Student Learning Outcomes/Objectives, along with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Foundational Knowledge
The students will be able to demonstrate mastery of foundational knowledge by completing all didactic courses, including Medical and Forensic Toxicology, Applied Toxicology, Pharmacology, and Statistics.

Relevant Associations:
Institutional Priority Associations
1 Education

Related Measures

M 1: Performance in Didactic Courses
Performance in didactic courses is evaluated on a minimum of three written examinations, written term papers and case presentations.

Source of Evidence: Academic direct measure of learning - other

Target:
100% of students will have an average grade of a B (3.0) or higher in the required didactic courses.

Finding (FY 2013) - Target: Not Met
one student out of three was unable to complete the didactic courses with a minimum grade of B (3.0) in all courses.

Related Action Plans (by Established cycle, then alpha):
repeat courses
The materials covered were presented in a manner that enabled the majority of the class to demonstrate clear understanding of the courses. The student who was unable to meet this criterion showed to signed early in the program and was advised to consult with student service for counseling regarding personal issues. The student will repeat two courses: Organ System Biochemistry and Advanced Clinical Chemistry and Toxicology.

Established in Cycle: FY 2013
Implementation Status: Finished
Priority: Hgh

Relationships (Measure | Outcome/Objective):
Measure: Performance in Didactic Courses | Outcome/Objective: Foundational Knowledge

SLO 2: Core Laboratory Competencies
The student will be able to meet performance standards in a list of core laboratory competencies. These include drug extractions ante- and postmortem specimens, and analyze them using instrumental techniques, including ELISA and gas chromatography/mass spectrometry, quality control and quality assurance, chain of custody.

Relevant Associations:
Institutional Priority Associations
1 Education

Related Measures

M 2: Practicum
Observation and evaluation of laboratory competencies by a toxicology chemist during a practicum period.

Source of Evidence: Capstone course assignments measuring mastery

Target:
All students will satisfactorily complete at least 80% of the required competencies during the practicum period, as observed by a toxicology chemist.

Finding (FY 2013) - Target: Met
All four participating students completed all the required elements on the competency list and all four got an A in the practicum. The students clearly demonstrated an understanding of how a forensic toxicology laboratory runs and are competent to perform analyses on postmortem specimens that will stand up in a court of law.

SLO 3: Chromatography Skills
The student will be able to perform chemical and drug extractions and analyses, and identify chemical compounds and drugs using non-instrumental screening methods. These include ELISA, spot tests, classical thin-layer chromatography and ToxiLab.

Relevant Associations:
Institutional Priority Associations
1 Education

Related Measures
**M 3: Portfolio**
Perform required exercises under direct observation of the instructor, correctly interpreting chromatograms and identifying unknown drugs in biological fluids. Performance is evaluated by a written portfolio containing (1) interpretations of chromatogram from six case studies and (b) the chromatograms and identification of drugs in six body fluids.

Source of Evidence: Portfolio, showing skill development or best work

**Target:**
100% of students will receive a grade of B or higher on the written portfolio

**Finding (FY 2013) - Target: Met**
All the students obtained B or higher on the written portfolios. The students were very competent in identifying drugs and chemicals in the biological specimens provided and none of them were color-blind.

**SLO 4: Conduct Independent Research**
Student will be able to provide evidence of the ability to conduct independent research.

**Relevant Associations:**

Institutional Priority Associations

2. Research - Engaging in research to understand health and disease, and to commercialize discoveries, as appropriate, to benefit the public.

**Related Measures**

**M 4: Research Proposal Evaluation Rubric**
A thesis committee will use the "Research Proposal Evaluation Rubric" to evaluate students in the areas of: (1) Background and Significance: Proposal clearly identifies and defines importance of hypotheses being tested; (2) Literature Review: Recognizes important unanswered questions based on review of literature; (3) Approach: The project is well developed and realistic; (4) Methods: The study design provides significant evidence of ability conduct to independent research and interpret results; (5) Critical Skills: Proposal demonstrates student has accomplished the critical skills necessary to perform meaningful research; (6) Research Standards: Where appropriate, the student recognizes importance of the approval process for animal (AICUC) and human (IRB) procedures and has met standards for working with animal models and human research subjects, respectively.

Source of Evidence: Senior thesis or culminating major project

**Connected Document**

Toxicology Research Proposal Evaluation Rubric

**Target:**
100% of students will obtain at least 80% of the total points on the evaluation rubric.

**Finding (FY 2013) - Target: Met**
All three students successfully prepared their research proposals. The students understood the subject matter, chose the correct outcome measures and the expected results.

**M 5: Written Thesis Defense Evaluation Rubric**
The student's Thesis committees will use the "Written Thesis/Dissertation Defense Evaluation Rubric" to evaluate the student in the areas of: (1) Communication - written: The dissertation is coherent, concise and cogent; (2) Use of Scientific Literature: Student effectively cites and synthesizes pertinent sources and integrates findings into a body of scientific research; (3) Knowledge of Discipline: Student demonstrates a comprehensive knowledge of field; (4) Knowledge of Specialized Research Techniques: Student understands the scientific significance of their work and demonstrates a compelling argument for hypotheses; (5) Research Methods: Student demonstrates use of methodology appropriate for research questions and of sufficient rigor to support conclusion. For wet-bench research, the conclusions are based on the results (6) Overall Evaluation of the Thesis/dissertation.

Source of Evidence: Senior thesis or culminating major project

**Target:**
100% of students will obtain a Satisfactory rating on the thesis evaluation rubric.

**Finding (FY 2013) - Target: Not Met**
Two completed work on their thesis and students passed meeting the writing requirements and successfully defending their theses in a public presentation. The students clearly demonstrated an understanding of their subject matter. One student did not complete writing her thesis. She was a full time research assistant on an extramurally funded research project and then was hired by the Bexar County Medical Examiner's office. This required on the research grant on weekends and starting her new job at the Medical Examiner's office. So the thesis write-up was not completed because of time constraints on the part of this part-time student.

**Related Action Plans (by Established cycle, then alpha):**

prolonged research
One student did not complete writing her thesis. She was a full time research assistant on an extramurally funded research project and then was hired by the Bexar County Medical Examiner's office. This required on the research grant on weekends and starting her new job at the Medical Examiner's office. So the thesis write-up was not completed because of time constraints on the part of this part-time student. Projected completion is Dec. 2013

**Established in Cycle:** FY 2013
**Implementation Status:** Planned
**Priority:** High

**Relationships (Measure | Outcome/Objective):**
Measure: Written Thesis Defense Evaluation Rubric | Outcome/Objective: Conduct Independent Research

**Analysis Questions and Analysis Answers**

Provide a brief analysis of the assessment results for this year. (For Academic Units Only)
The materials in the didactic courses were presented in a manner that enabled students to demonstrate clear understanding of the courses. All but one participating students successfully passed the required courses – and since this was due solely to personal problems facing the student, no changes in the curriculum were necessary this year. The students participating in the practicum clearly demonstrated an understanding of how a forensic toxicology laboratory in the medical examiner’s office and the Armed Forces Drug Testing Laboratory run, and are competent to perform analyses on postmortem specimens that will stand up in a court of law. The written portfolio showed that students were competent in identifying drugs and chemicals in biological specimens and none of the students were color-blind. Not all the students were able to complete writing their proposal or thesis. But those who did understood their subject matter, and were able to choose the correct outcome measures and correctly identified the expected results and interpretation. The student who did not complete the proposal is a recent retiree who took time off from school and the other student did not complete her thesis because of time constraints associated with being a part-time student.

What changes or improvements have you made based on these assessment results? (For Academic Units Only)
The memorandum of understanding that was completed with the Air Force Drug Testing Laboratory at Lackland Air Force Base, TX allowed a student to perform some of the task on the competency list, albeit on urine specimens, while waiting to go to Bexar County Medical examiner's Office Toxicology Laboratory for the remaining activities. By offering a non-thesis option (a Capstone Project), a student can now potentially complete the program in less than 2 years. One full-time student completed the program in 21 months.