

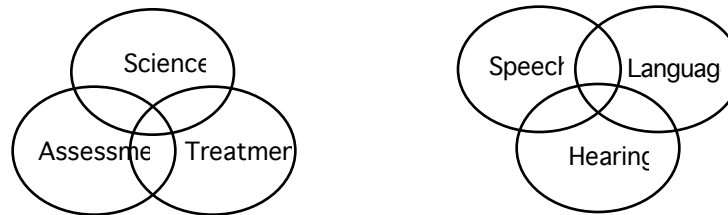
## Course Outline: EPsy 440: Speech and Language Science I Fall, 1990

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Office Hours: 11-11:50 MW, 2-2:30 F, or by appointment (call my extension and leave (your) name, number, and message).

### Scope of the Course

This course is required for undergraduate majors in Audiology and Speech-Language Pathology. It is the first course in the two semester sequence introducing basic Speech and Language Science (EPsy 440/441). Basic biological and physical science foundations which enable human speech are studied in 440. Emphasis is on the anatomy and physiology of speech mechanisms underlying the processes of a) respiration and breath support for speech, b) phonation, c) resonance, and d) speech articulation.

EPsy 440 builds upon its prerequisite, Zoology 260, to provide more specialized knowledge of human anatomy and to introduce physiology relevant to speech production.



**Relationship to Area Model:** Science of speech.

### Text (Required)

Zemlin, W. R. (1988). Speech and hearing science: Anatomy and physiology (3rd Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Though large, challenging, and rather expensive, the Zemlin text is used in two other courses and is a useful reference throughout your academic & professional careers.

### Reference Books

The library contains many well-illustrated atlases and reference works on human anatomy and physiology which include the speech mechanism structures to be covered in this course. *You are directed to consult these on your own initiative as need arises.* Sometimes you might need more simplified illustrations or descriptions than those given in the Zemlin text and in lecture, or you might wish for alternate styles of presentation such as different views or angles, color photographs, or transparencies. These are available on the shelves in the library; second floor, north wing, on the Reference shelves (by the reference desk), the regular shelves (sections Q and R), and the Oversized shelves (just west of the north staircase).

### Other Resources

Some resources (skulls, models, books) are available in the the Materials room in the TLRB. A complete (human) skeleton is available for study in rm. 110 TLRB; be aware that research and clinical uses of this room have priority.

### Course Requirements

1. Complete assigned readings. Keeping *reading notes* is encouraged in that a great deal of terminology must be mastered in this course. *Class handouts* should be studied carefully; focus on those aspects which are referred to in lecture.

2. No unexcused absences. Borrowing notes is a nuisance to other students and is a poor substitute for your own encoding of class material. No taping of lectures is allowed.

3. Take all examinations on time.
4. If you find you are having difficulty in the course, meet immediately with the instructor to go over your class and reading notes and to obtain direction for supplemental readings and reference works.
5. Adherence to the Code of Honor: You must not discuss the contents of an exam with other people until after it has been handed back and is thus "public" information. This would include giving hints as to what to study (and what not to bother studying) as well as reciting or paraphrasing specific questions from the exam.

### Exams

We will have three midterms and a final exam. Each exam will be worth a possible 100 points. Exams will cover both class lectures and assigned readings. Exams will be a mixture short answer, fill-in, labeling, multiple-choice, and true-false questions. Exams will be cumulative: alternate questions covering areas of general weakness will appear on subsequent exams. Exams will be given in the testing center and may be taken late only when written proof of serious illness, death, or extenuating circumstance is provided to me. Exam scores will be recorded as a percentage of the high score in the class. Thus if the high raw score on an exam were 95, the person scoring 95 would get 100% recorded; a person with a (raw) score of 92 would get 92/95 or 97% recorded.

### Semester Grading

Semester grades will be based no less than 90% on the exams and no more than 10% on class participation (which includes turning in written or laboratory assignments, pop-quizzes on assigned reading, and attendance). No exam scores will be dropped. The grading scale used at the end of the semester is 95-100% of the possible points for an A, 90-94% A-, 87-89% B+, 83-86% B, 80-82% B-, 77-79% C+, 73-76% C, 70-72% C-, 67-69% D+, 63-66% D, 60-62% D-, and below 60%, an E. Extra credit is impossible.

### Some Dates to Remember

September			
M	17		Last day to drop classes without receiving a "W"
F	28		Exam I in testing center
October			
M	8		Last day to drop classes for academic reasons
F	19		Exam II in testing center
November			
F	16		Exam III in testing center
M	19		ASHA convention (no class held)
Th-F	22-23		Thanksgiving break
December			
W	12		Last day of Fall '90 classes
M	17		Final Exam

### Topical Outline

#### Foundations to the Study of Speech Anatomy & Physiology

- Overview of the "speech chain" and form versus function
- The "organic" model; George Kopp's five "-ations"
- Standard nomenclature and the anatomical position: review
- Basic histology, especially muscle cells; EMG
- Myology and overview of the musculoskeletal systems; synovial joints
- Levers and muscle vectors

**EXAM I covers the above material**

Breath support for speech: anatomy and physiology of respiration

- axial skeleton; pelvis and pectoral girdle; spine and thorax
- muscles of respiration: names, origins, insertions, functions
- the lungs: Boyle's law
- vegetative versus speech inhalation/exhalation patterns
- spirometry and lung capacities and volumes; strain gauge pneumography

**EXAM II covers the above material**

Anatomy, physiology, and basic acoustics of phonation

- the glottal pulse and glottal tone; the larynx as an oscillator
- the myoelastic aerodynamic theory of phonation; Bernoulli effect
- gross anatomy of the larynx
- cartilages of the larynx; the hyoid bone
- extrinsic and intrinsic muscles of the larynx
- conus elasticus and the vocal ligament
- physiology of adduction, abduction and vocal cycles
- control of pitch and loudness; whisper; falsetto
- maturation and laryngeal mutation at puberty
- laryngoscopy, stroboscopy, and high speed cinematics

Resonant cavities and muscular valves of the pharynx

- bones and landmarks of the craniofacial skeleton and hyoid bone
- the fauces, pharynx and velum: muscles and subdivisions
- the nasopharynx: torus tubaris physiology
- the velum as an anterior pharyngeal wall structure
- the nasopharynx: patterns of velopharyngeal closure
- tonsils and adenoids: growth and devolution

**EXAM III covers the above material**

Anatomical and Physiological Support for Speech Articulation

- Superficial anatomy of the head and face; the skull and the facial skeleton
- Superficial and deep muscles of facial expression (C.N. VII)
- Superficial structures and anatomical landmarks of the oral cavity
- Muscles of orthognathic stabilization (hyo-mandibular complex)
- Intrinsic and extrinsic muscles of the tongue
- Palatography and the "place" feature
- Dentition: development; occlusion/malocclusion; terminology

**EXAM IV covers the above material**