Accelerated ANP 213: Human Anatomy and Physiology 1

Instructor: Joel Dahms

Introductions
- Note cards
- Name
- Year you graduated HS and where
- Career goal
- List of classes you have taken that may help prepare you for ANP 213 and WHEN you took them (e.g. BIO 101, Autumn ’06)
- List any other relevant experience you’ve had (job, internship, taking care of relatives, etc.).
- Preferred email address

Syllabus highlights
- Class meets:
  - MTWTh 8:00AM - 10:00AM in AS1627 (lecture)
  - MTWTh 10:10AM - 12:10PM in AS1615 (lab)

Contact info
- Email: jdahms@sccd.ctc.edu
  - email is the best way to contact me
- Office: IB 2324C
- Office hours: W 12:30 - 2:00 or by appointment
- Office Phone: 985.3940 Mailbox 1 (Voice mail only)

Course website
Course Website:
https://frontpage.northseattle.edu/anp213jd/

User ID: anp213jd
Password: neuron

Course website
The website has:
- Syllabus
- Lecture notes
- Answer keys to tests and practicals (not yet though)
- Objectives for each unit
- Resources to help you study
Required texts:


Optional texts:


Grading

Breakdown:

- Exams 300 points
- Lab Exercises 160 points
- Lab Practical Exams 150 points
- Assignments 40 points

Grade percentages

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>A / A-</td>
<td>4.0 - 3.5</td>
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<td>B+/ B</td>
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<td>1.4 - 0.7</td>
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Points

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exams</td>
<td>300 points (4 exams x 75)</td>
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<tr>
<td>Labs</td>
<td>160 points (8 sets x 20)</td>
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<td>Practicals</td>
<td>150 points (3 practicals x 50)</td>
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<td>Assignments</td>
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Your grade = points you earn

650 points
Commitment

- This class is VERY intensive (11 weeks → 4)
- This is a very difficult class that requires learning what is essentially a new language
- The class is designed by the college as an overview: lots of breadth, little depth
- Expect 30+ hours of reading and studying each week in addition to class sessions
- The pace is extremely frantic so missing class is not recommended.

Exams

- 75 points each
- Given online
- One each week on the material covered that week
- Posted Thursday nights, can take anytime in the next 48 hrs.
- Timed: you get 1.5 hours to complete it
- No books, no notes, no collaboration

Exams

Four exams

EXAM #1: Chapters 1 – 4  6/29 - 6/31
EXAM #2: Chapters 5 – 9  7/6 - 7/8
EXAM #3: Chapters 10 – 12  7/12 - 7/14
EXAM #4: Chapters 13 – 16  7/19 – 7/21

Exams

- A little more than half objective questions: multiple-choice, matching, true/false
- The rest: fill-in-the-blank, short answer, short essay, and diagram labeling
- Not cumulative *per se*

Exams

- Exams may not be rescheduled or made-up due to tardiness or absence. Students with extraordinary circumstances should discuss them with the instructor as soon as the situation occurs.
- If you know ahead of time that you will miss an exam for a valid reason, we can make arrangements but let me know as far ahead of time as possible.

Lab Practical Exams

- Three of these, worth 50 points each
- Cover the material on the “Lab Practical Study Guide”
- Given in the lab, they will involve slides, projected pictures of slides, bones, muscle models, brain models, and diagrams.
Lab Practical Exams

- Pract 1: 7/3 Tues on histology and integument
- Pract 2: 7/11 Wed on axial and appendic. bones
- Pract 3: 7/19 Thurs on muscles, brain, & cranial nerves

Lectures

- Lecture slides available on course website before lecture
- Print them out and bring them
- Do not cover ALL the material on exams (but the vast majority comes from the lectures)
- “Objectives” for each unit are available on the website. This is what you should study from for exams.

Objectives

- List of learning goals that need to be achieved for you to do well in this class
- Contains what the I and others have deemed to be the most important things for you to know to go on in a health-related career.
- Available on the course website

Attendance

- Students should attend every class session.
  If you miss a class session, it is your responsibility to obtain the lecture notes, to reschedule laboratory experiments and to obtain handouts, assignments or other materials distributed in class. ESPECIALLY because the class is so compressed

Labs

- Many laboratory exercises must be completed in the laboratory. Students who miss a laboratory exercise must schedule a make-up session with me or come in during open lab time to get credit for that exercise.
- Several lab exercises will be assigned each week and will be due the following week in lab.
- Labs will be assigned in sets
- Each set will have instructions so you know what to turn in

Schedule of Lectures and Readings and Labs
Questions?

Introduction to the Human Body

Anatomy

• “tome” means to cut in Greek
• Describes the structures of the body:
  • what they are made of
  • where they are located
  • associated structures

Physiology

• Is the study of:
  • functions of anatomical structures
  • individual and cooperative functions

KEY CONCEPT

• All physiological functions are performed by specific anatomical structures

Introduction

• Key to learning anatomy is understanding function

Anatomy and Physiology show the relationship between structure and function
Introduction
- For example:
  Left side of heart is larger than right.
- Why is that?

Structure (anatomy) and function (physiology) are intimately related

Gross Anatomy
- Structures large enough that one can see with the unaided eye

Gross Anatomy
Forms of gross anatomy:
- **Surface Anatomy** - study of superficial markings
- **Regional Anatomy** - The study of specific areas of the body (e.g. head, trunk)
- **Systemic Anatomy** - Study of the 11* specific organ systems
- **Developmental Anatomy** - study of how anatomical changes throughout the course of development

11 Organ systems
- Integumentary*
- Nervous*
- Skeletal*
- Endocrine
- Muscular*
- Cardiovascular
- Lymphatic
- Urinary
- Respiratory
- Reproductive
- Digestive

Microscopic Anatomy
- Cf. Gross anatomy
- Involves studying anatomical structures that cannot be seen with the unaided eye
  1. Cytology - cells
  2. Histology - tissue

Physiology = Function
1. Cell Physiology - study of cells
2. Special Physiology - study of specific organ
3. Systemic Physiology - study of systems
4. Pathological Physiology - study of how disease effects organs or organ systems

We’ll mostly be looking at the last two.
Anatomical Organization

- We will start from the smallest and finish with the largest

Levels of Organization

- **Atomic Level** - atoms are “smallest” particles
- **Molecular Level** - atoms (e.g. carbon) combine to form molecules (e.g. glucose)
- **Cellular level**:  
  - Smallest living units in organisms  
  - Cells contain organelles, each with a function
- **Tissue level** - different groups of cells that perform a function
- **Organ Level** - Different types of tissues that perform a common function

Organ System Level

- Consists of different organs working together

Other Levels

- **Organism Level** - All systems working together (e.g. humans)
- **Ecological level** - How organisms interact with each other and their environment
KEY CONCEPT

- The body is divided into 11 organ systems
- All organ systems work together
- Many organs work in more than 1 organ system
  → Integration

Homeostasis

- Homeostasis: All body systems working together to maintain a stable internal environment
- Systems respond to external and internal changes to function within a normal range (body temperature, fluid balance)
- Failure to function within a normal range results in disease
- Homeostasis is maintained in two ways:
  - Regulation
    - Extrinsic regulation:
      - responses controlled by nervous and endocrine systems
      - E.g. brain regulates body temp
    - Usually occurs by negative feedback which can be modeled as a thermostat
  - Regulation: Maintaining Normal Limits
    - Thermostat model

Negative Feedback

- Most common way that homeostasis is maintained in the body
- The response of the effector negates or opposes the stimulus

Positive Feedback

- Rare in nature
- The response of the effector reinforces the stimulus (e.g. blood clotting, ovulation, action potential)
- NOT a way to maintain homeostasis
Anatomical terms

Orientation of terms
- Note that Left/Right are reversed in anatomical figures
- WHY?

Anatomical Position
- Hands at sides, palms forward

Anatomical terms
- Supine – laying on your back
- Prone – laying on your stomach

Terms
- Anterior (= Ventral)
- Posterior (= Dorsal)

Terms
- Cranial – head
- Caudal – tail
Terms
- Superior – higher level
- Inferior – lower level

Terms
- Proximal – toward the body trunk
- Distal – away from the body trunk (toward fingers and toes)

Terms
- Medial – toward the midline
- Lateral – away from the midline

Planes
- Sometimes to gain a greater understanding of 3D images anatomists cut the image at different planes
- Three planes exist in 3D space
  - Two are parallel to the long axis of the body
  - One is perpendicular to the long axis.

Frontal Plane
- Parallel to long axis
- Also called “coronal” in the head region
- Divides body into
  - Anterior/Posterior
Sagittal Plane
- Also parallel to long axis
- Divides body into:
  - Left/Right

Transverse Plane
- Perpendicular to long axis
- Parallel to the ground so often called “Horizontal”
- Divides body into:
  - Superior/Inferior

Cavities
- Organs are contained in cavities
- What are the major body cavities and their subdivisions?
  - Dorsal
  - Ventral
Dorsal Body Cavity
1. Cranial Cavity
2. Spinal Cavity

The Ventral Body Cavity
- divided by the diaphragm into the thoracic cavity and the abdominopelvic cavity

Ventral Body Cavity
A. Thoracic Cavity
   - Pleural Cavity
   - Pericardial Cavity
B. Abdominopelvic (peritoneal) Cavity
   1. Abdominal cavity
   2. Pelvic cavity

SUMMARY
- Structure and function in anatomy and physiology
- Levels of physical organization
- Homeostasis and feedback
- Systems integration and equilibrium
- Anatomical terms
- Locations and functions of major cavities