

Elective Description

Campus: Southeast (Fargo)

Elective/Experience Title: Advanced Neurology

Location of Elective: Online

Department: Neurology

Course Number: NEUR 9204-01

Preceptor(s): Jau-Shin Lou MD, PhD, MBA and faculty

Period(s) Offered:

Number of students per period: 2 students

Course Prerequisites: Neurology Clerkship

Revised Curriculum Phase(s): 2 & 3

Purpose: Expanding the foundation of knowledge in neurology

Objectives: Following successful completion of this elective, the student will be able to:

1. Localize lesions (Brain, brainstem, cerebellum, spinal cord, roots, plexus, nerves, neuromuscular junctions, and muscles)
2. Know how to utilize neurodiagnostic tests including electroencephalography (EEG), nerve conduction studies (NCS), electromyography (EMG), and imaging (CT and MRI) to localize the lesion.
3. Formulate differential diagnoses by synthesizing the information from history, neurological examination, and diagnostic tests.
4. Formulate treatment plans for common neurological conditions.
5. Perform literature searches (textbooks and journals) for uncommon neurological conditions.
6. Demonstrate knowledge on major categories of neurological diseases including movement disorders, epilepsy, multiple sclerosis, stroke, neuromuscular diseases, and headache.

Instructional Activities:

During this elective, the student will be involved in:

1. Watching the following videos available on YouTube to review neurological examination:
 - a. Mental Status examination: <https://www.youtube.com/watch?v=14s9jMf4vR8>
 - b. MoCA (Montreal Cognitive Assessment): <https://www.youtube.com/watch?v=XjrnsIXoSCg>
 - c. Cranial Nerves: <https://www.youtube.com/watch?v=CU5Mz18U3jQ>
 - d. Motor, reflexes, and sensory examination: <https://www.youtube.com/watch?v=5ob5uJMgZOo>
2. Watching 10 recorded lectures given by faculty available on the website (<https://capture.med.und.edu/Mediasite/Catalog/catalogs/neurology-classes>) with the following titles:
 - a. Dementia (Dr. Rebecca Caillier)
 - b. Seizures and Epilepsy (Dr. Amanda Diamond)
 - c. Common Neuromuscular Diseases (Dr. Jau-Shin Lou)
 - d. Neurotransmitters (Dr. Ravinda Samaraweera)
 - e. Movement Disorders (Dr. Tanya Harlow)
 - f. Visual disturbance (Dr. Dane Breker)
 - g. Brain tumors (Dr. Adam Jackson)
 - h. Multiple Sclerosis (Dr. Susan scarberry)
 - i. Headache (Dr. Eugenie Muntean)
 - j. Stroke (Dr. Michael Manchak)

3. Readings from Merritt's Neurology (13th Edition) for self-study. The department will lend students choosing this elective a copy if needed.
4. Submitting the answers to the following 10 self-study questions:
 - a. What is the current understanding of migraine headache pathophysiology, specifically as it regards to calcitonin gene-related peptide?
 - b. How does the pathophysiology of multiple sclerosis differ from that of neuromyelitis optica?
 - c. What is the most effective antiplatelet agent for lowering stroke risk reduction: aspirin, clopidogrel, or aspirin/dipyridamole?
 - d. What is the mechanism of action for the anticonvulsants topiramate, levetiracetam, phenytoin, and valproic acid?
 - e. What is the role of dopamine in the central nervous system in the generation of normal movement?
 - f. By what mechanism would acetylcholinesterase inhibitors help slow cognitive decline in Alzheimer dementia?
 - g. What is the proposed mechanism(s) by which diabetes/prediabetes would cause polyneuropathy?
 - h. How is cerebral spinal fluid produced? How is it removed from the central nervous system?
 - i. How is myasthenia gravis different from Lambert-Eaton syndrome in pathophysiology, clinical presentations and treatments?
 - j. Discuss the anatomy of the sympathetic and the parasympathetic systems.
5. Completion of weekly checklists documenting progress with assigned tasks.

Criteria for Grading:

1. Utilize the standardized UNDSMHS senior virtual elective evaluation form.
2. The preceptors will assess each student on timely completion of activities by review of the weekly checklists.
3. The preceptors will grade each of the 10 self-study questions with a scale of 1 to 10 by direct review.
4. All objectives will be assessed with the self-study questions.
5. A "Pass" grade will be given for a total score of 70 or greater.
6. A "Fail" grade will be given for a total score of 69 or less.