



# HL2018 Advanced Physiology

## 9.0 credits

Avancerad fysiologi

This is a translation of the Swedish, legally binding, course syllabus.

### Establishment

Course syllabus for HL2018 valid from Autumn 2019

### Grading scale

A, B, C, D, E, FX, F

### Education cycle

Second cycle

### Main field of study

Technology and Health

### Specific prerequisites

Two years of studies in science/technology at university level. Basic knowledge of anatomy/physiology corresponding to the course HL1007 Medical Engineering, basic course

### Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

The course shall give a basic knowledge and understanding of human body structure and function. This knowledge is the basis for understanding how diseases occur and affect the function of various organs and body systems. The course includes practical moment where various physical testing methods for measuring normal physiological parameters.

## Course contents

### **\*\*A. Circulation and respiration**

**\*\***

The student should be able to

- explain the blood circulation, respiration, regarding to the structure and function of the cell to body systems level
- explain and analyze how the different systems interact in the control of the body's internal environment
- be familiar with different ways to study the function
- anticipate, understand and explain how the amended structure and function of these systems can lead to illness

#### **\*\*Skills**

**\*\*The student should**

- know how to perform the ECG recording, ortostatic test, static and dynamic spirometry
- possible to measure and record your heart rate and blood pressure
- to identify respiratory sounds and heartsounds

### **B. The Urinary tract, body fluids, endocrine system**

The student should be able to

- give an account of the urinary organs and endocrine organs structure and function of the cell to body systems level
- explain how the urinary organs and endocrine system in combination with other factors are involved in urine production, fluid balance and acid-base balance
- how these systems interact in the control of the body's internal environment (S3) and be able to predict, understand and explain how the amended structure and function can lead to illness

#### **\*\*Skills**

**\*\*The student must know the principles for the interpretation of the acid-base status**

### **C. Gastro intestinal system**

- Digestion and absorption
- Digestive organs and secretion
- Digestive canal motor activity
- Clinical illustrations

The student should be able to:

- give an account of the alimentary canal, liver and liver's structure and function of the different nutrients how they are absorbed and digested and
- be able to relate these skills to certain diseases

### **D. Man in motion with a focus on the importance of muscles**

The student should be able to

- give an account of the movement apparatus structure and function of cellular level to body systems level as regards the muscles importance
- explain how musculature changes during childhood, as well as during the aging process and be able to explain the beneficial effect of physical activity and fitness
- summarize detailed knowledge of the anatomy, musculature and function to the full picture
- describe how interaction between musculature and other bodies of the system affects the individual's movements and physical performance
- predict how amended structure and function of the muscular system can lead to illness

## **Course literature**

Principles of Anatomy and Physiology, 12 th, Ed. Gerard J. Tortora and Bryan H. Derrickson, ISBN: 978-0470-39234-8

## **Examination**

- TEN1 - Examination, 9.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

## **Ethical approach**

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.