerebellum, protection and nourishment

EXAMINATION (100 POINTS)

Neurology of Speech
Input processing; the sensory pathways, reticular activating system
Central processing; central elaboration of speech, speech structures, nondominant hemisphere
EXAMINATION (100 POINTS)

Output processing; speech formulation, memory, volitional versus automatic control, stages of processing
Summary

COMPREHENSIVE FINAL EXAMINATION

VI. INSTRUCTIONAL ACTIVITIES: The class format will be lecture/discussion oriented to student’s integration of anatomy/physiology and scientific principles of observation and measurement. Extensive use will be made of audiovisual materials, anatomic models, laboratory instrumentation and multimedia computer tools to demonstrate the application of problem solving strategies to clinical concerns in speech communication.

VII. FIELD AND CLINICAL EXPERIENCES: None

VIII. RESOURCES: Assigned readings, facilities of the MSU Speech and Hearing Clinic and Communication Disorders Speech Science Laboratory, audio, video and textual resources in the Communication Disorders Materials Room, and the MSU Waterfield Library, facilities of the MSU Blackboard system, Internet-based demonstrations, tutorials and tools. It is strongly suggested that students investigate the professional and academic resources posted in the “Great Links” section of the instructor’s website, at http://mick.murraystate.edu/.

IX. GRADING PROCEDURES: Student learning will be evaluated through a series of scheduled and unscheduled Performance Events: Scheduled assessments will include three one-hour examinations (100 points) and a Final Examination (200 points, comprehensive). All scheduled assessment events will be objective examinations (multiple choice, T/F, fill-in-the-blank, brief sentence, etc.). The one-hour examinations will emphasize recent information, but may also include materials from earlier assessments when deemed appropriate by the instructor. Scores on scheduled performance events will constitute 90% of the student's course grade. A number of unannounced quizzes will also be given during the term, and scores on these quizzes will constitute 10% of the overall course grade. Credit for missed quizzes will not be allowed for any reason.

Supplemental Credit: With prior arrangement, students may submit an essay or an anatomical model whose score may be used to replace that of the student's lowest one-hour examination. These projects should be of appropriate quality as to meet Portfolio
**Expectations** for the CDI program. Supplemental credit projects must be submitted by/before 5:00 pm, the Friday, **before** the last day of classes.

Points earned in course assessments will be transformed to percentage values and the departmental grading scale will be used to determine the student's final grade.

\[ A=90\%-100\%, \, B=80-89\%, \, C=70-79\%, \, D=60-69\%, \, E=0-59\% \]

The division of Communication Disorders uses a Pretest/Posttest system to evaluate course effectiveness only; scores on these tests have no bearing upon student grades.

**X. ATTENDANCE POLICY:** This course adheres to the policy published in the MSU Undergraduate Bulletin.

**XI. ACADEMIC HONESTY POLICY:** (As stated in MSU Undergraduate Bulletin) Cheating, plagiarism (submitting another person’s material as one’s own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying or examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student’s own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place. Note: Faculty reserve the right to invalidate any examination or other evaluative measures if substantial evidence exists that the integrity of the examination has been compromised.

**XII. TEXT AND REFERENCES:**

**TEXT:**

**REFERENCES:**

**XIII. PREREQUISITES:** Prerequisite: CDI 310 or permission.

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1 Numbers in parentheses indicate components of the Murray State University College of Education Conceptual Framework that are addressed by the course objectives.