

# Course Specification of Physiology for master of Heptobilliary Surgery

## A- Administrative Information

**Course Title:** Physiology for Heptobilliary surgery

**Code:** SURG 713

**Department giving the course:** Physiology department

**Program(s) on which the course is given:** Master of Heptobilliary surgery

**Department(s) offering the Program:** Heptobilliary surgery department

**Academic year/level:** 1<sup>st</sup> part

**Date of approval by Departmental and NLI Council:** 2011

## B- Professional Information

### 11. OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to:

- 11.1. Recall all basic physiological information regarding the learned subjects.
- 11.2. Explain, on a physiological bases, the related clinical pictures seen in the field of surgery medicine.
- 11.3. Apply course information to the explain the physiological background for treatment of the related abnormal, dysfunction, or dysregulated physiological mechanisms accompanying diseases of general medicine.

### 12. INTENDED LEARNING OUTCOMES (I.L.Os):

#### a .Knowledge & Understanding:

By the end of the course, students should be able to:

- a1.Name the different fluid compartments in the human body, and define moles, equivalents, and osmoles.
- a2. Define the components of blood, their origins, and their role in homeostasis.
- a3. Describe how the tonicity (osmolality) of the extracellular fluid is maintained by alterations in water intake and vasopressin secretion.
- a4. Describe how the volume of the extracellular fluid is maintained by alterations in renin and aldosterone secretion.
- a5. Name the major electrolytes in body fluids, and state their functions.
- a6. Explain how a negative feedback mechanism works, and how a positive feedback mechanism differs.
- a7. List the mechanisms by which heat is produced in and lost from the body.
- a8.List the temperature-regulating mechanisms, and describe the way in which they are integrated under hypothalamic control to maintain normal body temperature.
- a9.Define the term homeostasis, and use examples to explain its mechanism.
- a10.Define the special features of the circulation, coronary vessels, and skin, and how these are regulated.
- a11. Discuss glomerular filtration and tubular reabsorption and secretion mechanisms.
- a12. Understand the functional significance of the gastrointestinal system, and in particular, its roles in nutrient assimilation, excretion, and immunity.

a13. Understand the basis of conditions where pituitary function and growth hormone secretion and function are abnormal, and how they can be treated.

a14. Name the hypophysiotropic hormones, and outline the effects that each has on anterior pituitary function.

**b. Intellectual Skills:**

By the end of the course, students should be able to:

b1. Delineate the process of hemostasis that restricts blood loss when vessels are damaged, and the

adverse consequences of intravascular thrombosis.

b2. Discuss the pathophysiology of fever.

b3. Differentiate between pain and nociception.

b4. Differentiate between fast and slow pain and acute and chronic pain.

b5. Define circulatory shock, and list the compensatory processes that may arise during shock.

b6. Suggest the primary disturbances that can account for cardiogenic, hypovolemic, anaphylactic, septic, and neurogenic shock states.

b7. Describe how the pumping action of the heart can be compromised in the setting of specific disease states.

b8. Identify all factors that regulate vascular tone, their sources, and their mechanisms of action.

b9. Describe how the countercurrent mechanism in the kidney operates to produce hypertonic or hypotonic urine

b10. Describe the voiding reflex and draw a cystometrogram.

b11. Differentiate the physiologically significant effects of pancreatic hormones and other factors that regulate carbohydrate metabolism in health and diabetes.

b12. Compare the pathway that mediates sensory input from touch, proprioceptive, and vibratory senses to that mediating information from pain and thermoreceptors.

**c. Professional and Practical Skills:**

By the end of the course, students should be able to:

c1. Implement course information to explain the basis of disease states where components of the

blood and vasculature are abnormal, dysregulated, or both.

c2. Diagnose and explain referred pain.

c3. Compare the major classes of diuretics and how each operates to increase urine flow in specific diseases.

c4. Differentiate alkalosis and acidosis, and outline respiratory and renal compensatory mechanisms in response to each of them.

c5. Delineate the mechanisms of digestion and uptake for ingested food substances including vitamins and minerals.

c6. Infer how different gastrointestinal motility types change during several GIT diseases.

c7. Attribute the mechanisms by which the liver contributes to whole body homeostasis and the

consequences of the failure of these mechanisms.

c8. Define the effects of the thyroid hormones in homeostasis and development, and differentiate

the basis of conditions where thyroid function is abnormal and how they can be treated.

C9. Contrast the physiologic and pathologic effects of adrenal hormones.

**d.General and Transferable Skills:**

By the end of the course, students should be able to:

d1. Use course information effectively in the field of surgery medicine practice.

d2. Retrieve, manage, and manipulate course information by all means, including electronic means.

d3. Present course information clearly in written, electronic and oral forms

d4. Communicate ideas and arguments effectively.

d5. Analyze and use numerical data including the use of simple statistical methods

**3- Contents:**

<b>Topic</b>	<b>Theoretical hours</b>	<b>Laboratory/ Practical</b>	<b>Total</b>
<p><b>6. Body Fluids and Blood:</b></p> <ul style="list-style-type: none"> <li>- Body Fluid Compartments and Their Constituents.</li> <li>- Blood; White Blood Cells, Platelets, Red Blood Cells Types and Transfusion Reactions.</li> <li>- Hemoglobin; Reactions, Synthesis, and Catabolism.</li> <li>- Hemostasis and Anticoagulants.</li> </ul>	<b>1</b>	<b>0.5</b>	<b>1.5</b>
<p><b>Water and Electrolyte Balance:</b></p> <ul style="list-style-type: none"> <li>- Defense of Tonicity: Vasopressin; Receptors, Effects, Control of Secretion, and Clinical Implications.</li> <li>- Defense of Volume: The Renin–Angiotensin</li> </ul>	<b>1</b>	<b>1</b>	<b>2</b>

System. - Regulation of Electrolytes.			
<b>8. Homeostasis:</b> Definition of Homeostasis, Negative & Positive Feedback Mechanisms	<b>1</b>	<b>1</b>	<b>2</b>
<b>9. Body Temperature:</b> - Normal Body Temperature; Heat Production & Heat Loss. - Temperature-Regulating Mechanisms; Fever, Hypothermia. <b>10. Pain Sensation:</b> - Nociceptors. - Classification of Pain; Deep, Visceral & Referred Pain.	<b>1</b>	<b>0.5</b>	<b>1.5</b>
<b>11. Hemorrhage and Shock:</b> - Physiologic Causes of Circulatory Shock. - Stages & Types of Circulatory Shock. - Physiology of Treatment in Shock.	<b>1</b>	<b>0.5</b>	<b>1.5</b>
<b>The special features of the circulation,</b> coronary vessels, and skin, and how these are regulated.	<b>1</b>	<b>1</b>	<b>2</b>
<b>Glomerular filtration and tubular reabsorption and secretion mechanisms .</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>The functional significance</b> of the gastrointestinal system, and in particular, its roles in nutrient assimilation,	<b>1</b>	<b>1</b>	<b>2</b>

excretion, and immunity			
<b>The basis of conditions</b> of abnormal pituitary function and growth hormone secretion and, and treatment. - The hypophysiotropic hormones, and outline the effects that each has on anterior	<b>1</b>	<b>1</b>	<b>2</b>
<b>Factors that regulate vascular tone</b> , their sources, and their mechanisms of action. - The countercurrent mechanism in the kidney operates to produce hypertonic or hypotonic urine. - The voiding reflex and draw a cystometrogram.	<b>1</b>	<b>1</b>	<b>2</b>
<b>. The physiologically significant effects</b> of pancreatic hormones and other factors that regulate carbohydrate metabolism in health and diabetes.	<b>1</b>	<b>0.5</b>	<b>1.5</b>
<b>Total hours</b>	<b>11</b>	<b>9</b>	<b>20</b>

#### **4- Teaching and learning methods**

**4.1 Lectures:** for acquisition of knowledge

#### **5- Student assessment methods**

5.1 final written and oral exams

#### **Assessment schedule**

One written exam for One and half hours long+ oral exam, at the end of the course.

### **Weighting of assessments**

Final-term written examination 50 %

Oral examination 50%

Total 100%

### **6.list of references:**

#### **6.1Course Notes:**

Department notebook.

#### **6.2Essential Book (Texts):**

Ganong's Review of Medical Physiology, 23<sup>rd</sup> Edition, 2010.

#### **6.3.Recomended book**

Textbook of medical physiology, Arthur C. Guyton, John E. Hall, 11<sup>th</sup> Edition, 2006.

6.4 web sites:

[www.physiology online.com](http://www.physiology online.com)

### **7- Other Resources / Facilities required for teaching and learning to achieve the above ILOs**

Overhead projectors, Computers, Laboratories instruments, internet club

**We certify that all of the information required to deliver this course is contained in the**

**above specification and will be implemented.**