1. **GENERAL INFORMATION:**

Schedule: Monday, 900h to 1100h, September 10th to December 3rd 2012

Location: Beatty Hall, room 34

Credits for the course: 3 Credit Hours, Graduate studies

If you have a disability please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the Office for Students with Disabilities at 398-6009 (online at [http://www.mcgill.ca/osd](http://www.mcgill.ca/osd)) before you do this.

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. See [www.mcgill.ca/integrity](http://www.mcgill.ca/integrity) for more information.

Policies governing academic issues that affect students can be found in the [Handbook on Student Rights and Responsibilities, Charter of Students’ Rights](http://www.mcgill.ca/files/secretariat/greenbookenglish.pdf).

In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

This right applies to all written work that is to be graded, from one-word answers to
dissertations.

2. INSTRUCTOR:
Vincent Gracco, Ph.D.
Centre for Research on Brain, Language & Music, room 201
*** Should you have any question concerning the course or the course material, or to set up an appointment, please contact me by telephone at 514-398-7298 or by email at vincent.gracco@mcgill.ca

3. LEARNING OUTCOMES
By the end of this course students should be able to understand how speech is produced, from the brain to the actions of the articulators. Students should have a working knowledge of the anatomy and physiology of each of the systems used for speech (respiration, phonation, articulation, hearing, nervous).

4. COURSE CONTENT:
The anatomy and physiology of speech and hearing mechanisms will be covered. Topics will include neuroanatomy, the anatomy and physiology of the head, neck and upper torso, and the external, middle, and inner ear.

   September 10: Basic elements of anatomy: anatomical nomenclature, elementary tissues, etc. (Chapter 1)

   September 17: Anatomy and physiology of respiration (Chapter 2):
                   Structures (trachea, bronchi, lungs, ribs, sternum, etc.)
                   Musculature of the breathing mechanisms

   September 24: Anatomy and physiology of respiration (Chapter 2):
                  Mechanics of breathing

   September 31: First Exam (Basic elements of anatomy + Respiration): 1 h.
Anatomy and Physiology of Phonation (Chapter 3)
Mechanics of phonation
Voice characteristics (pitch, intensity)

October 8: No class

October 15: Anatomy and Physiology of Phonation (Chapter 3)
Mechanics of phonation
Voice characteristics (pitch, intensity)
Age and sex differences in the larynx

October 22: Anatomy and Physiology of Articulation (Chapter 4)
The skull (bones)
Oral, pharyngeal and nasal cavities
The articulators

October 29: Anatomy and Physiology of Articulation (Chapter 4)
Functions of the articulators
Vowels vs. consonants
Research techniques

November 5: Exam (Articulation and Phonation)

November 12: General neuroanatomy and neurophysiology (Chapter 5):
Classification of the nervous system, meninges, ventricular system and cerebrospinal fluid, Cerebral cortex: cellular organization, fibers types, etc., gross anatomy of the brain, brainstem (midbrain, pons, medulla) and Cerebellum. Blood supply.

November 19: Neuroanatomy and neurophysiology (Chapter 5):
Cranial nerves (anatomy and physiology)
Spinal nerves (anatomy and physiology)
Pathways of the brain.
Neurotransmission

**November 26:** Neuroanatomy and neurophysiology of the speech mechanism (Chapter 5):
Speech production: From the brain to the muscle fibres
The study of the neural basis of speech and language
Modern imaging techniques

**Embryology of the speech and hearing structures** (Chapter 7)
Development of the head, face, mouth, etc.
Teratogens.

**December 3:** Anatomy and physiology of hearing (Chapter 6):
External, middle and inner ear structures and functions
Inner ear structures and functions
Neural pathways for hearing
Measuring electrical potentials in the hearing system

**TBA:** Final exam

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5. **INSTRUCTIONAL METHOD:**
The course is divided into twelve lectures, plus three exams to be written in class.

6. **COURSE MATERIALS:**

1. **Required material:**

   **Recommended:**
Zemlin, E. and Zemlin, WR. *Study Guide/Workbook to Accompany Speech and Hearing Science Anatomy and Physiology.*
Handouts will be provided to students. It is required that students read the handouts and appropriate textbook chapters. The handouts will be available on WebCT Vista:  
http://webctvista.mcgill.ca/

2. Suggested readings:

**General anatomy textbook**  
Gray's Anatomy website-- www.bartleby.com/107/

**Anatomy of the head and neck**  

**Anatomy and physiology of speech and hearing:**  

**Cranial nerves:**  

**Neuroanatomy and neurophysiology:**  

7. **Assignments and Evaluation**  
There will be no graded assignments for this course other than the exams and readings. Students are strongly encouraged to read the textbook.
Evaluations are based on the material covered in class.

There will be three exams:
Basic elements of anatomy and Respiration: 20 %
Phonation, and Articulation (anatomy and physiology): 30 %
Neuroanatomy, Neurophysiology and Hearing 50 %