

TEXAS CHIROPRACTIC COLLEGE

DIVISION OF BASIC SCIENCES

DEPARTMENT OF ANATOMY

Course Syllabus

Course Title: Neuroanatomy

Course Number: AN 3542

Time Requirement: (hours/week)

Credit Units: 5 credits

Lecture: 4 hours

Lab: 2 hours

Days and Times and Places of Course: Lectures: Monday: 9:00 -10:00 in L-206
Tuesday: 9:00 -10:00 in L-206
Wednesday: 9:00 -10:00:00 in L-206
Friday: 10:00 -11:00 in L-205

Lab: Thursday: 2:00-4:00 in Chem Lab

Trimester/Year: Summer, 2010

Contact Information:

Course Professor: Isis Zaki, M.D., M.S., Ph.D.

Office: 321 (AUD)

Office hours: Monday-Friday: open (no appointment needed)

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Holidays:

- **Memorial Day: Monday May 31**
- **Independence Day: Monday July 5**
- **Homecoming: July 15-17**

General Course Description:

This course presents the detailed structure and function of the central and peripheral nervous system. Emphasis is given to neuroanatomic principles and pathways, along with functional correlations, cross-sectional neuroanatomy and the anatomy of special senses. Laboratory exercises complement and supplement lecture topics.

Course Objectives: At conclusion of this course, a successful student should be able to:

- (1) Be familiar with topics in the subject of neuroanatomy using the correct terminology.
- (2) Know the major anatomical structures of the brain and brainstem.
- (3) Have a knowledge of the locations and functions of the meninges.

- (4) Understand the formation, drainage and pathway of cerebrospinal fluid through the ventricular system of the CNS
- (5) Know the arterial blood supply and venous drainage of the CNS
- (6) Be aware of the effects of vascular lesions in the CNS
- (7) Know the pathways of all sensory and motor tracts in the spinal cord, brainstem and cerebrum
- (8) Understand the central connections of the cranial nerves
- (9) Have a good grasp of the organization of the autonomic nervous system and its main functions
- (10) Understand the structure, function and connections of the cerebellum.
- (11) Know the organization of the functional areas within the cerebral cortex
- (12) Know the components of the visual system
- (13) Understand the visual pathway from the retina to the brain
- (14) Know the components of the auditory and vestibular systems
- (15) Have a knowledge of the auditory and visual pathways
- (16) Know the receptors for taste and olfaction

Learning Outcomes: At the end of this course students should be able to:

- (1) List major ascending and descending tracts**
- (2) Describe the special senses pathways**
- (3) Distinguish between the major functional areas of the brain**
- (4) Identify the functional components of the cranial nerves**
- (5) Describe the anatomy of the autonomic nervous system**
- (6) Solve clinical problems by integration between basic knowledge information and various clinical presentations**

CCE Competencies:

The council on Chiropractic Education has set competencies that are required for the graduate of any Doctor of Chiropractic Program. Many of these competencies are indirectly touched on by courses in the basic Science Department. Some examples follow:

Diagnostic studies:

“Identify the pathophysiologic process responsible for the patient’s clinical presentation, and understand the natural history of the disorder”

Relationship to course content:

Knowing the anatomy of the central nervous system will help the clinician to properly diagnose vascular, traumatic, degenerative, congenital and neoplastic lesions that may affect the spinal cord, brainstem, cerebral hemispheres and cerebellum. Before any pathology can be diagnosed, the normal structure and function must be thoroughly understood.

Diagnosis Skills:

“ Integrate data in a manner that facilitates the formulation of a diagnosis”

Relationship to course content:

Acquiring the ability to read and discuss case studies in neuroanatomy allows the future clinician to recognize clinical symptoms involving cranial and spinal nerves and thus integrate patient information to formulate a diagnosis.

Equipments needed: Lab coat, gloves, Netter's atlas of Neuroscience and colored pencils for lecture diagram's drawings

Teaching Philosophy:

Integration between basic and clinical sciences and exposing the students, early in the DC program, to clinical skills are top priority goals in my teaching. Teaching most topics of this course starts by presenting a brief summary of a clinical case related to that specific topic and asking the students some questions regarding the possible anatomical structures involved, causes of the patient's problem, possible diagnosis and differential diagnosis, investigations and management of the case.

Involving the students in the learning process is achieved by asking them questions throughout the lecture that keeps them attentive and interactive. It also serves as a rapid feedback method about their level of understanding.

Student Responsibilities

This program prepares students to be good primary health care providers.

Students should act professionally to meet the challenges of such program by coming to class on time, by being ready to learn and by paying attention. Side talks during lectures or labs are not tolerated. Students should make the most of the time in class and ask questions. Every student should participate in answering questions during lectures and in the reading assignments in the labs and at home.

Working on any material other than class material is not accepted.

Interruption of the class by any type of misconduct will subject the student to a penalty.

Use of the lab tops for anything not related to the topic being discussed in class (e.g., e-mailing, internet, etc.) will subject the student to an academic penalty.

Sleeping in the class is NOT accepted and is considered as absence.

If a student leaves the class without excuse, he/she will not be allowed to come back.

Cellular Phones:

Electronic communication devices are to be turned off or placed in silent mode when in classroom. These devices are NOT allowed to be on your person during testing situations. Cellular phones may NOT be answered during class time with prior permission from the faculty member. Texting or e-mailing is NOT allowed during class time. Cell phones will be taken if used during class time.

There is no first time warning. Failure to comply with these rules will subject students to administrative/academic penalty.

Exam Protocol:

Students should take the scheduled lecture and lab examinations and quizzes on time.

Students are expected to do their own work during exams. **Academic dishonesty will not be tolerated** and will result in the student being taken before academic affairs. Students will be asked to sit every other seat and every other row during exams. All note packs, books, backpacks should be placed in the front of the classroom. Hats are to be turned back. No cell phones, pagers or lab tops will be allowed out on the desks. Students who come late to exams are not allowed extra time. Students are not allowed to take exams if students have submitted their answers and left the classroom.

Modes of Instruction:

- (1) Lectures with PowerPoint presentations.
- (2) Self-directed learning assignments.
- (3) Clinical correlations.
- (4) Clinical cases.

Required Texts:

- (1) Lecture Note Pack, available on the scholar360 and at the library
- (2) Netter’s Atlas of Human Neuroscience. Felten D and Jozefowicz R. Icon

Suggested Readings:

- (1) Basic Clinical Neuroscience. Young, Young and Tolbert. Second edition, Lippincott, Williams and Wilkins, 2008
- (2) Clinical Neuroanatomy for Medical Students. Snell, Richard S. Lippincott, Williams and Wilkins, 2006
- (3) Neuroanatomy, Maria A. Patestas and Laslie P. Gartner, Blackwell Publishing, 2006
- (4) Review Questions for the NBCE Examinations. Parts I and II, Mosby, 2006

Assessment of Student’s Achievements

- Format of lecture examinations includes multiple-choice questions (MCQ), matching questions, clinical cases, diagrams and short essay questions.
- Quizzes may contain MCQ, true and false, clinical cases and matching questions

Grading procedure:

Midterm #1	= 50 points
Midterm #2	= 50 points
Midterm #3	= 50 points
Long quiz	= 20 points
Two midterm Lab Exams	= 2 x 25= 50 points
Final Lab Exam	= 50 points
Quizzes	= 20 points
Final lecture Exam	= 80 points (Comprehensive)
Total points	= 370

Your final grade = your total points/370 x100

N.B. Neither extra credit points nor curving of the scores are considered in the final grades

Grading scale:

- A= 90-100%
- B= 80-89%
- C= 70-79%
- F= 69% and below

**Make Up Examination Policy: A new policy approved by TCC cabinet on
June 9, 2009**

3.0 POLICY

- 3.1 Students must notify faculty before missing any examination. If an examination is missed for good and sufficient reason and the student has notified the faculty member in advance, a make-up examination may be given subject to a fee of \$40.00. The fee for the make up examination is a minimum of \$75.00 if a standardized patient is required for the exam. Additional required standardized patient hours may increase this \$75.00 minimum fee. All intra-term examinations must be made up prior to final examinations. Missed final examinations must be made up within the first week of the next trimester. A student may be allowed a maximum of two missed examination dates for good and sufficient reason per trimester. These two missed examination dates are for all enrolled courses in a trimester, not for each individual course. Any request for additional make up examinations will require documentation substantiating the absence and must be approved by the Dean of Academic Affairs.

5.0 PROCEDURES

- 5.1 The student must notify the instructor that he/she will miss a scheduled examination prior to the administration of the exam.
- 5.2 The student will request a Make Up Examination Request form from the Assessment Center.
- 5.3 The Assessment Center will verify that the student has not exceeded the two allowed missed examination dates before providing the student with the Make Up Examination Request Form. (If the student has exceeded the two allowed missed examination dates, follow procedures 5.11 and 5.12 before proceeding to 5.4)
- 5.4 The student will sign an authorization for the appropriate make up examination fee to be charged to his/her account by the Business Office.
- 5.5 The faculty member will sign the Make Up Examination Request form, verifying that the student is eligible for a make up examination.
- 5.6 The faculty member will provide a make up examination to the Assessment Center prior to the scheduled make up examination date.
- 5.7 The Assessment Center will provide a secure testing environment for the make up examination.
- 5.8 After administration of the make up examination, the Business Office will debit the student's account and credit the student scholarship fund and, if applicable, the standardized patient account for the appropriate amounts.
- 5.9 The Assessment Center will return the completed examination to the faculty member for grading.
- 5.10 If the final examination from the previous trimester is being made up, the faculty member will provide the Registrar's Office with the student's final course grade prior to the end of the add/drop period.

- 5.11 If the student has exceeded the two allowed missed examination dates and is requesting an additional make up examination, the student will submit substantiating documentation to the Dean of Academic Affairs.
- 5.12 Upon submission of the substantiating documentation, the Dean of Academic Affairs will determine if an additional make up examination will be allowed.

THERE ARE NO MAKE UP EXAMS FOR THE MISSED LAB EXAMS OR QUIZZES

Incompletes: Refer to Student Handbook

Attendance Policy:

Attendance in all lectures and labs is required. A student is subject to academic penalty if absences exceed **10% (8 hours)**. Absences exceeding 20% subject a student to dismissal from a course and a WF grade. Three (3) incidences of tardiness may constitute an absence

Course Withdrawal:

The student completes a withdrawal form in the registrar's office. Withdrawal is allowed on the appropriate time during the trimester (student handbook) with a grade "W". Withdrawal after that time will result in a grade of "WF".

Retention of Examinations:

The lead instructor will retain all scantrons. If any student desires to review any of the exams, he/she can contact the lead instructor to set an appointment.

ANY DOCUMENTATION OF COURSE GRADES WILL BE KEPT BY THE LEAD INSTRUCTOR UNTIL THE SECOND FRIDAY OF THE FOLLOWING TRIMESTER. AFTER THAT TIME, THE GRADES MAY NOT BE REVIEWED.

Disclaimer Statement:

The syllabus is a representation of the course content, organization and evaluation procedures. The faculty teaching this course reserves the right to reasonably alter the sequence of activities, evaluation and assignment dates. Every effort will be made to inform the class members of such changes. Students are responsible to follow the syllabus and any change instituted by the faculty.

ALL CELL PHONES AND PAGERS SHOULD BE TURNED OFF DURING LECTURES AND EXAMS

**Neuroanatomy (AN 3542) course outline
Summer, 2010**

Weeks	Topics	Readings Clinical Neuroanatomy (Snell)	Readings Clinical Neuroscience (Young et al.)
Week 1	- Introduction, Neuroanatomical terminology, - Meninges and ventricles	Chapters 1,2 15	Chapters 1, 23& 24
Week 2	- Blood Supply of CNS	Chapters 15,16,17	Chapter 22
Week 3	-Blood Supply of CNS - Spinal Cord Review	Chapters 4,17 Chapter 7	Chapter 22 Chapter 2
Week 4	- Exam # 1 (Material of weeks 2,3,4) - Tracts of the Spinal Cord	Chapter 4	Chapter 11
Week 5	- Tracts of the Spinal Cord - Spinal cord lesions	Chapter 4	Chapters 5,6,7
Week 6	- Brain stem: medulla	Chapters 5,11	Chapters 3, 20
Week 7	- Exam # 2 (Spinal Cord) - Brain stem: Pons	Chapters 5,11	Chapters 3, 21
Week 8	- Brain stem: Midbrain - Brain stem lesions - Case Studies/ Review for Exam #3	Chapters 5,11,17	Chapters 3, 21
Week 9	- Exam # 3 (Brainstem) - Olfactory and gustatory Systems	Chapter 11	Chapters 12,13 & 15
Week 10	- Vestibular and Auditory Systems - Visual System - Review Autonomic Nervous System	Chapters 11, 14	- Chapter 14 - Chapter 19
Week 11	- Long quiz (on Special Senses and ANS) - Cerebellum	Chapter 6	Chapter 9
Week 12	- Cerebellum - Diencephalon: Thalamus, Hypothalamus	Chapters 6,12,13	- Chapter 9 - Chapter 4 - Chapter 18
Week 13	- Basal Ganglia, Limbic system - Cerebral Cortex	Chapter 10 Chapters 7,8	Chapters 8,16 & 17
Week s 14 & 15	- Final Lecture Exam (Comprehensive)		

Neuroanatomy Lab Schedule

Weeks	Topics
Week 1	Gross Brain (cadaver) and Brainstem Structures (cadaver & model)
Week 2	Meninges, Ventricles, CNS Vasculature and Dural Sinuses
Week 3	Review for First Lab Exam
Week 4	Lab Exam # 1
Week 5	Spinal Cord Lab
Week 6	Brainstem Cross sections: Medulla oblongata
Week 7	Brainstem Cross Sections: Pons
Week 8	Brainstem Cross sections: Midbrain
Week 9	Review for Second Lab Exam
Week 10	Lab Exam # 2 Cerebellum
Week 11	Frontal (coronal) sections of the brain Sagittal and Horizontal sections of the brain Brainstem Model: Cranial Nerve Nuclei
Week 12	Review for \Final Lab Exam
Week 13	Final Lab Exam

Note: dates of the quizzes: TBA