

COURSE SYLLABUS

ENDT 1360
Electroencephalography Clinical I
McLennan Community College

Revised for 2008-09

Electroencephalography Clinical I
ENDT 1360
SYLLABUS

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Course Description:

Performance of clinical EEG's in a clinical setting along with instruction in the recognition and understanding the test results displayed. (16 clinical hours)

General Course Objective:

Students will be able to apply theory, concepts, and skills of electroencephalography in a clinical setting.

Topic Outline:

Resource: ASET, reviewed July 2005, for performing an electroencephalogram.

1. The student provides a safe recording environment by:
 - a. Verifying identify of patient
 - b. Cleaning electrodes after each procedure
 - c. Following universal precautions for infection control
 - d. Attending to patient needs appropriately
 - e. Recognizing/responding to life threatening situations
 - f. Being certified to perform CPR
 - g. Following laboratory protocols for sedation
 - h. Complying with lab protocols for emergency and disaster situations
 - i. Complying with hazardous material handling procedures
 - j. Maintaining instrument/equipment in good working order
 - k. Taking appropriate precautions to ensure electrical safety
2. The student establishes rapport with the patient and the patient's family by:
 - a. Using personal communication skills to achieve patient relaxation/cooperation
 - b. Explaining all test procedures including activation procedures
 - c. Explaining the electrode application method (paste, collodion, etc.)
 - d. Interacting on a level appropriate to patient's age and mental capacity
 - e. Maintaining respect and patient confidentiality

3. The student evaluates the patient to:
 - a. Determine the patient's mental age, mental state and comprehensive level
 - b. Note the patient's overall physical condition
 - c. Decide appropriate method of electrode application
 - d. Ascertain the patient's capacity to cooperate with activation procedures
 - e. Determine if hyperventilation is contraindicated
 - f. Accommodate for disabilities or special needs
 - g. Determine the need for additional physiological monitors
 - h. Document unusual or inappropriate behavior suggestive of seizure or pseudo seizure
 - i. Determine the possible need for restraints or emergency intervention
4. The student prepares a basic data sheet ("tech sheet") that includes:
 - a. Patient information (*name, age, ID number, doctor, etc.*)
 - b. Recording time, date and technologist's name or initials
 - c. Noting pertinent patient history and familial medical history
 - d. Listing current medications/sedation and time of last dosage
 - e. Noting time of last meal
 - f. Noting time, date, aura and circumstances of last seizure or symptoms
 - g. Specifying the patient's mental, behavioral and consciousness states
 - h. Diagramming skull defects or anomalies (if any)
 - i. Diagramming any modifications in electrode placement
5. The student's electrode application follows a method that includes:
 - a. Measuring and marking the head following the 10/20 measurement system
 - b. Adjusting electrode placement for anatomical defects or anomalies
 - c. Prepping patient's scalp prior to electrode application
 - d. Applying electrodes with paste or with collodion and electrolyte
 - e. Verifying electrode impedances are balanced and below 5,000 Ohms
6. The student documents the working condition of an analog EEG instrument by:
 - a. Calibrating with a square wave to
 - 0.) Verify standard filter and sensitivity settings
 - 1.) Verify or adjust mechanical baseline
 - 2.) Verify or adjust electrical baseline
 - 3.) Verify or adjust time axis
 - 4.) Verify or adjust pen deflection
 - b. Imputing a biological signal (bio-cal) into all channels
 - c. Calibrating, at the end, on all filter and sensitivity settings utilized during the EEG
 - d. Recognizing/correcting any malfunctions seen with calibration

7. The student documents the working condition of a digital EEG instrument by:
 - a. Calibrating system amplifiers
 - b. Verify standard filter settings
 - c. Verify sensitivity settings
 - d. Inputting a biological (bio-cal) signal to all channels
 - e. Corrects or reports deviations as appropriate
8. The student obtains a standard EEG that includes:
 - a. At least 20 minutes of technically acceptable recording (120 pages)
 - b. Eye opening and closing to check effects of stimuli on EEG
 - c. Hyperventilation for a minimum of 3 minutes
 - d. Photic stimulation at frequencies appropriate for history and reactivity
 - e. Mental stimulation/assessment procedures
 - f. Periodic checks of electrode impedance
 - g. Natural drowsiness and sleep, if possible
 - h. Notations of montage, filters, paper speed & sensitivity setting changes
 - i. Notes on observed behavior, clinical seizure manifestations, etc.
9. The student customizes the recording procedure by:
 - a. Evaluating reason for referral, history and observed waveforms
 - b. Utilizing techniques to bring out or enhance clinical symptoms
 - c. Selecting montages appropriate for abnormalities seen and/or expected
 - d. Selecting appropriate instrument settings
 - e. Encouraging drowsiness and sleep
 - f. Applying additional electrodes to localize abnormal activity
 - g. Monitoring respiration if appropriate
 - h. Monitoring ECG rhythms for abnormality
10. The student understands and follows technical criteria for:
 - a. Recording electrocerebral inactivity (brain death)
 - b. Recording neonatal EEG
 - c. Recording pediatric EEG
 - d. Recording in intensive care or cardiac care units
11. The student differentiates artifacts from cerebral waveforms by:
 - a. Recognizing possible artifactual waveforms
 - b. Documenting (on the recording) patient movements
 - c. Applying/recording leads for eye potentials
 - d. Applying/recording leads for ECG
 - e. Replacing electrodes exhibiting questionable activity or contact
 - f. Troubleshooting for possible electrical interference

12. When the EEG recording is finished the student:
 - a. Removes electrode paste/glue from the patient's scalp and hair
 - b. Describes clinically significant behavior
 - c. Document sedation used, dosage and effects (if applicable)
 - d. Reviews EEG for appropriate documentation of amplifier settings & montage changes
13. The EEG student applies the principles of electronics and mathematics to recording by:
 - a. Knowing how differential amplifiers work
 - b. Computing voltage and frequency of waveforms
 - c. Calculating the duration of waveforms
 - d. Understanding the polarity of the waveforms
 - e. Understanding impedance
 - f. Understanding analog to digital conversion
14. The student knows how waveform displays are affected by:
 - a. 60 Hertz filter
 - b. Filter settings
 - c. Sensitivity settings
 - d. Paper speed
 - e. Referential and bipolar montages
 - f. Digital filters
 - g. Electrode types and electrode material composition
 - h. Malfunctioning equipment
15. The student recognizes:
 - a. Normal and normal variant awake and asleep patterns for each age range
 - b. Abnormal awake and asleep patterns for each age range
 - c. EEG patterns for levels of consciousness
 - d. Clinical seizure patterns

In addition,

16. The student understands (*has a working knowledge of*):
 - A. Functional neuroanatomy and neurophysiology
 - B. Medication effects on the EEG background and waveforms
 - C. Medical terminology and accepted abbreviations
 - D. Signs, symptoms and EEG correlates for adult neurological disorders
 - E. Signs, symptoms and EEG correlates for pediatric neurological disorders
 - F. Seizure manifestations, classifications and EEG correlates
 - G. Psychiatric and psychological disorders and EEG correlates

17. The student maintains and improves knowledge and skills by:

- A. Reviewing EEG tracings with an electroencephalographer on a regular basis
- B. Reading journal articles
- C. Studying textbooks related to the field
- D. Attending continuing education courses in Electroneurodiagnostics

The student will demonstrate the following affective qualities:

1. Self-direction.
 2. Responsibility for actions.
 3. Compassion for the patient.
 4. Maintains the patient's confidentiality.
 5. Enthusiasm and interest for learning.
 6. Establishes and maintains good rapport with the clinical staff, faculty and other students.
 7. Recognizes the value of teamwork and functions well as a student member of the team.
 8. Ethical and professional in all interaction with others.
 9. Always receptive to constructive suggestions and corrections.
 10. Responds calmly and effectively under pressure.
 11. Readily accepts direction from clinical staff and faculty.
 12. Adjusts well to new tasks and situations, in various clinical assignments.
 13. Understands the importance of professional development and life long learning.
 14. Demonstrates problem solving skills.
 15. Uses good judgment, knows when to ask for help.
- SCANS: The Secretary's Commission for Achieving Necessary Skills is incorporated into the learning outcomes and activities.

SCANS Competencies:

Resources: Allocates time (C1)

Information:

- Acquires and evaluates information (C5)
- Interprets and communicates information (C7)
- Uses computers to process information (C8)

Interpersonal:

- Participates as a member of a team (C9)
- Works with cultural diversity (C14)

Technology:

- Selects technology (C18)
- Applies technology to task (C19)
- Maintains and troubleshoots technology (C20)

SCANS Foundation Skills:

Basic skills:

- Reading (F1)
- Writing (F2)
- Arithmetic(F3)
- Listening (F5)
- Speaking (F6)
- Problem solving (F9)
- Seeing things in the mind's eye (F10)
- Reasoning (F12)

Personal qualities:

- Responsibility (F13)
- Self esteem (F14)
- Social (F15)
- Self management (F16)
- Integrity/ Honesty (F17)

TEXTBOOK:

1. Current Practice of Clinical Electroencephalography, Ebersole and Pedley, Lippincott, 3rd ed., 2003.
2. Blackboard.
3. Fisch and Spehlmann's EEG Primer, Bruce J. Fisch, 3rd Ed.
4. Primer of EEG with a Mini Atlas, A. James Rowan and Eugene Tolunsky, 2003.
5. The Little Black Book of Neurology, Zaidat and Lerner, 5th Ed. 2008
6. Atlas of EEG Patterns, John Stern, 2005, Lippincott

Grading System:

The grading will be based on a percentage system. Each assignment will be worth a total of 100%. The grade the student receives on any assignment will be the percent correct on that assignment. The grade scale will be as follows:

90 -100% = A

80 - 89% = B

75 – 79% = C

70 – 74% = D

69% and below = F

At the end of the semester the average percentage grade that the student obtained in the semester will be the student's grade in the course. **The student must obtain a C or better in all courses within the Electroneurodiagnostics and Polysomnography program (all courses with the rubrics ENDT and PSGT) to successfully complete the course requirements for the program. NO grades will be given over the phone.**

Evaluation:

The student will meet with the instructor during the course to evaluate the student's progress in the course. The evaluation will be based on the number of competencies (knowledge and skills) the student has completed and the student's affect (Dependability, Communication Skills, Interpersonal Skills, Clinical Competence, and Professional Development).

The student's affective evaluation will be documented as satisfactory, needs improvement or unsatisfactory. Areas that need improvement or are unsatisfactory will require documentation to indicate that the student agrees to the plan for improvement. If a student does not show improvement and the problem persists, points will be deducted from the course grade. For further description of the behaviors expected of the students refer to the MCC Student Handbook and the ENDT PSGT Student Handbook.

Progress toward achieving a degree of mastery of the clinical competencies will be evaluated to assure that the student develops the knowledge and skills expected of an entry level electroencephalography technologist. Documentation will be provided on:

1. Daily clinical summary cards.
2. A rotation summary form that documents satisfactory progress toward achieving a degree of mastery of the competencies identified in the topic outline.

The student will be responsible to assure that all the paperwork (daily summary cards and rotation summary) is completed at the time of the clinical evaluation. Penalties will be applied to the course grade if the student does not provide the appropriate documentation during the evaluation. A penalty will be applied to the course grade if the student is absent from the evaluation.

In order to successively complete this course the student must achieve a 70% to receive credit in the course. Two or more unsatisfactory evaluations in the course or any unacceptable behaviors may be sufficient grounds for an unsatisfactory course grade.

Class Attendance Policy:

The student is expected to prepare in advance for clinical assignments and arrive ready to start the clinical assignment at the designated time.

Regular and punctual attendance is expected of all students and the instructor will maintain a complete record of attendance. Students will be counted absent from missed assignments, beginning with the first official day of classes. Students, whether present or absent, are responsible for all material presented or assigned for a course and will be held accountable for such materials in the determination of course grades.

The goal of the clinical portion of this program is to introduce the student to skills necessary to become competent, efficient, and successful ElectroNeuroDiagnostic Technologist. Due to the importance of achieving these clinically related criteria, the student must attend and actively participate in the

clinical activities during the clinical portion of this program. The program's clinical practice attendance policies sets forth the minimum guidelines required the student to follow, in order to obtain the aforementioned practitioner skills and credit.

Clinical hours are 8am to 430p, which includes 30 minutes for lunch, unless specifically changed by the instructor and/or the specific clinical affiliate. Absence of scheduled clinical assignments will be taken as evidence that a student does not intend to complete the course. Unless the instructor has reason to believe the student will complete the course, the student will be withdrawn from the course with a grade of W. The instructor may reinstate the student if the instructor is satisfied that the student will resume regular attendance and will complete the course. The instructor has the prerogative of determining whether a student may make up work missed due to absences for other reasons. It is the student's responsibility to inform the instructor of the reason for the absence and to do so in a timely fashion.

All students are required to complete **30 clinical days** this semester, eight hours per day, regardless of personal circumstances. The completion of these 30 clinical days must be accomplished before the Friday in Dead Week. Absences from all clinical assignments, shall automatically receive a "W" if this goal has not been accomplished before the Monday, beginning finals week. It is the student's responsibility alone to assure that they have satisfactorily completed all clinical requirements.

Punctuality A tardy occurs when the student arrives at the clinical assignment after the assigned time. The first tardy indicates a potential problem that needs improvement. Two or more tardies are unsatisfactory and may result in a penalty applied to the clinical course grade. Four tardies may result in withdrawal from the course. One hour late will constitute an unexcused absence

Notified and Non-Notified Absences

"Non-Notified" Absence, defined - failure of the student to notify the clinical affiliate and course instructor's voice mail of that clinical absence.

"Notified" Absence, defined - student notifies the clinical affiliate and course instructor's voice mail prior to the start of the clinical assignment.

A major portion of the electroneurodiagnostics and polysomnography program is clinical education and training. **No "non-notified" absences will be allowed for any clinical assignment.**

The faculty does realize, however, that there are times when a student must be absent; therefore, the student must **notify both the clinical site** [*where the student is scheduled*] and the **course instructor** via voice-mail prior to the scheduled time of the clinical assignment.

The student must inform the affiliate site of an anticipated absence by leaving a message at the earliest possible opportunity. When leaving such a message, note the name of the person to whom the student spoke and the time of the message.

Due to the significant nature of clinical time for the student, all clinical hours missed due to absence must be made up at a time convenient to the clinic and agreed upon by the clinical instructor, clinical affiliate and the student. The student may be allowed to make up a "notified" absence. The instructor will schedule make-ups only after a written request is submitted by the student a minimum of 2 days prior to the requested scheduled activity and will be subject to approval. After the make-up time has been completed, written documentation (Daily Written Summary Card) must be provided. Absences will be made up at the clinical affiliate the student was scheduled at when the absence occurred. At no time is the student allowed to change their clinical schedule without the permission of the instructor. Switching clinical assignments is not allowed.

- **Time for which the student is paid by the clinical facility cannot be used as make-up time.**
- **Make-up's do not remove clinical absences or extend the allowable limit of clinical absences.**

Any "non-notified" absence from a scheduled make-up is subject to appropriate disciplinary action and penalties that will affect the grade in the clinical course. This will not only affect the student's satisfactory completion of that clinical course; it will jeopardize the student's enrollment in the program.

To be excused after arriving at the clinical site:

Students must obtain prior approval from the clinical affiliate and/or MCC faculty and recorded on the student's daily clinical card. An authorized leave, regardless of the circumstances, constitutes an absence.

Any unauthorized clinical absence or leave without the consent of the clinical affiliate and/or MCC faculty from the clinical site constitutes a "non-notified" absence and is strictly prohibited, subjecting the student to appropriate consequences, (e.g., withdrawal from the program or penalties applied to the course grade). At no time are students allowed to request to leave early.

Dismissal from the clinical site:

The student will receive an absence if a student is dismissed from the clinical area for any reason (e.g., no name tag, inappropriate dress, hygiene, disrespectful attitude, etc.) If the student corrects the deficiency and returns to the clinical site within the first hour of the scheduled time, the student will receive a tardy. If the student cannot correct the deficiency within an hour, the student must accept a clinical absence, and correct the deficiency before the next clinical assignment.

CONFIDENTIALITY: All information regarding patients is to be treated with the utmost confidentiality and in compliance with the HIPAA rules and regulations. Clinical affiliates will allow use of patient information only for the purpose of education and training. This is especially pertinent in regards to the student projects.

Strict adherence to patient confidentiality (HIPAA) is required at all times. Students are not allowed to discuss a patient, history or the events of testing with family, other by-standers, or other medical personnel. Violation of this policy will result in immediate dismissal from the program.

GENERAL EXPECTATIONS:

The student will dress in the assigned scrub uniforms with lab coat. Tennis shoes are allowed. Open toed shoes are not acceptable. Small post earrings are acceptable.

The student will **NOT** smoke from pre-arrival in the car until final departure from the clinical site. If a complaint is made from the clinical site, patients and or physicians that the student smells of smoke, the student will be dismissed from clinicals. This will count as an unexcused absence.

BEEPERS, CELLULAR PHONES AND PERSONAL PHONE CALLS

All beepers and cellular phones must be turned off at the beginning of class. **Pagers and cell phones must be turned off at the clinical sites.** The student will be notified of an emergency telephone call by the health careers secretary. No personal phone calls (non-emergency) will be accepted.

STUDENTS WITH DISABILITIES

"In accordance with the requirements of the Americans with Disabilities Act (ADA), and the regulations published by the United States Department of Justice 28 C.F.R. 35.107(a), MCC's designated ADA co-coordinators, Dr. Johnette McKown, Executive Vice President and Dr. Lynn Abernathy, Vice President, Student Services shall be responsible for coordinating the College's efforts to comply with and carry out its responsibilities under ADA. Students with disabilities requiring physical, classroom, or testing accommodations should contact Mr. Marcus Sweatt, Disabilities Specialist, at 299-8122 or msweatt@mclennan.edu."

All assignments and assigned projects to be turned in must be in the following format:

Double Spaced
Times Roman Style
Size 12 Font
APA

Any papers submitted not complying with the above requirements will be considered incomplete and graded as a "0 ". Any papers submitted late will be an automatic 20 point reduction in grade, i.e. paper grade will start at 80. It is up to the discretion of the instructor as to whether or not the paper will be accepted late.

Subject to Change Disclaimer

The policies, regulations, procedures, and fees associated with this program are subject to change without prior notice, if necessary, to keep College and program policies in compliance with State and Federal laws and/or with rules related to the program's accrediting agency.

The College and the program reserve the right to change curricula, rules, fees, and other requirements, of whatever kind, affecting students in any way. The provisions of this document do not constitute a contract, express or implied, between any applicant, student, faculty or staff member and McLennan Community College or this program.