# NDT A296: INTRODUCTION TO INTRAOPERATIVE MONITORING

| Item | Value |
|---|---|
| Curriculum Committee Approval Date | 11/15/2023 |
| Top Code | 121200 - Electro-Neurodiagnostic Technology |
| Units | 1.5 Total Units |
| Hours | 45 Total Hours (Lecture Hours 18; Lab Hours 27) |
| Total Outside of Class Hours | 0 |
| Course Credit Status | Credit: Degree Applicable (D) |
| Material Fee | No |
| Basic Skills | Not Basic Skills (N) |
| Repeatable | No |
| Open Entry/Open Exit | No |
| Grading Policy | Standard Letter (S) |

## Course Description

An introduction to Intraoperative neurophysiologic monitoring recording strategies. Analysis of signal changes during an operation will be correlated with anesthetic agents, metabolic effects, and/or the effects of surgical trauma. Intraoperative monitoring scenarios will be demonstrated and practiced in the classroom laboratory. PREREQUISITE: NDT A288. Transfer Credit: CSU.

## Course Level Student Learning Outcome(s)

1. Demonstrate knowledge regarding common indications, modalities, monitoring setups, and drug/metabolic effects for intraoperative neuromonitoring during neurological surgical procedures.

## Course Objectives

- 1. Explain common indications for intraoperative neurophysiological EEG, evoked potential, and neuromuscular monitoring
- 2. State the criteria for significant changes during intraoperative monitoring
- 3. Distinguish between the effects of various anesthetic agents
- 4. List the effects of physiological variables on monitoring results

## Lecture Content

Introduction to the Surgical Suite/Operating Room OR Etiquette The Surgical Team The Neuromonitoring Team Responsibilities of the IONM Technologist Introduction to IONM Equipment Recording Settings Parameters Stimulators Settings Parameters Intraoperative Applications Somatosensory Evoked Potentials Transcranial Motor Evoked Potentials Trigger vs Free-running EMG Brainstem Auditory Evoked Potentials Facial nerve monitoring Intraoperative EEG Train of Four Warning Criteria Spinal Surgery Indications Types of Spinal Surgeries Modalities Vascular Surgical Procedures Indications Types of Vascular Procedures Modalities Brain Tumors/Skull Based Procedures Indications Types of Skull Based Procedures Modalities Anesthetic Metabolic Effects Inhalation Agents Total Intravenous Anesthesia Physiological Effects Troubleshooting in the OR ACNS Intraoperative Neuro-Monitoring Guidelines Review of Nervous System and Neuromuscular Anatomy and Physiology as it pertains to Neuromonitoring

## Lab Content

IONM Equipment Overview Display Amplifer Electrode Inputs Recording Settings Stimulator Settings Ancillary Equipment Intraoperative Applications SSEP Setup Recording Parameters Stimulating Parameters TcMEP Setup Recording Parameters Stimulating Parameters EMG Setup Recording Parameters Stimulating Parameters BAEP Setup Recording Parameters Stimulating Parameters EEG Setup Recording Parameters Stimulating Parameters

## Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

## Instructional Techniques

Instructional presentation slide sets Lecture Digital and video presentations Course examples of waveforms for identification and analysis Computer/software demonstration

## Reading Assignments

Required textbook/handout readings (1.5 hrs/week).

## Writing Assignments

Research reporting and presentation of an NDT intraoperative neruomonitoring procedure. Review professional journals and survey published literature for reporting on intraoperative monitoring application. Intraoperative monitoring case scenarios anaylsis and discussion.

## Out-of-class Assignments

Reports/presentation, case scenario analysis and discussion questions. (1-2 hrs/week).

## Demonstration of Critical Thinking

Written Assignments Objective and Final Exams comprised of multiple choice tests, short answer, and waveform analysis IONM equipment setup Oral and written report/presentation

## Required Writing, Problem Solving, Skills Demonstration

Review topics found in professional journals and survey published literature for reporting on intraoperative monitoring application. Reports will be evaluated on clarity of ideas, answering specific questions, body of research cited, and oral presentation. Intraoperative monitoring case studies/scenarios will be evaluated for completeness and validity. IONM setup for a variety of procedures

## Eligible Disciplines

Diagnostic medical technology-diagnostic medical sonography, neurodiagnosti...: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

## Textbooks Resources

1. Required Meng, Elizabeth and Yamada, Thoru. Practical Guide for Clinical Neurophysiologic Testing EP, LTM/ccEEG, IOM, PSG, and NCS/EMG, 2nd ed. Philadelphia: Wolters-Kluwer, 2022 2. Required Husain, Aatif

M.. Illustrated Manual of Clinical Evoked Potentials, 1st ed. New York: demosMedical Springer Publishing, 2018 Rationale: First and only edition for text. Content specific to discipline taught in course.

## Other Resources

1. Guidelines in Intraoperative Monitoring, 2006 ? Published by the ACNS
2. Instructor prepared handouts.