



Anatomy of the Nervous System(Brain; Cranial Nerves; Spinal Cord; and Brachial Plexus)

A Graduate Course in Cadaver-based Human Anatomy for Instructors of Undergraduate Anatomy and Physiology

(3 Credits)

COURSE OVERVIEW

Anatomy of the Nervous System is a post graduate, blended learning course which includes on-line assignments and activities; an on-site cadaver workshop; post-workshop discussions, and the creation of a peer-reviewed final project. The course synthesizes basic anatomy and cadaver dissection of the nervous system to promote development of dissection techniques, the acquisition of fundamental knowledge, and clinical applications. The teaching modalities will emphasize active student participation.

The specific anatomical structures to be studied and dissected include the brain, spinal cord, cranial nerves, and the brachial plexus. During the workshop portion of the course, faculty from Louisiana State University will guide 12 hours of dissection complemented by lecture sessions enriched by slide, video and computer animations.

• **Course designer/moderator:**

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WHO SHOULD TAKE THIS COURSE:

- Faculty who are seeking a better three-dimensional understanding of the organization of the nervous system
- Faculty who currently use or are planning to use cadavers and wish to acquire advanced knowledge of human structures within the nervous system
- Faculty who are not planning to use cadavers in teaching but want additional cadaver-based training and experience to enhance their development as effective instructors
- Faculty who currently use or are planning to use cadavers in their curriculum and want to exchange ideas, solve problems, and explore best practices in cadaver based investigation of the nervous system specifically the brain, cranial nerves, spinal cord, and brachial plexus anatomy
- Faculty who wish to generate a teaching and learning project that focuses on clinical correlations and cadaver-based brain, cranial nerves, spinal cord, and brachial plexus anatomy
- Faculty who have a basic understanding at the undergraduate level of the nervous system

LEARNING OBJECTIVES:

Upon completion of this course, participants will be able to:

- Master nervous system anatomy dissection utilizing appropriate techniques and instruments.
- Observe and name nervous system structures of the human body, and understand the interrelationship of body structures.
- Develop an understanding that the human body does not always conform to textbook illustrations.
- Implement a plan for integrating cadaver-based brain and spinal cord anatomy teaching and learning into the curriculum.
- Understand techniques for the acquisition, handling, storage, and disposal of preserved human specimens.
- Demonstrate respectful handling of human cadavers.
- Evaluate the ethical and personal issues surrounding death and the human donation program for science and medicine.
- Gain a three-dimensional appreciation of the organization of the nervous system
- Acquire the anatomical knowledge necessary to demonstrate clinical competence

COURSE FORMAT:

1. **Learning activities** prior to attending workshop – at least **31 hours**.

2. **Clinical Anatomy Dissection**— a total of 17 hours in on-site sessions and small-group discussions to be distributed as follows:

- Friday evening – approximately **3 hours**.
- Saturday – at least **10 hours (day and early evening)**
- Sunday morning – approximately **4 hours**.

3. **Post-session discussions**—at least **11 hours** of moderated discussions of topics relating to the on-site experience and the course objectives

4. **Direct on-line instruction** – at least **11 hours** of instruction by Course Moderator and Director of HAPS-I.

5. **Creation and peer-review of final projects:** Anatomy is first and foremost a visual science and this course is designed to emphasize the practical aspect, starting from how anatomical knowledge is applied and working backwards from the goal to the details. Therefore, the final project should be a learning object/resource that focuses on some anatomical entity covered in this course applied to at least two clinical situations. This helps to make anatomy much more relevant— it becomes crucial to know not only the one path of a nerve traditionally described in textbooks, but also how to derive clinical applications from what is being taught. Approximately **30 hours**.

Total estimated hours: 100 hours.

COURSE DESCRIPTION:

The purpose of this course is to explore best practices in using cadavers in teaching and learning the brain, cranial nerves, spinal cord, and brachial plexus in an undergraduate anatomy or anatomy & physiology course.

The dissection segment of this course, which serves as a core activity, will be conducted in the human anatomy laboratory at Louisiana State University in Baton Rouge, LA. The clinical anatomy segment of the workshop will begin on a Friday evening and end at noon Sunday. Enrollment is limited to 20 participants.

Prior to the dissection, participants will have assigned readings, directed learning activities and discussion to explore fundamental information on the use of cadavers and on techniques of brain, cranial nerves, spinal cord and brachial plexus dissection. Participants will also have the opportunity to work with prosected cadavers and isolated specimens present in the laboratory for the purpose of identifying normal anatomical structures as well as specific pathologies.

After the weekend dissection, members of the course learning community will progress onward with discussion and processing of the concepts discovered during the clinical dissection. Individuals or teams will develop a final project using the clinical dissection component coupled with how it applies to two areas of medical interest. The final projects will be peer-reviewed within the course learning community and will be published at the *HAPSweb.org Archive*. Projects judged to be exceptional by a peer-review process will be forwarded to the *HAPS Institute Collection at the APS Archive of Teaching Resources*.

Successful completion of this course earns three graduate credits in biology from the University of Washington (Seattle).

REQUIRED MATERIALS:

Texts: Students will be expected to have access to an atlas of anatomy and a dissection guide. The recommended atlas is *Atlas of Human Anatomy 4th ed.* by Frank Netter. The recommended dissection guide is *Clemente's Anatomy Dissector* (either 1st or 2nd ed.)

Miscellaneous: Due to the nature of conducting dissection on cadavers during the workshop component, students will wear lab coats or scrubs in class. Please travel with your lab coat or scrubs. Items such as latex gloves and dissection instruments will be provided by LSU. Students who have specific requirements pertaining to latex gloves (allergies) are requested to supply their own.

EVALUATION:

Participants will be evaluated on a “*credit/no credit*” basis. A total of **100 points** may be earned with a passing grade being designated as a **70%**. Points will be distributed as follows:

1) Pre-dissection activities	15 pts
2) Participation in clinical anatomy dissection	40 pts
3) Post-dissection activities	15 pts
4) Final project	30 pts
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	100 pts. - total

1) Pre-dissection activities

Far in advance of the clinical dissection work, participants will be asked to complete assignments which will aid in the overall understanding of the anatomical areas being dissected. This will be submitted electronically to the instructor via the Angel course platform. Directed readings and electronic presentations will also be assigned that will include topics such as the appropriate use of cadavers, and anatomical review and dissection techniques. Initial online discussions will help in building the learning community and will prepare everyone for an effective clinical experience. Members of the course learning community, including the course moderator, will communicate through Angel on a regular basis.

2) Clinical Anatomy Dissection

The anatomy of the head and neck is an important component of this course, leading into the view of the brain and spinal cord in relation to their surrounding structures. The laboratory sessions include dissection, examination of prosections, and correlations with radiological images. The weekend clinical work includes Friday evening, Saturday, and Sunday morning sessions. Attendance for the duration of each session is expected throughout the weekend. Participants are expected to actively engage in all discussions and group learning activities. Sharing of information between participants is a wonderful way to learn and will be strongly encouraged. Working with cadavers for the purpose of identifying specific anatomical structures and pathologies is also required.

[NOTE: Nearby hotel accommodations have been arranged at a discounted price for those coming in from a distance. Please check hapsweb.org (navigate to HAPS Institute and this course) for details.]

3) Post-dissection activities

An online discussion forum after the workshop will explore concepts, dissection techniques, anatomical correlations that were observed during the clinical work. These discussions also facilitate the process of designing, collaborating, creating and reviewing the final project (see next item).

4) Final project

All course participants will create a final project. The final project in this course is to design a class lesson or activity, or some other type of “learning object.” The learning object should use information from the workshop and/or any of the new ideas you have received from your colleagues or the assignments. The goal is to allow participants to apply what they have learned throughout the course and apply it in a relative and useful format that reflects their understanding of the anatomy and how it applies to clinical correlations. In the project, the scholars will demonstrate their understanding of cadaver-based brain, cranial nerve, spinal cord, and/or brachial plexus anatomy in the body of the project. General guidelines for the project will be provided, including the required peer-review process and publication process. There are examples of types of projects in the online orientation presentation.

The assignment should have an introduction with a little bit about the topic content, the level of students the activity is aimed at, how long it should take to implement. It should also have a section that talks about the activity objectives and how the objectives might be assessed. Include a section on any resources needed either physical tools, computer programs, etc. Of course, include a description of the activity or a copy of the activity itself and references.

The final project document should be no longer than four to eight pages (not including the title page and reference page), single spaced, and 12 pt. font. You must include the actual activity (such as a PowerPoint presentation, podcast, worksheets, case study, or other), which also should be of reasonable length.