

Polysomnography Program

Associate in Applied Science Degree Program

Purpose: This program educates students to work as sleep technologists under the supervision of sleep specialists, performing polysomnography to assist physicians in the diagnosis and evaluation of disorders of sleep and wakefulness. Polysomnography (PSG) is the simultaneous recording of physiological parameters from multiple organ systems with non-invasive monitoring equipment. The technologist simultaneously monitors EEG (electroencephalography), EOG (electro-oculography), EMG (electromyography), ECG (electrocardiography), indices of multiple respiratory flow efforts, position sensors and blood oxygen and carbon dioxide levels during sleep. Interpretive knowledge is required to provide sufficient monitoring diligence of the recorded activity from the lungs, brain, muscle and heart and the clinical events observed during sleep. This includes diagnosing and treating a host of sleep-related disorders identified in the International Classification of Sleep Disorders-2, such as narcolepsy, REM and non-REM parasomnias, sleep related movement disorders, circadian rhythm sleep disorders and sleep apnea. Polysomnographic studies are performed in a sleep facility or using portable monitoring in the patient's home. The sleep technologist must be able to analyze real-time data making certain that it is valid and interpretable, and intervening appropriately to initiate therapy and safety measures.

Program Entrance Requirement: Proof of completion of a current CPR course is required prior to beginning PSG clinical practicum courses through either the American Heart Association Cardiopulmonary Resuscitation & Emergency Cardiac Care for Health Care Provider or the Red Cross Basic Life Support Course. Clinical practicum sleep facility clinical requirements may include drug testing, vaccination titres, tuberculosis (TB) skin testing, Health Insurance Portability and Accountability Act (HIPAA) competency, and/or criminal background check.

Registration and Sequence of Courses: Polysomnography Technology is a 60 credit hour program that includes classes in polysomnography as well as basic anatomy, medical terminology, writing, mathematics, and introductions to electricity and computers. The courses for the polysomnography curriculum are designed so that each semester's requirements must be met before proceeding into the next semester. During the first two semesters, students may take general education courses as well as PSG courses. Students acquire hands-on experiences with a focus on polysomnographic technology and clinical practice. This includes a rigorous curriculum of lectures, labs, and clinical experiences. Students will gain clinical experience in the polysomnographic field prior to graduation during the clinical practice experience to have an opportunity to gain skills in performing polysomnography while supervised by a clinical instructor.

After successful completion of the program, graduates will have met the educational requirements necessary to take the national comprehensive registry examination for polysomnographic technologists administered by the Board of Registered Polysomnographic Technologists (BRPT).

I. Curriculum General Education/Studies Requirements - 30 Credits

Written and Oral Communication (CM)
Critical Thinking (CT)
Natural Sciences (NS)
History and the Social and Behavioral Sciences (SS)
The Humanities – the Arts, Literature, and Philosophy (HA)
Computer Course

II. Course-Specific – 30 Credits

1st & 2nd Semesters

Introduction to Sleep Medicine

- Medical Terminology
- History of Sleep Medicine
- ICSD-2
- Overview of Sleep Medicine - Diagnosis and Treatment
- Role of the Sleep Technologist
- Normal Sleep
- Evaluation of Sleep Complaints & Patient History
 - Assessment of Daytime Sleepiness
 - Questionnaires
 - Assessment tools
 - Assessing vitals
- Documentation-Patient Charting
- Basic Waveforms of Sleep

Anatomy & Physiology of Sleep Medicine

- Cardiovascular System
- Respiratory Anatomy & Physiology
- Neuroanatomy
- Sleep Pharmacology

Patient Interaction and Safety

- Ethics and Professionalism in the Sleep Lab
- Infection Control
- Employee and Patient Safety
- Security, Disaster, Environmental Emergencies
- Medical Emergencies in the Sleep Lab
- Handling Difficult Patients
- Patient Education

Methodology for Polysomnography

- Principles of patient preparation
 - Special needs of the patient
- International 10-20 System of Electrode Placement
- Electrodes: Principles of electrical conduction
- Montage: Signal derivation and amplification
- Applied Concepts
 - Signal Processing (filter, sensitivity)
 - Calibrations
- AC/DC Instrumentation

Laboratory I

- Orientation to the Sleep Facility –
 - Policies and Procedures
 - Federal and State Compliance (Personnel)
- Patient Interaction
- Electrode / sensor application
- Initiating the sleep acquisition
- Monitoring the acquisition for appropriate interventions
- Ending the sleep acquisition
- Infection Control

Clinical Practicum I

- Assess patient and patient information
- Impedance checks
- Complete electrode / sensor placement
- Clinical Objectives
 - Patient Arrival, Prep and Electrode Application
 - Cleaning and Safety
 - Montages and Equipment Calibration

3rd & 4th Semesters

Adult Sleep Scoring

- Visual Rules
- Arousal Rules
- Cardiac Rules
- Movement Rules
- Respiratory Rules
- Data Analysis and Report Generation
- Archiving and Data Storage

Laboratory II

- Patient Interaction
- Electrode / sensor application
- Initiating the sleep acquisition
- Monitoring the acquisition for appropriate interventions
- Ending the sleep acquisition
- Scoring

Clinical Practicum II

- Scoring
- Report Calculations
- Patient Assessment
- Patient Monitoring
- Documentation
- Artifact Recognition & Troubleshooting
- Cardiac Arrhythmia Identification

Patient Monitoring

- Assessment of EEG and Sleep Architecture
- Assessment of sleep disordered breathing
- Assessment of Movement Disorders
- Assessment of Parasomnias
- Assessment of Psychiatric Disorders & Sleep
- Artifact Recognition & Trouble-shooting
- Esophageal Manometry
- CO₂ Monitoring

Pathophysiology of Sleep Disordered Breathing

- Obstructive Sleep Apnea
- Hypopneas, Respiratory Effort Related Arousals (RERA's)
- Central Apnea
- Cheyne Stokes Respiration
- Complex Sleep Apnea

Treatment of Sleep Disordered Breathing

- PAP Habituation and Mask Fitting
- Performing CPAP, Bi-Level, & ASV Titrations
- Supplemental Oxygen
- Dental Devices
- Surgical Procedures

Sleep Disorders (non-respiratory)

- Sleep Related Movement Disorders
- Narcolepsy
- Other Hypersomnias
- Parasomnias
- Insomnia
- Seizures and Epilepsy
- Circadian Rhythm Sleep Disorders

Other Procedures

- MSLT
- MWT
- Actigraphy
- Home Sleep Testing
 - Indications
 - Types of Systems
- Databases
- Archiving

Pediatric Polysomnography

- General Pediatric Considerations
- Sleep Patterns: Infancy through Adolescence
- Pediatric Sleep Disorders
- Neuromuscular Disorders in Children
- Visual Rules for Children
- Respiratory Rules for Children

Clinical Laboratory III

- Patient Interaction
- Electrode / sensor application
- Initiating the sleep acquisition
- Therapeutic Intervention PAP Titration
- Ending the sleep acquisition
- CO₂ monitoring
- PAP Titration
- Pulse Oximetry
- Oxygen Titration

Practical Clinical Practicum III

- Mask fitting
- Expanded montages
- Case review
- CO₂ monitoring
- PAP Titration
- Pulse Oximetry
- Oxygen Titration