

## Exam 1 Topics for Review

The exam will cover material presented in the textbook and in discussed in lecture. This list is intended to assist you in organizing your study material. Each chapter has two sections: the first outlines the major concepts we've covered thus far, and the second is a list of vocabulary taken from the text.

### **CHAPTER 1 The nature of sound**

#### *Basic Physics Concepts*

- A. Mass, Force, Weight, Volume Measurement of air pressure
- B. Movement of air
- C. Air pressure, volume, density

#### Source concepts

- D. Sound wave motion
  - Frequency & pitch
  - Amplitude, intensity & loudness
  - Human range of hearing
  - Decibel scale
- E. Characteristics of sound waves
  - Simple & complex waves
  - Periodic & aperiodic waves
  - Fundamental frequency & harmonics
  - Fourier's theory, Fourier's analysis/synthesis
- F. Visualizing sound: Waveform & spectra

#### *Terminology*

Amplitude	Frequency	Pressure
Aperiodic	Fundamental frequency	Pure tone
Boyle's law	Harmonic frequency	Rarefaction
CGS system	Human auditory area	Ratio scale
Complex sound	Inertia	Reflection
Compression	Intensity	Simple harmonic motion
Constructive interference	Interference	Sinusoid
Damping	Joules	Spectrum
Decibel scale	Laminar flow	Turbulent flow
Destructive interference	Linear scale	Volume velocity
Driving pressure	Logarithmic scale	Watts
Dynes	Microbar	Waveform
Elasticity	MKS system	Wave front
Ergs	Pascal	Wavelength
Fourier analysis	Period	Wave motion

***Resonance Concepts***

- A. Resonance & resonators
  - Free vs. forced vibration
  - Types of resonators
  - Filters & bandwidth
- B. Vocal tract resonance
  - Source-filter theory
  - Formant frequency variables

***Terminology***

Attenuation rate	Forced vibration	Resonance curve
Bandwidth	High-pass filter	Resonant frequency
Band-pass filter	Low-pass filter	Resonator
Band-stop filter	Natural frequency	Roll-off rate
Broadly tuned	Narrowly tuned	Slope
Cutoff frequency	Passband	Source-filter theory
Formant	Pure tone	Transfer function
Free vibration	Rejection rate	

**CHAPTER 2 Pulmonary system**

***Concepts***

- A. Respiratory system structure & mechanics
  - Anatomy of lower pulmonary system & chest-wall system
  - Muscles involved in respiration
    - Muscles of inspiration (active & passive)
    - Muscles of expiration (active & passive)
  - Pleural linkage
  - Moving air in and out of the lungs
    - Active vs. passive breathing, recoil forces
    - Pressures & air flow
- B. Lung volumes & capacities
  - Measurements of volume & capacities, airflow & pressure
- C. Breathing for speech
  - Differences between speech breathing & life breathing
    - Location of air intake
    - Ratio time for inhalation, exhalation
    - Volume of air inhaled per cycle
    - Muscle activity during expiration
  - Changes over the lifespan

**Terminology**

Accessory muscles of respiration	Diaphragm	Recoil forces
<i>Alveolar pressure (in class)</i>	Expiratory reserve volume	Residual volume
Alveoli	Functional residual capacity	Resting expiratory level
Bronchi	Inspiratory capacity	Spirometer
Bronchial tree	Inspiratory reserve volume	Thoracic cavity
Bronchioles	Intercostal muscles	Tidal volume
Checking action	Parietal pleura	Total lung capacity
Chest wall	Pleural linkage	Visceral pleura
Dead air	Pulmonary apparatus	Vital capacity

**CHAPTER 3 Pulmonary System – Clinical Applications**

**Concepts**

- A. Invasive vs. noninvasive ventilation
  - Endotracheal intubation
  - Tracheostomy
  - Mechanical ventilation
  - Continuous positive airway pressure (CPAP)
- B. Conditions that affect speech breathing
  - Lung diseases
    - Obstructive
    - Restrictive
    - Central
  - Parkinson’s disease & Lee Silverman Voice Therapy (LSVT)
  - Cerebellar disease
  - Cervical spinal cord injury
  - Cerebral palsy
  - Cardiopulmonary illness
  - Neurologic disease

**Terminology**

Cannula	Linearized magnetometer	Pulmonary function testing
Central respiratory problems	<i>LSVT (in class)</i>	Respiratory kinematic analysis
Cerebellar disease	Mechanical ventilation	Restrictive respiratory problems
Cerebral palsy	Manometer	Stoma
Cervical spinal cord injury	Obstructive respiratory problems	Stridor
CPAP	Parkinson’s disease	Tracheostomy
Endotracheal intubation	Plethysmograph	
	Pneumotachograph	