

TEMPLATE FOR COURSE SPECIFICATIONS

Cairo University
Faculty of Medicine
Department of Medical Physiology_____.

Course Specifications

Course title :Medical Physiology For Second Year
(Code) PHY-203

- **Department offering the course : Medical Physiology Department**
- **Second academic year of M.B.& B.Ch. program**
- **Date of specification approval**

A) Basic Information:

- **Allocated marks:** 250 marks
- **Course duration:** 30 weeks of teaching with a final year examination.
- **Teaching hours:**

Total	210 hrs ,
Theoretical	150 hrs,
Tutorials	30 hrs
Practical	30 hrs

B) Professional Information:

1- Overall Aim of the Course:

The aims of the course are to enable student :

- To continue upgrading the physiology basis taken in the first year.
- To explore in details the function of the nervous, the endocrinal , the reproductive, renal & the digestive systems as well their integration to achieve homeostasis.

- To integrate physiological data & mechanisms with the ongoing basic sciences anatomy , histology & biochemistry and their clinical applications.
- To follow the rapidly changing and inflating details about molecular physiology & genetics.
- To develop the basic skills and ethical behavior required for scientific research , as well as effective communication and team work attitude.

2- Intended Learning Outcomes (ILOs):

a- Knowledge and understanding:

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

- a1- Describe the main morphologic features of the nervous system.
- a2- Review the physiology of sensory receptors , synaptic transmission , different sensory pathways , sensory coding and sensory lesions.
- a3- Describe the motor functions of spinal cord , brain stem , motor cortex and subcortical centers.
- a4- Point out the neural basis of sleep , alertness , instinctual behavior , emotions , learning and memory.
- a5 – Discuss the functional anatomy of the eye , the physiology of the image –forming mechanism , physiology of retina , visual pathway , visual cortex and eye movements.
- a6- Describe the various parts of ear , and summarize the mechanism of hearing , auditory pathway , and various forms of deafness.
- a7- Point out the physiology of receptor organs and pathways of smell and taste sensations.
- a8- Describe the gross and microscopic anatomy of endocrine glands , mechanism of action of hormones , control of hormone secretion
- a9- Point out the effect of hormones in health and disease states.
- a10- Describe the physiology of the male reproductive system and abnormalities of testicular functions.
- a11- Describe the physiology of female reproductive system as regards ovarian cycle , puberty , pregnancy , parturition , lactation and menopause.
- a12- Describe the functional anatomy of the digestive system , action and regulation of the gastrointestinal secretion and motility.
- a13- Describe the metabolism from the physiologic point of view and identify mechanisms of regulation of metabolic rate , body temperature , food intake and physiology of exercise.
- a14 - Point out the functional anatomy of the kidney , physiology of

glomerular filtration , renal tubular function and micturition.
a15 - Discuss regulation of extracellular fluid composition and volume.

B- Intellectual skills:

b1- Distinguish between physiological and pathological performance of different body systems.

b2- Suggest the basic physiological measurements used to test different body functions .

b3-Comment , on some clinical parameters such as : ABP& nerve conduction velocity for a normal individual.

B4- Integrate physiology with other sciences.

c- Professional and practical skills:

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

c1- Perform a systematic examination of the nervous system : types of sensation , motor system , tendon jerks and muscle tone.

c2- Use the most important visual tests : corneal , light & accommodation reflexes , visual acuity , colour vision and visual field defects.

c3-Do a preliminary examination and diagnosis of common endocrinal conditions: Acromegaly, Dwarfism,Thyroid disease (hypo or hyper), Cushing and Addison's diseases.

c4-Perform the most important renal function tests.

c5- Integrate physiological with other basic and clinical sciences.

d- General and transferable skills:

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

d1- Identify the essential ethical issues involved in scientific research .

d2- Work separately or in groups to research and prepare a scientific topic.

d3- Use available presentation aids (e.g overhead projectors or Data show) to present clearly and effectively a scientific topic in a tutorial , a staff meeting or the yearly scientific day.

e- professional Attitude and Behavioral skills.

e1- Respect and follow institutional code of conduct.

f- Communication Skills:

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

f1- Work effectively in a group in lab .

f2- Respects the role of staff and co- staff members regardless of degree or occupation.

3- Course contents:

Subject	Lectures (hrs)	Tutorial / Small group discussion (hrs)	Practical (hrs)	Total (hrs)	% of Total
1- The central nervous system & special senses	68	12	15	95	45.2
2- Endocrine & Reproductive system	42	9	6	57	27.2
3- Gastrointestinal system	18	3	3	24	11.4
4-Renal System & body fluids	16	3	3	22	10.5
5- Metabolism & Regulation of body temperature	6	3	3	12	5.7
Total	150	30	30	210	100

III-A) TOPICS:4

1. The central nervous system & special senses:

- General functional organization .
- Receptors.
- Somatic sensations.
- Synapses of the CNS , & chemical transmitters .
- Organization of the motor control system : spinal , descending motor system , cortical motor areas.
- Spinal cord reflexes, stretch reflex, upper and lower motor neuron lesions.
- Basal ganglia & cerebellum: functions and syndromes.
- Vestibular apparatus & control of posture.
- Hypothalamus & limbic system.

- RAS, consciousness and sleep.
- The neurophysiological basis of learning & memory.
- Functional structure of the eye, lacrimal apparatus and protection of the eye.
- Refractive power of the eye, functions of iris, aqueous humour , and retina.
- Visual acuity, color and binocular vision.
- Visual pathways and role of cortical areas in perception of vision.
- Functional structure of the external , middle and internal ears.
- Mechanism of sound transduction , auditory pathway and auditory perception .
- Deafness and testing for deafness.
- Smell & taste , receptors and pathway

2. Endocrine & Reproductive system.

- Introduction.
- Hormones: characters & mechanism of action.
- Pituitary gland: anterior & posterior and their syndromes.
- Thyroid gland , syndromes and function tests.
- Parathyroid gland , vitamin D3 and calcitonin.
- Calcium homeostasis and tetany.
- Suprarenal cortex: glucocorticoids , mineralocorticoids and adrenal androgens .
- Supernal medulla.
- Endocrine pancreas: insulin and glucagon pancreatic polypeptide and somatostatin and diabetes mellitus.
- Glucose homeostasis.
- Male reproduction : functional structure , spermatogenesis, blood testis barrier , male sex hormones control & actions.
- Female reproduction : functional structure , female sex cycles, Ovulation, female sex hormones control & actions
- Physiology of pregnancy and lactation.
- Physiology of puberty.

3. Gastrointestinal system.

- Salivary secretion , mastication and deglutition.
- Gastric secretion , gastric mucosal barrier , motility , gastric evacuation and vomiting

- Hepatic secretion , gall bladder , control of bladder evacuation , jaundice.
- Small & large intestine , digestive and absorptive functions.
- Gastrointestinal motility and GIT hormones.
- Defecation

4. Metabolism & regulation of body temperature.

- Energy balance and metabolic rate.
- Control of food intake , obesity estimation of body fat.
- Body temperature , control of body temperature.
- Exercise physiology.

5. Renal physiology

- Functional structure of the kidney.
- Glomerular filtration , tubular segments function , renal handling of different plasma constituents.
- Renal function tests plasma clearance concept.
- Micturition .

III-B) Tutorial / Small Group Discussions

b1- Preparation of assignments.

b2- Presentation.

b3- case scenarios , reports and problem solving.

III-C) PRACTICAL CLASSES:

c1-Perform a systematic examination of the nervous system : types of sensation , motor system , tendon jerks and muscle tone.

c2- Use the most important visual tests : corneal , light & accommodation reflexes , visual acuity , colour vision and visual field defects.

c3-Do a preliminary examination and diagnosis of common endocrinal conditions: Acromegaly, Dwarfism, Thyroid disease(hypo or hyper), Cushing and Addison's diseases.

c4-Perform the most important renal function tests.

c5- Integrate physiological with other basic and clinical sciences

4- Teaching and learning methods:

A-METHODS USED:

A1-Lectures: the students are divided into groups (according to faculty system).

A2-Tutorials classes : two groups (about 60 students each)

A3-Practical training : small groups training (about 25 students each)

A4-A yearly scientific day for students , in the form of small group presentations. The titles of the subjects are determined during several meetings with staff.

B- Methods for disabled students:

- Supporting Learning Classes can be arranged for disabled students.
- Procedures for availability of faculty member for individual student consultations and academic advice:
 1. Office hours of each staff members.
 2. Availability of email communication.

TEACHING PLAN:

Lectures: One hour lecture daily (for five days /week), Time from September to May; Students will be divided into groups according to faculty system.

Tutorials: In two small lecture halls (60 students each), a 3hr/ 2 weeks (during 3 months each term). The tutorial class is scheduled and previously announced (2 weeks before). The subject, which are conversationally directed are lagging by few weeks to the related branches and systems given at that time in the lectures. Special topics from the curriculum- of special interest – are exclusively discussed in the tutorial classes.

Practical classes: In two big labs a 3hr/ 2 weeks (alternating with the tutorial classes) small groups (25 students) is scheduled & the planned practical tests are announced two weeks before.

Time plan:

Item	Time schedule	Teaching hours	Total hours
Lectures	<u>5</u> times/week; one hour each between September to May	1	150
Practical	<u>3</u> hours / 2 weeks	3	30
Tutorial	<u>3</u> hours / 2 weeks	3	30
Total			210

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: The minimal acceptable attendance in the practical & tutorial is 70%. Students who fail to attend this percentage (in each half of the year will not be allowed to take the midyear and end of the year final theoretical exam and the end of the year practical exam.

5-B) Assessment TOOLS:

Tool	Purpose (ILOs)
Written examination	To assess knowledge , understanding & intellectual skills.
Oral examination	To assess knowledge & understanding , intellectual and presentation skills.
Practical examination	To assess some practical and intellectual skills

5-C) TIME SCHEDULE: Faculty bylaws

Exam	Week
1- Mid term test1 at First half of the academic year	November
2- Mid-year exam	January
3- Mid term test2 at Second half of the academic year	March
4- Practical exam	April
5- Final exam	May

5-D) GRADING SYSTEM:

Examination	Marks allocated	% of Total Marks
1- Formative assessment	-	
2- Mid-term	10	20%
3- Mid-year	40	
4- Second half	-	
5- Final exam:		
a- Written	125	50%
b- Practical	40	16%
c- Oral	30	12%
6- Assignments & other activities	5	2%
Total	250	

- The minimum passing score is **150 marks**, provided at least **30 marks** are obtained in the final written exam.
- Passing grades are: **EXCELLENT** $\geq 85\%$, **VERY GOOD** $75 < 85\%$, **GOOD** $65 < 75\%$ **AND FAIR** $60 < 65\%$.

5-E) Examinassions description:

Examination	Description
1- Formative Assessment	Usually carried out during the course, to give feedback to students. It is not be part of grading process
2- Mid term test1	Objectively structured questions.
3- Mid-year	MCQ (single best opinion) + true & false + cases + problem solving + matching items .
4- Mid term test2	Objectively structured questions.
5- Final exam:	
a- Written	MCQ (single best opinion) + true & false + cases + problem solving + matching items +short essay Qs.
b- Practical	In the lab , at multiple phases through the practical courses .
c- Oral	In front of two separate examiners (an internal & external)
6- Assignments & other activities	Distributed according to the performance of students in practical & tutorial classes between: Attendance, Attitude, Discussion ,Assignments &Presentations

6- List of references:

6.1- Basic materials: Department book : written by staff members (5 volumes) Is available for purchase by students from bookshops installed in the faculty.

6.2- Essential books (text books):

Guyton AC, Hall JE : Textbook of Medical Physiology, Last Edition. Saunders.

Ganong WF: Review of Medical Physiology", Last edition. Lange Medical Books/ Mc Graw – Hill.

6.3- Recommended books:

Johnson LR :Essential Medical Physiology .Last Edition. Raven Press.

6.4- Periodicals, Web sites, ... etc:

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

- Lecture halls:
- Small group classes
- Laboratory
- Information technology / AV aids
- Models etc

Course Specification Updating Team: Curriculum Committee of Medical Physiology Department

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Revised by Prof. Dr Quality assurance unit