Annual Academic Assessment Report Cover Sheet
Assessment reports are due the 1st Wednesday after the Fall Term
Email to: assessment@unlv.edu

Program Information:

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<th>Program Assessed</th>
<th>Ultrasound</th>
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<tbody>
<tr>
<td>Department</td>
<td>Health Physics and Diagnostic Sciences</td>
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<tr>
<td>College</td>
<td>Allied Health Sciences</td>
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<tr>
<td>Department Chair</td>
<td>Dr. Steen Madsen</td>
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<tr>
<td>Assessment Coordinator</td>
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<td>Date Submitted</td>
<td>December 20, 2017</td>
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Contact Person for This Report

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<th>Melinda Bechtel</th>
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Please attach a narrative (not to exceed 4 pages, excluding appendices) addressing the following:

- What are the student learning outcomes? Please provide a numbered list.
- Which learning outcomes were assessed?
- How were they assessed? (Programs must use at least one direct assessment of student learning.)
- Undergraduate programs should assess at least one University Undergraduate Learning Outcome (UULO) each year, which may or may not overlap with a program learning outcome.
- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  - student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  - activities requiring originality, critical analysis and expertise.
  - the development of extensive knowledge in the field under study.
- What was learned from the assessment results?
- How did the program respond to what was learned?

Please limit the narrative portion of your report to no more than four pages. You may attach appendices with data, tables, charts, or other materials as needed. Please explain the relevant conclusions from any appendices in your narrative. Please contact the Office of Academic Assessment if you have questions or need assistance.
Comprehensive Medical Imaging (CMI), option Ultrasound

Comprehensive Medical Imaging (CMI), option Ultrasound, employs advanced imaging modalities to achieve diagnostic evaluations of the body. The CMI Ultrasound program at UNLV is an innovative academic program designed to enable students to successfully pursue a career as an Ultrasound professional. To meet this goal it provides students with a foundation in mathematics, biology, physics, and chemistry as well as courses in ultrasound physics, abdomen, obstetrics, gynecology, and vascular pathology. The program offers theoretical, laboratory, and clinical course work in the modalities of ultrasound. Graduates of the program help the community meet the demand for professional personnel to perform patient imaging procedures on state-of-the-art advanced ultrasound imaging systems.

The ultrasound student’s learning outcomes are as follows:

1. The student must be able to demonstrate knowledge of the physics of sound and its medical application when scanning a patient.

2. The student must be able to demonstrate knowledge of the abdomen, small parts, obstetrics, gynecology, and vascular pathology and its medical application when scanning a patient.

3. The student must be able to assess and solve problems related to ultrasound exams and the equipment to process these exams.

4. The student must demonstrate effective verbal communication skills.

5. The student must demonstrate a professional work ethic.

6. The student must be able to compile a patient history relating to an examination requested by a physician. This includes obtaining the appropriate patient history from both the doctor and the patient, and interpreting the results of radiographic imaging tests, laboratory tests, and surgical procedures.

7. The student must be able to demonstrate knowledge about Duplex Doppler flow patterns of the abdomen, pelvis, vascular system and obstetric ultrasound scans.

8. The student must demonstrate the ability to perform sonographic examinations of the abdomen, pelvis, vascular, and obstetric systems according to protocol guidelines established by the American College of Radiology, utilizing real-time imaging equipment with trans-abdominal and endo-vaginal transducers, Doppler, and Color Doppler display modes in the laboratory and clinical setting.

9. The student must be able to demonstrate the ability to render appropriate patient care to an ultrasound patient and treat the patient with professionalism and respect according to the guideline established by the American Registry for Diagnostic Medical Sonography (ARDMS).
10. The student is successful after they demonstrate their knowledge and ability to recognize pathology by passing the ARDMS (American Registry of Diagnostic Medical Sonography) board exam given after they graduate with their Bachelor degree.

Table 1: Program SLO to UNLV UULO Correlation

<table>
<thead>
<tr>
<th>UNLV UULO</th>
<th>Program SLO</th>
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<tbody>
<tr>
<td>Intellectual Breadth and Lifelong Learning</td>
<td>1,2,3,6,7,8</td>
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<tr>
<td>Inquiry and Critical Thinking</td>
<td>3, 6,7,8,9,10</td>
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<tr>
<td>Communication</td>
<td>4,6,8,9</td>
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<tr>
<td>Global/Multicultural Knowledge and Awareness</td>
<td>4, 8,9</td>
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<tr>
<td>Citizenship and Ethics</td>
<td>5,6,8,9,10</td>
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What learning outcomes were assessed? Learning outcomes 1 -9 were assessed.

How were they assessed?

1. Learning Outcomes Number 1, 2, 3 and 7 are applied theoretical concepts learned in the classroom. The assessment includes:
   A. Two tests and a final in the didactic portion of the program.
   B. Clinical competency evaluations performed by each student during their clinical practicum course. These tests require the students to successfully explain and demonstrate ultrasound scanning on a patient (another student). There are four different competency evaluations given during the practicum. The student are tested on the following skills:
      1. Knowledge of the specific protocol for that type of scan.
      2. Demonstration of the ability for scanning.
      3. Operation of the equipment to produce the scan.
      4. Knowledge of the anatomy that needs to be shown during the scan.
      5. Knowledge of any anatomical variations learned in class.
   C. The student is considered successful in the clinical practicum course when they can approach the patient professionally, scan a specific protocol with no errors and pass a written final with 90% or better.

2. Learning Outcomes Number 4, 5, 6, 7, 8, 9, are assessed in the clinical. The assessment includes:
   A. When doing ultrasound scans in the clinical the students are graded on their ability to render appropriate patient care, demonstrate effective
verbal communication with the patient, their family, and their friends. This includes being able to introduce themselves to the patient, asking for two identifiers (the patient’s name and birthdate), inquiring why the patient is having the ultrasound exam and what is the patient’s previous medical history in a professional and empathic manner.

B. The student is also evaluated on their professional work ethic (coming to clinical when assigned, coming on time, obeying the HIPPA regulations for example), their ability to recognize and identify normal and abnormal anatomical structures and their ability to perform these ultrasounds using the protocol guidelines established by the American College of Radiology. The student is graded on Competency and Performance Review forms.

What was learned from assessment results?

1. Overall classroom grades for the ultrasound students were mostly “ A’s and B’s” on examinations of the theoretical concepts of ultrasound.
2. The students were graded on their ability to transfer theoretical concepts in the classroom by successfully completing competencies and a final in the clinical practicum course. The student must perform a scan with 100% perfection to pass the competency evaluation. There are four competency evaluations in a clinical practicum course. After passing the four competency evaluations the student takes a final and must pass it with a 90% or better. 95 to 100% of the students enrolled in the clinical practicum course pass it with a grade of “satisfactory”.
3. Students are evaluated in clinical by the preceptor in the facility. They are evaluated two ways. The first is by Competency evaluations, the second is by the Performance Review evaluation. The first is done every time the student successfully scan a specific ultrasound exam on a patient. The second is done at the end of each semester. 100% of the student’s had an “Excellent” review on the Performance Review by the preceptor in the facility.
4. The students surveyed rated the program 4.9 out of 5 last year.
5. All the Ultrasound students that finished the program in May 2016 have become successfully employed within 3 month of graduation.
6. The clinical coordinator visits the clinical sites at least twice per semester, or more if there are any student concerns. Any concerns at the clinical site are solved immediately.

How do the program respond to what was learned?

The ultrasound Program Director talks to the Lead Ultrasound Technologists and the Radiology Manager’s at least twice per semester. One problem identified in 2015 was the hands on time each student had with the ultrasound machine during the clinical practicum. For the 2016 class, the number of students for each class practicum was reduced. The
smaller class size allowed more hands on time with each student by the instructor. In the fall of 2016, various hospitals complemented the University on the student’s ability to adjust to the clinical setting. The Program Director contributes the student’s successful adjustment to the clinical on the class size in the clinical practicum.

The Ultrasound Program graduates 100% of the students accepted into the program.