University of Minnesota
College of Veterinary Medicine

Syllabus

CVM 6120 Veterinary Neurobiology

Spring/2008
Two Credits

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Course Description: CVM 6120 Veterinary Neurobiology presents neurohistology, neuroembryology, and the anatomy and physiology of the central nervous system (brain & spinal cord) and special senses (vision, hearing taste, & olfaction) of domestic mammals.

Books and Supplies:
In addition to *CVM 6120 Class Lecture Notes* and the *CVM 6120 Laboratory Manual*, one book is required: "Guide to Dissection of the Dog", by Evans & de Lahunta, 6th edition (previously required for CVM 6100). These may be purchased from the Veterinary Student Supply (651-645-1702; vssvth@umn.edu)

Also, the following textbook resources are available on reserve in the Veterinary Library (the first two books are out of print).

• DeLahunta A: *Veterinary Neuroanatomy and Clinical Neurology* (1983). Because this book is organized somewhat differently than the course, it offers another perspective. A strength of the book is its clinical content which is useful later in the curriculum.

• Jenkins TW: *Functional Mammalian Anatomy* (1978) This text is a nicely organized and offers comprehensive presentation of neuroanatomy.

• Beitz AJ & Fletcher TF: Brain and Spinal Cord chapters in *Anatomy of the Dog* (1993) edited by H. Evans. This text contains more information than you need to know for the course, but it has some nice illustrations.

• Beitz AJ & Fletcher TF: Nervous Tissue in *Texbook of Veterinary Histology* (2006) edited by JA Eurell and BL Frappier; pp 91-116. This textbook chapter offers a comprehensive presentation of neurohistology.

• Any anatomy or physiology text will present nervous system function and structure.

Goals and Objectives -- Knowledge: When the student successfully completes the course, he/she will have developed an understanding of how the nervous system of domestic mammals is organized, in terms of relationships among major components comprising the nervous system, and an appreciation of how behavior is altered by disorders of nervous system components. The course is taught to prepare students for learning physiology, pathology, clinical diagnosis, surgery, and later coursework in Veterinary Neurology.

Goals and Objectives – Skills and Abilities: Upon successful completion of the course, students will be able to identify and pronounce the names of nervous system components, to facilitate their understanding of medical literature and communication with medical colleagues. They will be able to explain how neural components are structurally and functionally related to one another and how specific neural damage leads to particular neurological disorders. They will understand the rationale for procedures comprising a neurological exam of a veterinary patient.

Participation Policy: Students are expected to attend class and query instructors about course content that they do not understand. Instructors are available for individual consultation during laboratory periods and at other times by appointment.

Grading and Grading Standards:
Your CVM 6120 letter grade will be based on the following scale (percent total score rounded to the nearest whole number):

A = 90-100%
B = 80-89%
C = 70-79%
D = 65-69%
F = below 65%

Examinations:
There will be two examinations in the course a midterm and a final, each accounting for fifty percent of the course grade. Each exam will consist of a written test worth 30% of the course grade and a lab test (on gross brain and glass slide material) worth 20%. The range of subject matter per exam will be announced in class.

Specifically, on written tests you will be asked about the content of the *CVM 6120 Class Lecture Notes*, which will be referenced in lectures given by instructors. You will <u>not</u> be tested on the Clinical Correlation session presented by Dr. Hardy. For each lab exam, you will be tested on <u>underlined/bold terms</u> in the *CVM 6120 Laboratory Manual*, as presented in the accompanying *Neuroanatomy Lab Terms List*.

All examinations will be conducted under honor code regulations of the College of Veterinary Medicine and according to CVM academic policies on testing. Students are expected to complete exams in the time allotted.

Make-up Policy: Students will be allowed to make arrangements to take examinations that they missed in the case of absences excused by a course instructor.

Criteria for Evaluation:
Grades will be awarded based on examination scores, as described above.

Methods of Instruction:

Lectures will be based on the Lecture Notes that students purchase. Lectures will include additional images, video clips, and limited live animal presentations.

Labs will involve identification of structures observed in gross brains and on tissue glass slides, as described in the Laboratory Guide that students purchase. Lab content will be introduced in a lecture room context at the beginning of each lab. Lab demonstration material will be displayed during each Lab period for purposes of subject matter clarification and enrichment.

Independent Study. To access web-based courseware, visit the Veterinary Anatomy web site (**http://vanat.cvm.umn.edu/**), which contains a CVM 6120 web page. The following courseware web sites may be viewed on-line or downloaded to your local hard disk.

1] **Canine Brain Transections** — a web site presenting sixteen transverse sections through a canine brain with dynamic labels depicting structures that students are expected to identify per brain section. Two modes of identification are available: select a name & see the structure or select a structure & see its name.

2] **Brain Gross Anatomy** — a web site presenting a variety of gross anatomical images of brains of domestic animals. Images are organized by anatomical region and by viewing perspective. Each image has an accompanying caption. Labels can be toggled on/off.

3] **Neurohistology ATLAS** — a web site that presents a variety of neurohistology images with captions. Via two-way links, a catalog of small images is available to locate large images with full captions.

4] **Neurobiology Labs: Preview/Review Images** — a web site presenting neuroanatomy information related to each of eight Neurobiology Labs. Content in the form of images with captions, including links to other images, is organized per Lab.

5] **Lab I: Neurohistology** — a web site that duplicates Lab I of the CVM 6120 Laboratory Guide, presenting color images that correspond to the black & white images included in the Lab Guide. Each section of the Lab Guide is a page in the web site.

6] **Lab 2: Spinal Cord** — a web site corresponding to Lab 2 of the CVM 6120 Laboratory Guide dealing with the spinal cord.

7] **Lab 3: Brain** — a web site corresponding to Lab 3 of the CVM 6120 Laboratory Guide, including color images of dissected brains.

8] **Lab 6: Cerebellum** — a web site corresponding to Lab 6 of the CVM 6120 Laboratory Guide dealing with the cerebellum.

9] **Learning Objects (Animations)** — several animations are currently under development to illustrate neurobiology concepts. They will be introduced during the course.