SYLLABUS

COURSE:	DENS 1502 Gross Anatomy
SEMESTER:	Spring
CREDIT HOURS:	4.5
REVISED:	2005
REPRINTED:	2007
COURSE DIRECTOR:	R.L. Warner, Ph.D.

GOAL

This course provides the dental student with the opportunity to learn in detail the structure of the human body and to begin to relate the structure to function. The greatest amount of time and detail are directed toward the study of head and neck anatomy.

Upon completion of this course, the student should know the structures and arrangement of the human head and neck in detail and the general scheme of whole body anatomy. The student will have received all the gross anatomical instruction necessary for the National Board Examination and for the practice of general dentistry.

OBJECTIVES

I. INTRODUCTION AND GENERAL GROSS ANATOMY

1. Define the anatomical terms introduced and describe the features of the human skeleton by naming the bones and their most prominent features.

2. Describe the anatomical features of the nervous system. Give the details of the:

   2.1 structure of the central nervous system
   2.2 names of the components and their main functions
   2.3 structure of a typical spinal nerve and its divisions
   2.4 basic structure of the parasympathetic system
   2.5 basic structure of the sympathetic system

3. Describe the major back muscle groups, the arrangement of the spinal cord and spinal nerves and general scheme of the nerve and blood supply to the back and occipital region.

4. Describe the muscle groups, nerves and blood vessels of the shoulder. Give the details of the:

   4.1 muscles attached to the scapula
   4.2 muscles of the rotator cuff
   4.3 brachial artery and vein and branches

5. Describe the gross anatomy of the axilla by giving the details of:

   5.1 the boundaries of the axilla
   5.2 brachial plexus and its cords and terminal nerves

6. Describe the thoracic wall by detailing the muscles, bones, nerves, arteries and pleural lining.

   6.1 describe the anatomy of the trachea, bronchi and lungs and distinguish the differences between the right and left bronchi and lungs
   6.2 describe the effects of penetrating wounds at 4 vertebral levels
   6.3 describe the nature and effect of a sucking wound and collapsed lung

7. Describe the anatomy of the trachea, bronchi and lungs and distinguish the differences between the right and left bronchi and lungs.

8. Describe the features of the thoracic mediastinum by distinguishing the:

   8.1 boundaries and contents of each part
   8.2 features and relationships of the great vessels
   8.3 features of the posterior mediastinum, including the aorta, esophagus, azygous system and sympathetic chain

9. Describe the gross anatomy of the heart by detailing the:

9.1 features of the pericardial sac and consequences of fluid in the sack
9.2 features of the chambers, septa and valves
9.3 the coronary arteries and the cardial veins
9.4 differences between the fetal and postnatal circulation

9.4.1 types and postnatal consequences of heart and arterial anomalies
9.4.2 development and outcome of coronary artery disease

10. Describe the anatomy of the abdominal wall by giving details of the:

10.1 bones, muscles, fascia and lining and their relationships
10.2 anatomy of types and consequences of hernias

11. Describe the stomach, small intestines, large intestines, pancreas, liver, gall bladder and spleen including the arrangement of the mesentery and peritoneal reflections.

12. Describe the arteries and veins of the abdomen and pelvis.

13. Describe the gross anatomy of adrenals, kidney, ureters and urinary bladder.

14. Describe the gross anatomy involved in diverticulitis, duodenal ulcers, gall and urinary stones and blockages, liver blockage and development of 3 types of varices, splinting by the greater omentum.

II. THE NECK AND FACE

1. Name the triangles of the neck and list their boundaries and contents.

2. Give the location, attachments and innervation of muscles of the neck and give the details of the cervical plexus.

3. Describe the contents of the carotid sheath, the branches of the external carotid artery, the tributaries of the internal jugular vein, the vagus nerve.

4. Describe the anatomy of the submandibular gland and its relationship to surrounding structures, especially the facial artery.

5. Advanced skull anatomy. Following a handout and directions given in lab, find the deeper and more detailed structures of the skull. In the construction of the skull, know the roles played by the parts of the sphenoid, ethmoid and palatine bones. Be able to identify the foramina, fossae, canals, processes and other details of bones and regions as required.

6. Describe the location, arrangement and function of the muscles of facial expression and the pathways of the facial nerve and distribution of its terminal branches.

7. Describe the parotid region, the parotid gland and structures associated with it.

8. For the muscles of mastication, give the precise location, origin, insertion, blood supply, nerve supply and action.

III. THE DEEP HEAD AND NECK STRUCTURES

1. Describe the infratemporal region by giving detailed anatomy of the:

1.1 contents of the space and its boundaries
1.2 mandibular division of the trigeminal nerve
1.3 maxillary artery and its branches
1.4 relationship of the nerves, arteries and veins to the medial and lateral pterygoid muscles

2. Describe the cranial cavity and surface of the brain and brain stem by detailing the:

2.1 meninges and blood dural sinuses
2.2 circle of Willis
2.3 cranial nerves at the brain stem and exiting the skull

2.4 nature and contents of the cavernous sinus
2.5 anatomy leading to the passage of infection from the scalp to the cranial cavity

3. Describe the anatomy of the orbit by giving the details of the:

3.1 bones of the orbit
3.2 extraoccular muscles and their nerve supply
3.3 clinical diagnosis of orbital nerve and muscle function
3.4 arteries and veins
3.5 summary of the anatomical routes by which a thrombus or infection can travel from the anterior face to the cranial cavity
3.6 sensory nerves, ganglia
3.7 eyeball and optic nerve
3.8 vagina bulbi and the prosthetic eye
3.9 lacrimation and the route taken by tears to reach the nasal cavity

4. Describe the anatomical features of the lateral nasal walls and the relationships of the paranasal sinuses to the nasal cavities. Describe paranasal sinus drainage and anatomical considerations in sinus infections.

5. Describe the nasal septum and the hard and soft palate. Describe the relationships among cranial cavity, orbit, nasal cavity, sinuses and oral cavity.

6. Describe the anatomy of the oral cavity by giving details of the:

6.1 vestibule, cheek, lip, tongue and floor of the mouth
6.2 dorsal surface of the tongue and the papillae
6.3 nerve supply to the teeth, tongue and mouth lining
6.4 blood supply to the teeth, tongue and mouth lining
6.5 relationship of the structures in the floor of the mouth
6.6 genioglossus malfunction and sleep apnea
6.7 roles of supra- and infra-hyoid muscles in opening the mouth and swallowing
6.8 roles of lingual, hypoglossal and glossopharyngeal nerves in the mouth and clinical diagnosis of their malfunction
6.9 surgical landmarks and approaches in the floor of the mouth
6.10 nerves of the palate and results of their anesthesia

7. Describe the pterygopalatine fossa by giving its boundaries, openings and contents, and the relation of these contents to the surrounding regions.

8. Describe the temporomandibular joint by detailing the:

8.1 bony structures
8.2 capsule, disc and associated muscles
8.3 nerve and blood supply
8.4 joint cavities and the movements of the joint
8.5 role of the retrodiskal part in TMJ function and TMD
8.6 scenario of joint dislocation and reduction
8.7 causes and effects of muscle spasm
8.8 effects of adhesions in the separate cavities
8.9 types of stresses leading to TMD
8.10 types of symptoms of TMD
8.11 causes of joint noises
8.12 in general, types of treatment of TMD
8.13 sphenomandibularis and zygomandibularis

9. Describe the anatomy of the pharynx by giving the details of the:

9.1 pharyngeal constrictor muscles, attachments and nerve supply
9.2 naso-, oro-, and laryngeal regions and associated muscles and features
9.3 opening of the oral cavity into the oropharynx, features of fauces
9.4 base of the tongue and epiglottis
9.5 the three structures in which a lost dental preparation may be trapped
9.6 tonsils and their formation into Waldeyer's ring to combat infection
9.7 anatomy, innervation and function of muscles of soft palate in sealing off oral and nasal cavities

10. Describe the larynx by detailing the:

10.1 laryngeal cartilages
10.2 muscles and nerve supply
10.3 laryngeal spaces, vocal cords and relationships
10.4 anatomical approach to establishing an emergency airway
10.5 clinical effect of recurrent laryngeal nerve malfunction

11. Describe the external, middle and inner ear by giving details of the:

11.1 auricle, external acoustic meatus, tympantic membrane and chorda tympani nerve
11.2 middle ear ossicles and their action, stapedius and tensor tympani
11.3 cochlea, cochear duct and hair cells
11.4 semicircular canals, ampullae, saccule, utricle
11.5 relationships among cavities of ear and mastoid air cells, danger of the spread of infection to the cranial cavity from the nasopharynx
11.6 relationships of middle ear cavity to internal carotid and internal jugular
11.7 relationship between TMJ and middle ear, possible consequences
11.8 causes of high tone and other deafness

IV. APPLIED HEAD AND NECK ANATOMY

1. Describe the fascial boundaries in the neck and head and relate this arrangement to potential spread of infection.

2. Describe the lymphatics of the head and neck by giving precise location of lymph node groups and their drainage and relate this drainage to the possible metastases of oral cancers and to the diagnosis of infection.
3. For each of the cranial nerves give the details of the:

    3.1 location and exit opening from the skull
    3.2 modalites and distribution
    3.3 motor innervation of named muscles (if any)
    3.4 specific relation to the parasympathetic system (if any)

4. Describe the parasympathetic nervous system by giving the:

    4.1 location in the cranial nerves and the associated ganglia
    4.2 structures innervated
    4.3 general distribution to the rest of the body

5. Describe the sympathetic nervous system by giving the:

    5.1 relationship to the spinal cord of the sympathetic chain and ganglia
    5.2 distribution to the head and neck
    5.3 distribution to the rest of the body
    5.4 synaptic connections and their location
    5.5 function of the neurotransmitters

6. Relate spinal cord damage to paraplegia, quadriplegia and hemiplegia.

7. Describe the effects of herpes zoster and herniated disk on a spinal nerve.

8. Explain xerostoma and sialorrhea in terms of parasympathetic system.

    8.1 explain the effects of adrenergic drugs on low blood pressure, controlling bleeding, cardiac arrest, slow heart beat and asthma
    8.2 describe the causes and symptoms of Horner's syndrome
    8.3 explain the effects of adrenergic blocking agents and beta blockers on hypertension

9. Describe the anatomical location for each of the types of anesthetic injection employed in general dentistry and the distribution of the nerves anesthetized.

10. Identify the anatomical features seen in the sections taken through regions of the head, and relate these features to those seen in radiograghs.

11. Describe the types of imaging that are employed to gain diagnostic information about head and mouth structures, and relate the anatomical features seen to the gross specimens.

12. Describe the roles of the following anatomical features of the edentulous mouth in denture design: zygomaticoalveolar ridge, coronoid process, anterior crest, hamular notch, palatoglossal arch, labial frenula, lingual frenula, buccal frenula, pterygomandibular raphe, soft palate, incisive papilla, posterior nasal spine, relative absorption of palatine bone and alveolar ridge, maxillary tuberosity, origin of medial pterygoid in hamular notch, sublingual fold, external oblique line, genial tubercles, genioglossus, mentalis, labial vestibule, mental foramen and ridge height, retromylohyoid

space, origin of mylohyoid muscle, origin of buccinator, retromolar pad, temporalis tendons, masseter, modiolus, orbicularis oris, philtrum and nasolabial groove.

RESOURCES

I. Media Resources: Printed media

1. Required textbook

Moore, K.L. and Agur, A.M.R.
Essential Clinical Anatomy
Williams and Wilkins, Baltimore, 1995

Tank, Patrick
Grant's Dissector, 13th ed.
Lippencott, Williams and Wilkens, Baltimore, 2005

2. Supplemental textbook

April, E.W.
Clinical Anatomy, 3rd ed.
Williams and Wilkins, Baltimore, 1997

3. Required atlas

Netter, F.H.
Atlas of Human Anatomy, 2nd ed.
Novartis Pharmaceutical Corp., New Jersey, 1997

4. Monograph

Warner, R.L.
Gross Anatomy
University of Texas Health Science Center at Houston, Medical School, 1998

5. Handouts: Selected writings and images by Crabtree, Gibson, Mong, Tebo and Warner

II. Human Resources

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STUDY PLAN AND REQUIREMENTS

The Gross Anatomy Course is among the largest courses you will encounter in dental school so it is important that you take full advantage of the time that has been scheduled for you to study human anatomy. The amount of laboratory time scheduled should be enough so that you will not need to spend much extra if you utilize your time wisely. The scheduled lectures are very helpful to guide you toward the essential content of the various topics addressed in this course.

You will find anatomy to be a fascinating and enjoyable subject if you keep up with your studying. Before each scheduled period, you should read over the assigned textbook, atlas and dissector pages. If you are somewhat familiar with the anatomical terms of the region under study, the lectures and the laboratory periods will be a much more valuable learning experience.

You are expected to attend all assigned seminars and laboratory periods. This course is conducted in the usual lecture-laboratory mode and is scheduled for all students at the same time. There will be four section exams followed by a final comprehensive exam during finals week. Each written section examination will be immediately followed by a practical examination on the same day and these examinations are to be taken by all the students as scheduled.

The volume of material in this course is 4.5 credit hours. You should devote some study time to gross anatomy almost every day. If you do not keep up, this material can become overwhelming.

To summarize:

1. All scheduled lectures and laboratories are to be considered as mandatory attendance.

2. Read the assignments before class.

3. Make good use of the scheduled laboratory time. A very large part of learning anatomy occurs in the laboratory.

DENS 1502 GROSS ANATOMY
2007 Spring Semester Schedule

Monday and Wednesday, 1-4:50 pm; Fridays, see schedule.
Lectures: Room 340 or B81. Labs: Medical School Laboratory or B81. See schedule for changes.

Date/Time	Lecture	Presenter	Laboratory
Wed, Jan 3	Introduction and Osteology	Warner	Skeleton and Skull **Rm B81**
Fri, Jan 5 **1-4:50 pm**	Skeleton and Skull	Warner	Skeleton and Skull **Rm B81**
Mon, Jan 8	The Back Dissection	Mong	
Wed, Jan 10	Introduction to nervous system	Warner	Back dissection
Fri, Jan 12 **1-4:50 pm**	Shoulder, Axilla	Mong	Shoulder, Axilla
Mon, Jan 15	*Martin Luther King, Jr. Holiday*		
Wed, Jan 17	Thorax I	Warner	Thoracic Wall Shoulder, Axilla (cont'd)
Fri, Jan 19 **1-4:50 pm**	Thorax II	Warner	Lungs and Mediastinum
Mon, Jan 22	Thorax III	Warner	Heart
Wed, Jan 24	**WRITTEN EXAM I Rm 207**		**Lab Practical I**
Fri, Jan 26 **1-4:50 pm**	Abdomen I	Rogers	Abdominal wall
Mon, Jan 29	Abdomen II	Rogers	Viscera and Vessels
Wed, Jan 31	Abdomen III	Warner	Vessels and Posterior wall
Fri, Feb 2 **1-4:50 pm**	Skull **Rm B81**		
Mon, Feb 5	Neck I	Zhang	Neck
Wed, Feb 7	Neck II	Zhang	Neck
Fri, Feb 9 **1-4:50 pm**	**Examination on Skull Rm B81**		
Mon, Feb 12	Neck III	Zhang	Neck
Wed, Feb 14	Face I (on Exam III)	Zhang	Anterior Face (on Exam III)
Fri, Feb 16 **1-4:50 pm**	**WRITTEN EXAM II** **Rms 340/B81/20**		**Lab Practical II**
Mon, Feb 19	*Presidents' Day Holiday*		
Wed, Feb 21	Face II	Zhang	Posterior Face
Fri, Feb 23 **1-4:50 pm**	Cranial Cavity	Warner	Cranial Cavity

Date/Time	Lecture	Presenter	Laboratory
Mon, Feb 26	Orbit and Eye	Warner	Orbit (split heads)
Wed, Feb 28	Infratemporal fossa	Mong	Infratemporal Fossa
Fri, Mar 2 1-4:50 pm	Nasal and Oral Cavities	Warner	Nasal and Oral Cavities
Mon, Mar 5	**WRITTEN EXAM III Rm 207**		**Lab Practical III**
Wed, Mar 7	Pterygopalatine fossa	Mong	Pterygopalatine fossa
Fri, Mar 9	*Texas Independence Day Holiday*		
Mon, Mar 12	TMJ, Muscles of Mastication	Warner	TMJ
Wed, Mar 14	Larynx	Warner	Larynx
Mar 19-23	*Spring Break*		
Mon, Mar 26	Pharynx	Warner	Pharynx
Wed, Mar 28	Ear	Warner	Ear
Mon, Apr 2	Anatomy of anesthesia	Crabtree	Anatomy of anesthesia
Wed, Apr 4	Fascia and lymphatics	Crabtree	Review
Mon, Apr 9	**WRITTEN EXAM IV Rm 207**		**Lab Practical IV**
Wed, Apr 11	Anatomy of the edentulous mouth	Warner	Head Sectional Anatomy
Mon, Apr 16	Head and Neck Sectional Anatomy ***Course Evaluation*** **Rm B81**	All Faculty	Radiographic Anatomy Models **Rm B81**
Wed, Apr 18 1-2:50 pm	Cranial Nerves and Autonomics *(2 hours)*	Gibson	Review
Mon, Apr 23	*No class*		
Wed, Apr 25	**FINAL WRITTEN EXAMINATION Rm 207**		**Final Laboratory Practical Rm B81**

Gross Anatomy Lab Tank Assignments

A
AHMED, Afreen Sayeed
DABEL, Tyler Bryan
CHEN, Stephen Joseph
FAN, Benjamin

B
JACOB, Lorraine Vinitha
PIGNERI, Nicholas David
SISTA, Sridhar R.
STEELE, Brian Mathew
GONZALEZ, Anthony Benjamin

C
GARRETT, Rachael Ann
LE, Katelynn Dung-Hoang
KURUVILLA, Jini P.
RAMIREZ, Adriel
TRAN, Chu

D
TAYLOR, Brenden Elizabeth
MALIK, Navid Nasir
PHAM, Kathy
MARTINEZ, Vickie Saldana

E
LEFFELHOTZ, John Walker
VALLABHBHAI, Poonam
SCHAEFER, Jeffery Scott
CAMARATA, Nicholas Alan

F
CRAN, Karisha Lynn
ASGARI, Fatemah Layla
CHAU, Vu Anh
GONZALEZ, Iven

G
BENTLEY, Michelle Elizabeth
AJAJA, Moyosola Omotayo
RAFIEI, Poria
MORRISON, Justin Lynn

H
ROSENTHAL-EAMES, Mina L.
SUH, Helene Jaeyun
RUSHING, Matthew Lindon
GOMEZ, Hector Manuel

I
HERNANDEZ, JR., Joe William
DADJOO, Nisa
FOSSUM, Brent Eugene
GOLD, Elizabeth Anne

J
HAMID, Huma
GARCIA, Amber Celeste
DENNINGTON, Boyd Patrick
PAZ, Jeff

K
HOANG, Leena
MOSLEMI, Shamim
McMURRAY, Geoffrey Leroy
SHIRALI, Sepideh Sahar

L
WEBSTER, William Kirk
PATEL, Jaanki Bhupendraku
HOSSAIN, Fariah S.
BEETAR, Patrick Daniel

M
CASTANEDA, Carla Ida
ALIBHAI, Husein Murtaza
JOHNSON, Erika Robin
ESTES, IV, John Levi

N
LAGALY, Donald Chad
PHAM, Nguyen Thanh
PAVLICK, Holly Joy
ROUSE, Richard Alexander

O
PERRY, Rachel Isabel
SOLORZANO, Deborah Michelle
BASTANI, Sean Ehsan
CASTENSON, Eric James

P
BRADLEY, Margaret Sharon
AZHAR, Deeba Sarah
HALLOCK, Michael Joseph
RAMSEY, Justin Carter

Q
HIRT, Edgar Joseph
RASHEED, Zarina
MULLER-DELGADO, Monica G.
STANWORTH, Brian Paul

R
TAPP, Stephen Michael
ROBBINS, Heather
KING, Precious Joy
GIESLER, Cody Lance

S
AUDU, Sherifat Omonike
CHUMBLEY, Steven Lewis
FITZGERALD, Michael Paul
MILLER, James Charles

T
NAIL, Kevin Matthew
McRAY, Brett Hamilton
PECCORA, Dwight Daniel
THAMES, Walter Dee

EVALUATION METHODS

Each of the four sections of Gross Anatomy is followed by a major examination which consists of two parts. The first part is a written examination that is one-hour long, and it is followed directly by the second part that is a practical examination administered in the gross anatomy laboratory in the Medical School. The written and practical examinations are weighted equally and are worth 100 points each.

The final written exam consists of 100 points on material since the last exam, and 50 points on questions covering older material, which was covered on all previous exams. Unlike the written final, the final lab exam is not comprehensive but only covers material since the previous lab exam.

Points will be added to the final average of those students who participate actively and consistently in the laboratory.