Cairo University  
Faculty of Medicine  
Department of Anatomy

Course Specifications

Course title: Human Anatomy and Embryology (1st year)
(Code): ANA-101

- Department offering the course: Anatomy Department
- First academic year of M.B B.Ch. program
- Date of specification approval: 2016

A- Basic Information

- Allocated marks: 250 marks
- Course duration: 30 weeks
- Teaching hours: 240 hours  
  Theoretical: 120 hours  
  Practical: 120 hours

B- Professional Information

1- Overall Aim of the Course:

- To provide a core body of scientific knowledge concerning the normal structure of the human body at the level of organ and organ system with the study of the normal growth and development relevant to anatomical topics.
- To provide appropriate ethical and professional education necessary for dealing with cadavers.
- To correlate anatomical facts with their clinical applications.

2- Intended Learning Outcomes (ILOs):

a- Knowledge and Understanding

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

1. Describe the basic principles of structure of the different tissues, organs and systems of the human body (a.1).
2. Point out the surface landmarks of the underlying bones, muscles and tendons, and internal structures (main nerves, vessels and viscera) (a.1).
3. Outline major clinical applications of anatomical facts (a.1).
4. Explain the different stages of human development, evolution and growth (a.3).
5. Describe the theoretical basis of professional, practical skills and evidence based medicine (EBM) (a.8).

**Professional skills: (b, c, d, and e)**

**b- Practical and Clinical Skills**

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

1. Apply the anatomical facts while examining the living subject in order to reach a proper diagnosis (b.1).

**c- Professional Attitude and Behavioral Skills**

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

1. Apply the national code of ethics issued by the Egyptian Medical Syndicate (c.5).
2. Respect and follow the institutional code of conduct (c.6).

**d- Communication Skills**

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

1. Value the ethics and respect to all individuals inside and outside the dissecting room and pay a good deal of respect to the cadavers (d.2).
2. Maintain honesty and integrity in all interactions with teachers, colleagues, patients and others with whom physicians must interact in their professional lives (d.5).
3. Recognize the scope and limits of their role as students as well as the necessity to seek and apply collaboration with other workers (d.5).
4. Be responsible towards work (d.5).
5. Maintain a professional image concerning behavior, dress and speech (d.5).

**e- Intellectual skills**

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

1. Integrate the basic anatomical facts with clinical data (e.1).
2. Identify the different surface markings and determine the position or course of internal structures (e.1).
3. Identify the preserved specimens (e.1).
4. Interpret the different internal structures in cadavers and normal anatomical structures on radiographs and ultrasonography, C.T. scan and nuclear magnetic resonance images (e.1).
5. Interpret some clinical findings in relation to developmental basis (e.1).
6. Design scientific research through the formulation of research questions pertinent to medicine and the collection, analysis and interpretation of medical data (e.7).
f- General and transferable skills

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

1. Adopt the principles of lifelong learning needs of the medical profession (continuous professional development; CPD) (f.1).
2. Use computers efficiently in reaching biomedical information to remain current with advances in knowledge and practice (f.2).
3. Present information clearly in written, electronic and verbal forms (f.3).
4. Communicate ideas and arguments effectively (f.4).
5. Work effectively within a multidisciplinary team (f.5).

3- Course contents:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures (hrs)</th>
<th>Tutorial / Small group discussion (hrs)</th>
<th>Practical (hrs)</th>
<th>Total (hrs)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Biology</td>
<td>14</td>
<td>-----------</td>
<td>-----------</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>2 Upper limb</td>
<td>34</td>
<td>10</td>
<td>38</td>
<td>82</td>
<td>34.2</td>
</tr>
<tr>
<td>3 Lower limb</td>
<td>32</td>
<td>8</td>
<td>36</td>
<td>76</td>
<td>31.7</td>
</tr>
<tr>
<td>4 Thorax</td>
<td>26</td>
<td>6</td>
<td>22</td>
<td>54</td>
<td>22.5</td>
</tr>
<tr>
<td>5- General Embryology</td>
<td>14</td>
<td>-----------</td>
<td>-----------</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>24</td>
<td>96</td>
<td>240</td>
<td>100</td>
</tr>
</tbody>
</table>

Topics

A) Lectures
   I- Introduction
   - General concepts (anatomical terms of positions, planes and movements)
   - Skin and Fascia (layers and appendages of the skin, characteristics of superficial and deep fascia, parts and function of deep fascia)
   - Skeletal system (bones: classifications and types, function, general features, growth, blood supply; cartilage: types, properties and sites)
   - Articular system (types of joints: criteria and sites; bursae: structure, function and different sites)
   - Muscular system (types, classifications of skeletal muscles, differentiation between a tendon and aponeurosis)
   - Cardio-vascular system (structure of heart, types of circulations, characteristics and classification of arteries and arterial anastomoses, the characteristics of veins, factors helping venous return and connections between arteries and veins)
   - Lymphatic system (parts of lymphatic system factors helping lymphatic drainage)
   - Serous membranes (site, arrangement and function of serous membranes)
II- Upper Limb

- Bones (clavicle, scapula, humerus, radius, ulna, hand bones)
- Pectoral region (fascia, muscles, nerves, arteries)
- Breast (position, structure, function, blood supply, lymphatic drainage)
- Axilla (boundaries, contents)
- Brachial plexus
- Back (muscles related to upper limb, origin, insertion, action, nerve supply)
- Shoulder region (muscles related to upper limb, origin, insertion, action, nerve supply)
- Rotator cuff muscles (origin, insertion, action, nerve supply)
- the anastomoses around the scapula and surgical neck of the humerus
- Arm (compartments, muscles, nerves and vessels of each compartment)
- Cubital fossa (boundaries, contents)
- Anastomosis around elbow
- Forearm (compartments, muscles, nerves and vessels of each compartment)
- Retinacula of the wrist (site, attachment, relation, carpal tunnel and its syndrome)
- Palm of the hand (palmar aponeurosis and palmar fascial spaces, muscles, nerves, arteries, flexor sheaths)
- Dorsum of the hand (anatomical snuff box, dorsal interosseous muscles)
- Venous drainage of the upper limb (superficial and deep veins)
- Nerve injuries (upper and lower trunks of the brachial plexus, radial nerve, axillary nerve, median nerve, ulnar nerve)
- Joints (sternoclavicular and acromioclavicular joints, shoulder joint, elbow joint, superior and inferior radioulnar joints, wrist joint, carpometacarpal, metacarpo-phalangeal and interphalangeal joints)
- Cutaneous innervation of the upper limb

III- Thorax

- Thoracic cage and vertebral column
- Intercostal spaces (Intercostal muscles, nerves, vessels, internal mammary artery)
- Pleura (parts, recesses, surface anatomy, nerve supply).
- Lungs (surfaces, fissures, lobes, pulmonary segments, surface anatomy, blood & nerve supply, lymphatic drainage)
- Mediastinum (parts, boundaries, contents)
- Pericardium (parts, sinuses)
- Heart (size, shape, surfaces, internal features, surface anatomy of valves and borders, site of hearing of heart sound of each valve, blood and nerve supply of the heart,)
- Great vessels of the thorax (aorta and its parts and branches, pulmonary trunk and its divisions, brachiocephalic vein, SVC, IVC)
- Thoracic parts of trachea and esophagus
- Nerves of the thorax
- Lymphatic drainage of the thorax

IV- Lower limb

- Bones (hip, femur, patella, tibia, fibula, foot bones)
- Fascia (superficial and deep fascia)
- Front of the thigh (muscles: origin, insertion, action, nerve supply; femoral triangle: boundaries, contents; femoral sheath; adductor canal: boundaries and content)
- Medial compartment of the thigh (muscles, nerve and vessels)
- Lumbosacral plexus (formation, branches)
- Gluteal region (muscles, nerve and vessels)
- The back of the thigh (muscles, nerve and vessels)
- Popliteal fossa (boundaries and contents)
- Leg (front, back and lateral compartment: muscles, nerve and vessels)
- Foot (dorsum and sole: muscles, nerve and vessels)
- Joints (hip, knee, superior & inferior tibiofibular, ankle, subtalar, intertarsal, metatarsophalangeal, and interphalangeal joints)
- Cutaneous innervation of lower limb
- Lymph drainage of lower limb
- Mechanisms of walking
- Body weight transmission

V- General Embryology
- Introduction
- Gametogenesis
- Female reproductive cycles (ovarian and menstrual cycles)
- Fertilization
- Implantation
- Differentiation of the embryo-blast and trophoblast
- Development of triaminar germ disc and chorionic villi
- Embryonic period
- Fetal membranes: A) Placenta  B) Amnion and umbilical cord
- Twins & Congenital Anomalies

B) Tutorial / Small Group Discussions
1. **Upper limb:** discussion of the practical topics, before and after the practical classes.
2. **Thorax:** discussion of the practical topics, before and after the practical classes.
3. **Lower limb:** discussion of the practical topics, before and after the practical classes.

C) Practical Classes: The practical classes include the following topics:
1- Upper limb:
   - Bones (clavicle, scapula, humerus, radius, ulna, hand bones)
   - Pectoral region (muscles, nerves, vessels, clavipectoral fascia)
   - Axilla: (boundaries and contents)
   - Brachial plexus
   - Back: (superficial and deep layers of muscles related to upper limb)
   - Shoulder region: (muscles, nerves, vessels)
   - Arm: (front and back muscles, nerves and vessels)
   - Cubital fossa: (boundaries, contents)
   - Forearm: (front and back superficial and deep groups of muscles, nerves, vessels)
   - Retinaculum of the wrist: (flexor and extensor retinaculum)
   - Palm of the hand: (palmar aponeurosis, intrinsic muscles of the hand, superficial and deep palmer arches, nerves, flexor sheath)
   - Dorsum of the hand (anatomical snuff box, dorsal interosseus muscles)
   - Joints
2- Thorax:
- Bones of thoracic cage and vertebral column
- Intercostal muscles, nerves, vessels, internal mammary artery
- Pleura (parts, recesses, surface anatomy, nerve supply).
- Lungs (surfaces, fissures, lobes, pulmonary segments, surface anatomy, blood & nerve supply, lymphatic drainage)
- Mediastinum (parts, boundaries, contents)
- Pericardium (parts, sinuses)
- Heart (size, shape, surfaces, internal features, surface anatomy of valves and borders, site of hearing of heart sound of each valve, blood and nerve supply of the heart.)
- Great vessels of the thorax
- Thoracic parts of trachea and esophagus
- Nerves of the thorax
- Lymphatic drainage of the thorax

3- Lower limb
- Bones (hip, femur, patella, tibia, fibula, foot bones)
- Fascia (superficial and deep fascia)
- Front of the thigh
- Medial compartment of the thigh
- Gluteal region
- The back of the thigh
- Popliteal fossa
- Leg (front, back and lateral compartments)
- Foot (dorsum and sole)
- Joints (hip, knee, superior & inferior tibiofibular, ankle, subtalar, inertasal, metatarsopharangeal, and inerpharangeal joints)

4- Teaching and learning methods

Methods Used:
- Lectures
- Practical classes including: practical dissection, demonstration in the dissecting room, museum jars and radiological films.
- Tutorial classes

Teaching plan:
- Lectures:
  Student are divided into five groups
  One hour lecture, four times every week
  Time of the lecture is from 12:00 - 1:00 pm, 1:00-2:00 pm, and 2:00-3:00 pm, for the different groups (According to the Faculty Central Schedules)
- Tutorials:
  Half an hour session, two times every week, Students are divided into groups of 130-150 and are given a prelab discussion for half an hour, before the beginning of each practical class using data show and videos to demonstrate the important structures of the dissected region(s) of the topic of the week which the student should focus on during the practical classes. In
addition, a brief topic discussion and a discussion of the related problem solving questions are done by the end of the practical classes. X-ray images are also demonstrated. There are group discussion and formative assessment questions every session.

- **Practical classes:**
  Two hours session time, two times every week, held in the dissecting room. The students divided into 12 subgroups (18-22 students/dissected body). The demonstrators are responsible for demonstration of the different structures of the dissected region, on cadavers, plastinated and plastic specimens, to the students and helping them to recognize these structures.

**Time plan:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Time schedule</th>
<th>Teaching hours</th>
<th>Total hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>One hour each</td>
<td>5 hours/week (24 weeks)</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>5 hours/week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical</td>
<td>Two hours session two times/ week</td>
<td>4 hours/week (24 weeks)</td>
<td>96</td>
</tr>
<tr>
<td>Tutorial</td>
<td>Half hour session two times / week</td>
<td>One hour/week (24 weeks)</td>
<td>24</td>
</tr>
<tr>
<td>Revisions and Training on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>240</td>
</tr>
</tbody>
</table>

**5- Students Assessment methods**

**5-A) Attendance criteria:** The Faculty Bylaws

**5-B) Assessment tools:**

<table>
<thead>
<tr>
<th>Tool</th>
<th>(ILOs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written examination</td>
<td>To assess knowledge and Understanding and Intellectual skills</td>
</tr>
<tr>
<td>Practical examination + Oral exam</td>
<td>To assess Practical, transferable and Intellectual skills</td>
</tr>
<tr>
<td>Assignment</td>
<td>To assess General and transferable skills</td>
</tr>
</tbody>
</table>

**5-C) Time schedule:** Faculty bylaws

<table>
<thead>
<tr>
<th>Exams</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Quiz exam</td>
<td>Not predetermined</td>
</tr>
<tr>
<td>2- First half of the academic year (Midterm)</td>
<td>Held in 7th week</td>
</tr>
<tr>
<td>3- Mid-year exam</td>
<td>Held in 14th and 15th weeks</td>
</tr>
<tr>
<td>4- Second half of the academic year (Midterm)</td>
<td>Held in 24th to 26th weeks including revisions</td>
</tr>
<tr>
<td>5- Final Practical exam + Oral exam</td>
<td>Held in 28th week</td>
</tr>
<tr>
<td>6- Final written exam</td>
<td>Held in 30th week</td>
</tr>
</tbody>
</table>
5-D) Grading System:

<table>
<thead>
<tr>
<th>Examination</th>
<th>Marks allocated</th>
<th>% of Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Continuous assessment</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>3- Mid-year written exam</td>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>5- Final exam:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a- Written</td>
<td>125</td>
<td>80</td>
</tr>
<tr>
<td>b- Practical (OSPE) + Oral Exam</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td>100</td>
</tr>
</tbody>
</table>

Formative assessment:
Feedback is given to student after the Formative exams.

5-E) Examination description:

<table>
<thead>
<tr>
<th>Examination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Continuous assessment</td>
<td>Quiz exam, practical notebook, formative assessment, Two spotting exams</td>
</tr>
<tr>
<td>Midterm exams</td>
<td></td>
</tr>
<tr>
<td>2- Mid-year</td>
<td>Written exam: short essay, MCQ, case scenarios.</td>
</tr>
<tr>
<td>3- Final exam:</td>
<td>Written: short essay question including UL, LL, thorax, and embryology, MCQ, case scenarios, Problem solving questions, cross matching questions and filling in the space</td>
</tr>
<tr>
<td>a- Written</td>
<td>Practical (OSPE): Including: bone, soft tissues and imaging anatomy</td>
</tr>
<tr>
<td>b- Practical (OSPE) + Oral</td>
<td>Oral: one committee.</td>
</tr>
<tr>
<td>Total</td>
<td>6 exams</td>
</tr>
</tbody>
</table>

6- List of references:
1- Course notes: Books authorized by department.
2- Essential Books:
   a) Cunningham’s Anatomy
   b) Gray’s Anatomy.

7- Facilities required for teaching and learning:
Facilities used for teaching this course include:
- Lecture halls: 5 lectures halls
- Small group classes
- Laboratory (dissecting rooms)
- Data show and lap tops
- Plastinated and Plastic models
- Anatomy Museum

Course coordinator: Professor Ehab El-Shaarawy

Head of Department: Professor Hoda El-Aasar
Date: 9 / 8 / 2016