Overview of Today’s Lecture

• Course and Publisher Web site
• Course Description/Textbook/Lab Book
• Course Objectives and Syllabus Review
• Blueprint for success

• Organization of the Human Body
• Characteristics of Life
• Homeostasis
• Anatomical Terminology

Course Web Site

• Our Web sites for this class are located at:
  – http://www.gserianne.com/science/GerianneBio211 (Main)
    • Announcements (VERY IMPORTANT TO LOOK AT FREQUENTLY!)
    • Syllabus and all lecture/lab schedules
    • Lecture and Lab slides used in class (ppt and pdf formats)
    • Supplementary online materials for Lecture and Lab
    • Lecture and Lab Exam Study Guides
    • Links to many other sites including McGraw Hill Publisher’s Web site
    • Extra credit assignments
  – http://my.commnet.edu (BB Vista; Secondary)
    • You will need your student ID and password for the Blackboard (BB) Vista site
    • This BB Vista site will be used ONLY be for self tests and grades
Outline of Course/Requirements

• Course Description
  – Lecture / discussion format
  • Lectures will follow Martini’s Visual Anatomy and Physiology, 1st edition closely
  – Figures used for class
  – Laboratory
    • Wood’s Laboratory Manual, 4th edition
  – Reading assignments should be done BEFORE you come to class/lab

Major objectives of this course

• In general, you will…
  – Master the objectives listed in the Study Guides
  – Develop a further mastery of scientific/biomedical terminology
  – Further develop your ability to think logically and critically

• Let’s review the syllabus and handouts…

Blueprint for Success

• Most importantly…
  – **See Suggestions for Studying (handed out)
  – Skim your textbook BEFORE lecture and make notes
  – Take notes in your own words and become mentally involved during lecture; review/rewrite your notes after lecture
  – Ask questions if you don’t understand
  – Continually review previously learned material
  – Use all the study aids available to you

• Why the Visual Anatomy & Physiology textbook and how is it different? How can it help you succeed? What if you don’t like the format?
Overview of Anatomy and Physiology

**Anatomy** – study of structure
- Gross anatomy – macroscopic (types?)
- Cytology (microanatomy) – cells
- Histology (microanatomy) – tissues

**Physiology** – study of function
- Specialized, e.g., neuro-, cellular-, patho-
- Comparative physiology

Structure is **always** related to function; if structure changes, function changes

What’s this red stuff all about, anyway?

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How Structure Determines Function

![Diagram](image)

Figure from: Hole’s Human A&P, 12th edition, 2010

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Levels of Organization

![Diagram](image)

Figure from: Hole’s Human A&P, 12th edition, 2010
Important Definitions of Organizational Terms

- **Cell** – The basic unit of biological structure and function (what is a “basic unit” of something?)

- **Tissues** – A group of cells working together to perform one or more specific functions

- **Organs** – Two or more tissues working in combination to perform several functions

- **Organ System** – Interaction of organs functioning closely together

General Function of Organ Systems

Organ Systems – Integument and Skeletal

![Image from Martini, Anatomy & Physiology, Prentice Hall, 2001]
Organ Systems – Muscular and Nervous

Rapidly-acting, short-term control

(Skeletal muscle shown)

Organ Systems – Endocrine and Cardiovascular

Slower-acting, longer-term control (compared to nervous system)

Organ Systems – Lymphatic and Respiratory
Body’s maintenance of a stable internal environment

**Absence of homeostasis = DISEASE**

**Homeostatic Mechanisms** – monitor aspects of the internal environment and corrects any changes

- **Receptors** - provide information about environment
- **Control center** - tells what a particular value should be
- **Effectors** - causes responses to change internal environment
The 70 trillion cells in our bodies surround themselves with their own environment. This is the environment that must remain stable despite changes outside.

**Homeostasis**

- **Negative feedback** – deviation from set point progressively lessens
- **Positive feedback** – deviation from set point gets progressively greater

- **Examples of negative feedback**
  - Temperature regulation, blood pressure, blood glucose levels
- **Examples of positive feedback**
  - Blood clotting, milk production, uterine contraction

- Remember that homeostasis does **NOT** mean constant!
  - Continual variations occur in body systems
  - Gives rise to 'normal ranges' (See Appendix B)
Notice that this occurs in a ONE-WAY circuit.

Figure from Hole’s Human A&P, 12th edition, 2010

Notice that this occurs in a ONE-WAY circuit.

Know the normal temperature of the body

Figure from Hole’s Human A&P, 12th edition, 2010

Know the names and positions of the body cavities

Figure from Hole’s Human A&P, 12th edition, 2010
Body Cavities (cont’d)

Know the terms on this slide

Axial

Right lung
Right pleural cavity
Pleural cavity
Abdominopelvic cavity

Appendicular

Mediastinum
Thoracic cavity
Left lung
Left pleural cavity
Pleural cavity

Figure from: Hole’s Human A&P, 12th edition, 2010

Serous Membranes

Visceral layer – covers an organ
Parietal layer – lines a cavity or body wall

Thoracic Membranes
• Visceral pleura
• Parietal pleura
• Visceral pericardium
• Parietal pericardium

Abdominopelvic Membranes
• Visceral peritoneum
• Parietal peritoneum

Serous fluid – thin, watery, slippery fluid typically separating serous membranes

Figure from: Hole’s Human A&P, 12th edition, 2010

Serous Membranes

Be able to label all parts of this diagram. (What system is each organ a part of?)

Figure from: Hole’s Human A&P, 12th edition, 2010
Serous Membranes

Be able to label ALL parts of this diagram (What system is each organ a part of?)

Figure from: Hole’s Human A&P, 12th edition, 2010

Anatomical Terminology

Know these terms

Anatomical Position – body standing erect, facing forward, upper limbs at the sides, palms facing forward

Body Sections

Know this
Anatomical Subdivisions

- Used most in clinical situations
- Used most in surgical/anatomical study situations

Body Regions

Know the terms on this slide and their locations on the body

Review

- Anatomy = structure; physiology = function
- Structure determines function
- The human body (multicellular organisms) can be organized in increasing levels of complexity
  - Atom, molecule, cell, tissue, organ, organ system
- The eleven organ systems of the body function to maintain homeostasis
Review

- Homeostasis is the maintenance of a stable (NOT CONSTANT!) internal environment
  - Requires: receptor(s), control center, and effector(s)
  - Typically uses a negative feedback mechanism
- The body contains cavities that house our organs
  - Dorsal (posterior) cavity
  - Ventral (anterior) cavity
- Body cavities are lined by serous membranes
  - Visceral
  - Parietal