

# **2018-2019 Program Assessment Report**

## **Sleep Health A.A.S. Polysomnographic Technology Option**

### **1. Mission, Objectives & Learning Outcomes**

#### **Oregon Tech Mission**

Oregon Institute of Technology, an Oregon public university, offers innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate, hands-on learning environment, focusing on application of theory to practice. Oregon Tech offers statewide educational opportunities for the emerging needs of Oregonians and provides information and technical expertise to state, national and international constituents.

#### **Core Theme 1: Applied Degree Programs**

Oregon Tech offers innovative and rigorous applied degree programs. The teaching and learning model at Oregon Tech prepares students to apply the knowledge gained in the classroom to the workplace.

#### **Core Theme 2: Student and Graduate Success**

Oregon Tech fosters student and graduate success by providing an intimate, hands-on learning environment, which focuses on application of theory to practice. The teaching and support services facilitate students' personal and academic development.

#### **Core Theme 3: Statewide Educational Opportunities**

Oregon Tech offers statewide educational opportunities for the emerging needs of Oregon's citizens. To accomplish this, Oregon Tech provides innovative and rigorous applied degree programs to students across the state of Oregon, including high-school programs, online degree programs, and partnership agreements with community colleges and universities.

#### **Core Theme 4: Public Service**

Oregon Tech will share information and technical expertise to state, national, and international constituents.

## **Program Mission**

The Sleep Health - Polysomnography option, an Associate of Applied Science degree program, provides instruction and clinical practice in a distance learning format. The program prepares students to achieve professional proficiency in sleep health and technology and to acquire the professional credentials in needed to work as a Sleep Technologist immediately upon completion of the first year certificate courses. Typically a newly registered RPSGT works as a staff sleep technologist on night shift performing overnight sleep studies. Often after 3 to 5 years, a sleep technologist is offered a daytime position in the sleep lab, performing narcolepsy testing, helping sleep apnea patients with their treatments, and analyzing data recorded by the night technologists. Usually after 5 years as a sleep technologist, a graduate with the A.A.S. degree would be considered for a management position in a sleep center.

## **Program Alignment to Oregon Tech Mission and Core Themes**

The A.A.S. Sleep Health – Polysomnography program is designed to meet the needs of new sleep technicians working in sleep centers across the country. The program meets one of the pathways for technicians sitting for the national registry exam in sleep technology: “completion of a program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP)”. This distance education program is designed to meet the CAAHEP Committee on Accreditation for Polysomnographic Technology (CoA PSG) standards and the needs of place-bound technicians. The entire program is delivered online with local clinical facilities, near where the students are located, providing the clinical practicum.

Core Theme 1: Applied Degree Programs: We are dedicated to providing the highest quality education in the EMS industry as demonstrated through the caliber of our faculty, the tremendous success of our alumni, and the enthusiastic support of our EMS employers.

Core Theme 2: Student and Graduate Success: Our aim is to continue to partner with high potential students, from diverse backgrounds and perspectives, and assist them in becoming national EMS clinical and organizational leaders.

Core Theme 3: Statewide Educational Opportunities: We will continue supporting bold intellectual pursuits that advance and expand the EMS industry’s comfort zone in order to improve and innovate both the quality of individual patient care as well as the systems of EMS care.

Core Theme 4: Public Service: We strive to partner with communities, industry, other colleges and universities, and private citizens to develop community-based solutions to community problems.

## **2. Program Description and History**

### **History**

The program began in 2007 as the first national fully-online CAAHEP accredited program for polysomnography.

### **Description**

Students take online didactic courses along with completing a part-time clinical rotation in an AASM-accredited sleep lab in their local area. Students must complete a total of 540 clinical sleep lab hours during the program per our CAAHEP accreditation, with 360 of the hours being completed during night shift. Students are eligible to sit for the national registry exam in Polysomnography Technology (RPSGT) offered by the Board of Registered Polysomnographic Technology (BRPT) upon completion of the first-year certificate courses and clinical rotation.

A student may enter the program in any of the four academic quarters at Oregon Tech, once the legal affiliation agreement is completed between the clinical site and Oregon Tech and the student has completed all on-boarding requirements of the clinical site.

In 2018-2019, students from the following states were admitted: OR, CA, ID, TX, ME, VA

### **Enrollment and Attrition**

Admitted During 2018-2019: 11 (36% decrease over 2017-2018)

Graduated During 2018-2019: 10 (0% change over 2017-2018)

Passed National Registry Exam: 6 (100% on first attempt)

Employed: 6

Salary: \$49,900

Institutional 2016-2018: <https://www.oit.edu/career-services/graduate-success>

### **Industry Relationships**

55% of 2018-2019 admitted students were set up for clinical rotation at a site with an existing affiliation agreement with Oregon Tech, 45% were newly established affiliation agreements.

### **Success Stories**

All students complete a 540 clinical sleep lab rotation, ensuring that students have a robust hands-on learning experience. All rotations are conducted under the guidance of Oregon Tech online faculty and on-site RPSGT working professionals. Below are a few comments from 2018-2019 graduates and employers:

#### **From Students:**

Thorough; felt prepared; great clinical experience; varied courses
Program is amazing. Dr Perri extremely helpful/passionate.
Drs Schwartz and Perri are amazing professors! Appreciate their help and knowledge.
The clinical portion of the program provides great experience
I really enjoyed my time with OIT, and I feel like I was adequately prepared by the school for my exam and my future job.
Great school; have referred others to the program already.
<b>From Employers:</b>
He was exceptionally well prepared as a new graduate.
Highly professional in ability to communicate with me and peers
Disciplined student/employee
Great asset to our team
Good communication skills

### Program Faculty Review

Program Student Learning Outcomes and Objectives were reviewed by program faculty during the annual AAST Meeting in Indianapolis in Fall 2018. Faculty review is an on-going process with frequent phone/email communication between the Program Director and main faculty member (former Program Director), as well as periodic communication with the Medical Director and the Department Chair.

The annual Program Advisor meeting took place on Dec 7, 2018.

### Meeting Notes:

[https://oregontech-my.sharepoint.com/:w:/g/personal/michael\\_schwartz\\_oit\\_edu/EZcAXAqNFL9PvqMzMrXe\\_IMBIsRjoHZulM6atyMK5sEl6Q?e=F30jBg](https://oregontech-my.sharepoint.com/:w:/g/personal/michael_schwartz_oit_edu/EZcAXAqNFL9PvqMzMrXe_IMBIsRjoHZulM6atyMK5sEl6Q?e=F30jBg)

## 3. Program Educational Objectives

The education objectives of the Sleep Health - Polysomnographic Technology option are twofold:

1. Prepare students for immediate employment anywhere in the United States in sleep technology
2. Provide students with the skills to move into supervisory and patient education roles in sleep centers

### Program Student Learning Objectives (PSLOs)

The following six PSLOs pertain to the A.A.S. Sleep Health – Polysomnography option:

PSLO #1: Demonstrate the ability to review patient information and prepare for a polysomnogram.

PSLO #2: Demonstrate ability to apply sensors correctly with acceptable impedances for data collection.

PSLO #3: Demonstrates ability to calibrate signals, document, and troubleshoot recording artifact.

PSLO #4: Demonstrates ability to accurately analyze and summarize adult PSG data.

PSLO #5: Demonstrates understanding of PAP and O2 theory, application and contraindications.

PSLO #6: Demonstrates knowledge of PAP therapy adherence, management, and patient education.

The PSLOs were last revised in 2017-2018 academic year to align with industry standards and objectives which were revised in 2018 by the BRPT. PSLOs are reviewed each year during the annual advisory board meeting (conference call), last conducted on 12/7/2018. In attendance on 12/7/2018 were:

- Program Director
- Medical Director
- Key faculty member/current instructor, former Sleep Health Program Director
- Key faculty member/current instructor, Institutional Program Assessment Coordinator
- 2 Key industry leaders/clinical site managers
- 2 Experienced sleep lab RPSGT preceptors

**Meeting Notes:**

[https://oregontech-my.sharepoint.com/:w:/g/personal/michael\\_schwartz\\_oit\\_edu/EZcAXAqNFL9PvgMzMrXe\\_IMBIsRjoHZulM6atyMK5sEl6Q?e=F30jBg](https://oregontech-my.sharepoint.com/:w:/g/personal/michael_schwartz_oit_edu/EZcAXAqNFL9PvgMzMrXe_IMBIsRjoHZulM6atyMK5sEl6Q?e=F30jBg)

#### 4. Curriculum Map

COURSE	PSLO 1	PSLO 2	PSLO 3	PSLO 4	PSLO 5	PSLO 6
Bio 200	F					
Echo 227				F		
RCP 120				F		
PSG 211	F	F				
PSG 221		P	P			
PSG 231				F	F	
PSH 246	F					
PSG 264	F					
PSG 271A	P	F	F	P		
PSG 271B		P	P	P	P	P
PSG 271C	C	C	C	C	C	C
PSG 291						F

F = Foundational, P = Practice, C = Capstone

## 5. Assessment Cycle

Due to the relatively small student cohorts (<20 per year), all PSLOs are assessed annually.

**\*All data taken from PSG 271C in final term of PSG Certificate Program**

**\*All outcome measures are direct except for the student survey**

	<b>2016-2017</b>	<b>2017-2018</b>	<b>2018-2019</b>
<b>PSLO 1</b>	Comp Exam	Comp Exam	Comp Exam
	Direct Practical	Direct Practical	Direct Practical
	Student Survey	Student Survey	Student Survey
<b>PSLO 2</b>	Comp Exam	Comp Exam	Comp Exam
	-----	-----	10/20 Diagram
	Practical	Practical	Practical
	Student Survey	Student Survey	Student Survey
<b>PSLO 3</b>	Comp Exam	Comp Exam	Comp Exam
	Practical	Practical	Practical
	Student Survey	Student Survey	Student Survey
<b>PSLO 4</b>	Comp Exam	Comp Exam	Comp Exam
	-----	-----	Summary Graphs
	-----	-----	EKG Recognition
	ISR	ISR	ISR
	Practical	Practical	Practical
	Student Survey	Student Survey	Student Survey
<b>PSLO 5</b>	Comp Exam	Comp Exam	Comp Exam
	Practical	Practical	Practical
	Student Survey	Student Survey	Student Survey
<b>PSLO 6</b>	Comp Exam	Comp Exam	Comp Exam
	Practical	Practical	Practical
	Student Survey	Student Survey	Student Survey

## 6. Assessment Activity

This assessment cycle, the on-site practical exam (direct measure) was changed from being administered to students by program faculty to being administered by the preceptor at the clinical site. This change was approved by our CAAHEP representative and was a welcome change for our students financially and

logistically. Program assessment was also changed from a 1-4 rubric to a 1-5 rubric, following straight percentages of 90/80/70/60/below 60 for all measures.

This assessment cycle, three measures were broken-out from another measure for increased sensitivity:

- “10/20 Diagram” (PSLO #2)
- “EKG Recognition” (PSLO #4)
- “Summary Graphs” (PSLO #4)

All data was taken from the PSG 271C (capstone course) with the largest enrollment during the academic year 2018-2019. This was Summer 2019 term with 4 students. This represents 40% of all PSG students who took the capstone course in the 2018-2019 academic year.

**All measures are direct, except the student survey which is indirect.**

**Scoring Rubric for all measures is 1-5:**

- 90%-100% = 5
- 80%-89% = 4
- 70%-79% = 3
- 60%-69% = 2
- <60% = 1

**Performance Target for all measures is 3 or higher:**

- A “3” represents the equivalent of a C grade (70%).

**Results:**

**PSLO #1:**

**Demonstrate the ability to review patient information and prepare for a polysomnogram.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	82.5%	4	YES
PRACTICAL CHECKLIST	100.0%	5	YES
STUDENT SURVEY	94.2%	5	YES

**PSLO #2:**

**Demonstrate ability to apply sensors correctly with acceptable impedances for data collection.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	64.5%	2*	NO*

10/20 DIAGRAM	91.0%	5	YES
PRACTICAL CHECKLIST	100.0%	5	YES
STUDENT SURVEY	94.3%	5	YES

**PSLO #3:**

**Demonstrates ability to calibrate signals, document, and troubleshoot recording artifact.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	70.3%	3	YES
PRACTICAL CHECKLIST	100.0%	5	YES
STUDENT SURVEY	92.3%	5	YES

**PSLO #4:**

**Demonstrates ability to accurately analyze and summarize adult PSG data.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	78.8%	3	YES
SUMMARY GRAPHS	91.7%	5	YES
EKG RECOGNITION	83.3%	4	YES
PRACTICAL CHECKLIST	100.0%	5	YES
ISR SCORING	87.3%	4	YES
STUDENT SURVEY	93.3%	5	YES

**PSLO #5:**

**Demonstrates understanding of PAP and O2 theory, application and contraindications.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	76.4%	3	YES
PRACTICAL CHECKLIST	82.0%	4	YES
STUDENT SURVEY	93.9%	5	YES

**PSLO #6:**

**Demonstrates knowledge of PAP therapy adherence, management, and patient education.**

MEASURE	MEAN SCORE %	RUBRIC SCORE (1-5)	MEET CRITERIA?
COMP EXAM	79.2%	3	YES
PRACTICAL CHECKLIST	100.0%	5	YES
STUDENT SURVEY	94.2%	5	YES

**Assessment data file:**



[https://oregontech-my.sharepoint.com/:x:/g/personal/michael\\_schwartz\\_oit\\_edu/EWxNwtlsnYRDlvTfJWPe-MYBj1IyII-RCe5IyVJ6T62wYw?e=S5cERe](https://oregontech-my.sharepoint.com/:x:/g/personal/michael_schwartz_oit_edu/EWxNwtlsnYRDlvTfJWPe-MYBj1IyII-RCe5IyVJ6T62wYw?e=S5cERe)

### **Results Trend History (compared to 2017-2018)**

PSLO #1: Students are improving

PSLO #2: Remains a challenge for students

PSLO #3: Remains a challenge for students

PSLO #4: Students are improving

PSLO #5: Remains a strong area for students

PSLO #6: Remains a strong area for students

### **Faculty Discussion**

Assessment data were shared with key faculty via cell calls during the month of October 2019. Sampled students in PSG 271C, the capstone course, overall did fairly well. This was reflected in the finding that only 1 (5%) of all 22 measures across all six PSLOs did not meet the performance criteria of a score of 3 or higher: the assessment of PSLO #2 (sensor application content area) on the comprehensive exam (rubric score 2/5):

1) PSLO #2: Demonstrate ability to apply sensors correctly with acceptable impedances for data collection.

- Criteria was not met with the comprehensive exam questions in this content area. Upon further investigation, the following specific content areas were identified as problematic for students:
  - Understanding recording concepts of montage, parameter and derivation
  - Describing proper locations for chin EMG electrodes
  - Understanding the clinical presentation of retrognathia

The PSLO #2 measure of the comprehensive exam is designed to assess student ability to conceptually understand technical concepts practiced and learned in the hands-on environment of the sleep lab clinical rotation. As sleep studies become more computer-based and automated, these concepts become more challenging to understand. However, the national registry exam in sleep technology (BRPT) still tests students on these concepts.

One other performance measure met criteria with a rubric score of 3, but it was a mean score of 70.3%:

2) PSLO #3: Demonstrates ability to calibrate signals, document, and troubleshoot recording artifact.

- Upon further investigation, the following specific content areas were identified as problematic for students:
  - Recording parameters for pediatric sleep study
  - Recording observations

Pediatric PSG is a challenging area, not performed in most sleep labs. Therefore, students must learn the technical and clinical concepts of pediatric PSG without the advantage of hands-on learning in the sleep lab.

## **7. Data-driven Action Plans: Changes Resulting from Assessment**

### Regarding item #1 above in section 6:

Instructors of PSG courses will look for ways to enhance learning of these concepts through new/revised group discussion modules in the foundational courses PSG 211 (Jane Perri), and PSG 221 and PSG 231 (Michael Schwartz). There will be no budgetary impact of these actions. The specific content items in the comprehensive exam pertaining to PSLO #2 will be reviewed by Jane Perri and Michael Schwartz during Fall 2019 term:

- Understanding recording concepts of montage, parameter and derivation
- Describing proper locations for chin EMG electrodes
- Understanding the clinical presentation of retrognathia

This outcome measure will be taken during the 2019-2020 annual assessment.

### Regarding item #2 above in section 6:

Jane Perri will create a new group discussion module in PSG 264 Pediatric PSG so that students in the course will have more opportunity to read and discuss the topic of recording parameters for pediatric PSG studies. Jane Perri and Michael Schwartz will informally query students about the methods and types of observations made during clinical rotation. There will be no budgetary impact of these actions. The specific content items in the comprehensive exam pertaining to PSLO #2 will be reviewed by Jane Perri and Michael Schwartz during Fall 2019 term:

- Recording parameters for pediatric sleep study
- Recording observations

This outcome measure will be taken during the 2019-2020 annual assessment.

## **8. Closing the Loop: Evidence of Improvement in Student Learning**

The education objectives of the Sleep Health - Polysomnographic Technology option are to:

1. prepare students for immediate employment anywhere in the United States in sleep technology
2. provide students with the skills to move into supervisor and patient education roles in sleep centers

As students continue to pass the national registry exam at above-national rates, the Sleep Health – Polysomnography Option program is meeting expectations. Additionally:

- Key program faculty are active in the field professionally
- Students provide mostly positive experiences on exit surveys
- OIT is a nationally-recognized institution of excellence and a draw for students wanting to excel in the field with an AAS or BS degree. Increasingly, sleep labs (and some state licensing boards) are requiring an AAS degree or higher in sleep technology

### **Closing the Loop**

Last year, key faculty discussed possibly expanding the ISR assessment to measure each of the three main PSG scoring parameters (staging, respiration and limb movements) separately and modify the rubric accordingly. This year's assessment data do not support the need to modify this.

Last year, the assessment data showed improvement in the measure of PSLO #4 "EKG Recognition". This year, we created a distinct stand-alone measure of "EKG Recognition", which demonstrated continued meeting of criteria for assessment.

Last year, key faculty and the Medical Director discussed the need to closely monitor the area of PAP therapy, specifically advanced PAP modalities. This year, with the change of the practical exam being conducted by the sleep lab preceptors, questions specific to bi-level PAP/advanced PAP modalities was included. Assessment data showed criteria was met by students in this area. We will continue to monitor this important area of polysomnography.

### **Final Thoughts**

At this time, no significant modifications are required in the delivery of the program to students. Minor modifications are discussed in this assessment report. This assessment report will be shared later this year in the annual program advisor meeting.