

# Forensic Science PhD

## Ability to Conduct Original Research

### Goal Description:

Students and faculty engaged in research will publish or present results in the form of peer-reviewed journal articles or national conference proceedings.

**Providing Department:** Forensic Science PhD

### RELATED ITEMS/ELEMENTS -----

#### RELATED ITEM LEVEL 1

#### Students will Prepare Written Research of Publishable Quality

##### Learning Objective Description:

Students actively engaged in research projects sponsored by program faculty will develop the technical writing skills and scientific abilities required to publish their findings in journals or present their data at scientific meetings.

#### RELATED ITEM LEVEL 2

#### Student Preparation of Research Materials for Publication/Presentation

##### Indicator Description:

Students will contribute to the knowledge base of forensic science and produce research directed at improving the practice of forensic science. This may be demonstrated by publication of research in a peer reviewed scientific journal or national/international conference proceeding (e.g. American Academy of Forensic Sciences Annual Meeting). Publication of student research in journals and at national or international conferences serves to demonstrate the value and quality of the work to the forensic science and/or scientific community.

##### Criterion Description:

Program-sponsored research will result publication rates of 1.0 publication/student (100%) at the PhD level. Publication rates will be calculated as follows: Number of publications involving PhD students / number of full-time students enrolled in the PhD program during the academic year. Publications include peer-reviewed journal articles or conference proceedings.

##### Findings Description:

For the 21-22 AY, there were 1.8 publications per PhD student. During this cycle, 25 students produced a total of 45 publications (10 journal articles and 35 conference proceedings). This is a slight increase from the prior cycle (1.6) but this metric has not returned to pre-COVID numbers (2.2). It is not yet clear how disruptions to laboratory-based research during the pandemic may have contributed to this metric. However, virtual and hybrid conferences allowed for increased opportunities for students to submit and present research in the form of conference proceedings.

Attached Files

 [Publications by AY.pdf](#)

#### RELATED ITEM LEVEL 3

#### Student Preparation of Research Materials for Publication/Presentation

##### Action Description:

Continue to place strong emphasis on prompt publication of dissertation research in high impact scientific journals. Identify barriers or impediments to achieving this goal. Connect students with proper resources to writing (writing assistance and training with citation managers). Evaluate the impact of increased funding opportunity that will be provided from The Graduate School (increased from \$1000 to \$1200 per student per year).

## Develop Specific Knowledge Base

### Goal Description:

Develop specific knowledge base in forensic science to prepare graduates for future success.

**Providing Department:** Forensic Science PhD

### RELATED ITEMS/ELEMENTS

#### RELATED ITEM LEVEL 1

#### Detailed Competence of Core Course Material

##### Learning Objective Description:

Students will command detailed competence of core course material in forensic science. This objective specifically addresses student outcomes and workplace readiness associated with this knowledge transfer.

#### RELATED ITEM LEVEL 2

#### Knowledge Base and Technical Competence

##### Indicator Description:

The Department will evaluate knowledge base and competence among former PhD students. A survey will be developed in order to assess self-reported job readiness. Students will be surveyed regarding their acquisition and integration of skills/knowledge, hands-on experience in the laboratory, competence in the core forensic disciplines, professional values, concepts and problem-solving ability.

##### Criterion Description:

At least 90% of all responses must be ranked as 3 (satisfactory) or 4 (highly satisfactory).

##### Findings Description:

Postgraduate Survey responses for three graduating PhD students are reported for this cycle. Response rates were 100%. Responses were Highly Satisfied or Satisfied in 11 of 12 categories. One response was "unsatisfactory" for "provides an environment to develop competence in highly specialized area" as they were not satisfied with the number/type of electives offered in their discipline. Overall, however, scores were highest over the last five years for hands-on skills, integration of knowledge & skills, and faculty motivation/knowledge. It is not clear how disruptions from pandemic may affect these or future metrics.

Attached Files

 [PhD Postgraduate Survey 2022.pdf](#)

 [PhD Postgraduate Survey - Curriculum.pdf](#)

#### RELATED ITEM LEVEL 3

#### Knowledge Base and Technical Competence

##### Action Description:

Continue to ensure coursework and research experience reflects the skills/knowledge necessary to succeed and encourage participation and engagement in standards development activities that have the potential to impact employer expectations and the industry as a whole. Map curriculum to ensure balance of electives. Evaluate development of new electives and assess recently introduced courses. Determine ability to offer courses that are listed in curriculum but have not been offered.

## Integration of Knowledge, Skills, and Abilities

### Goal Description:

Students completing the PhD in Forensic Science will integrate knowledge, skills and abilities learned in the curriculum and formulate an independent research project to be conducted in an environment conducive to research and scholarly inquiry.

**Providing Department:** Forensic Science PhD

RELATED ITEMS/ELEMENTS -----

RELATED ITEM LEVEL 1

**PhD Students will Demonstrate Competency in Research**

**Learning Objective Description:**

Students completing the PhD in Forensic Science will demonstrate mastery in technical writing and technical laboratory performance during the development and execution of an independent dissertation project.

RELATED ITEM LEVEL 2

**PhD Dissertation Reports**

**Indicator Description:**

Consistent faculty-developed scoring methodology will be applied to the qualifying examinations as well as the final dissertation research report for FORS 8099. The portfolio and proposal that accompany the qualifying exam will be examined in order to assess student's knowledge base, oral presentation skills, and ability to develop and propose an original research plan. The dissertation report will be examined for mastery of discipline-specific knowledge and advanced technical writing capabilities.

**Criterion Description:**

When advancing to doctoral candidacy, students will receive a grade of >80% on their qualifying examination, as determined by the portfolio committee consisting of at least three departmental faculty.

When defending doctoral dissertation, students will successfully pass their defense as decided upon by their dissertation committee.

**Findings Description:**

During this assessment cycle, four students underwent qualifying examination (QE) process. Two students passed (83% and 85%) and two students failed (56% and 61%). The policy and rubrics for the QE were revised by faculty this year in order to provide better explanation of expectations and allow for separate evaluation of writing, presentation, and theoretical knowledge. Increased scrutiny at the QE level is key to ensuring readiness for dissertation-level research and should prevent attrition later in the doctoral program. For the two students who failed, they will be given another semester to prepare and be re-examined.

During this cycle, all doctoral students successfully defended their dissertation defenses. The averaged time to graduation among three students was 5.83 years (range 5.5-6 years). This is an increase from previous years (5.25 in 20-21 and 5 in 19-20).

Two students during this cycle decided to Master out. Both of these students began in the MS program and applied to transfer to the PhD program.

RELATED ITEM LEVEL 3

**PhD Dissertation Reports**

**Action Description:**

Continue to emphasize readiness for dissertation-level research during the Qualifying Examination (QE) process. Determine if this reduces future attrition from the doctoral program. Faculty will revise progress reports for students in terms of frequency and depth, in order to

better evaluate student productivity and intercept deficiencies earlier in the process.

Evaluate time to graduation for this and future cohorts to determine if increased time to graduation is a result of pandemic or if other barriers are present but unknown to department.

Better evaluate student abilities during capstone to determine if suitable candidates to transfer to doctoral program, in an effort to reduce attrition in early stages of dissertation research.

## Job Readiness

### Goal Description:

Graduates will possess the required theoretical knowledge and technical skill set to be effective in the workplace.

**Providing Department:** Forensic Science PhD

### RELATED ITEMS/ELEMENTS -----

#### RELATED ITEM LEVEL 1

#### **DTFs Will Demonstrate Competence in Teaching and Instruction**

##### **Learning Objective Description:**

Eligible students enrolled in the PhD in Forensic Science will have the opportunity to serve as Doctoral Teaching Fellows (DTFs). In this role, they will demonstrate competence as it relates to teaching and instruction.

#### RELATED ITEM LEVEL 2

#### **Competence in Teaching and Instruction**

##### **Indicator Description:**

IDEA scores will be used to evaluate competence in teaching and instructional methods in courses.

##### **Criterion Description:**

Mean IDEA scores will exceed 4.0 in all courses instructed by DTFs.

##### **Findings Description:**

This objective was met. During AY 21-22, six doctoral students taught seven sections of online classes in the Forensic Science Minor (FORS 3366 and for the first time FORS 4364). The scores ranged 4.3-4.7 and compares favorably with IDEA scores for the same courses taught by faculty (4.4-4.8). DTF instructional performance was comparable to full-time faculty, which ensures that undergraduate students enrolled in the minor received a quality experience regardless of the instructor type. This is important as the department prepares itself for growth related to licensing demands and curriculum changes in other colleges. These findings also demonstrate that students are being adequately prepared for online teaching responsibilities, which enhances their workplace readiness for academic-based careers. We have continued to enroll our doctoral students in Blackboard certification once they've successfully passed their Qualifying Exams. If faculty workload is revised, an increased availability in DTF will be much needed.

Attached Files

 [2022 DTF Teaching scores.pdf](#)

#### RELATED ITEM LEVEL 3

#### **Competence in Teaching and Instruction**

##### **Action Description:**

Continue to promote Blackboard Certification once doctoral students have successfully passed their Qualifying Exam. Increase use of students as Teaching Assistants in online courses to assist faculty with their workload and promote better use of time for graduate assistants.

#### RELATED ITEM LEVEL 1

### **Graduates will Acquire Necessary Workplace Skills**

#### **Learning Objective Description:**

Graduates have developed the necessary knowledge, skills and abilities for successful employment in a forensic setting.

#### RELATED ITEM LEVEL 2

### **Competence in Teaching and Instruction**

#### **Indicator Description:**

IDEA scores will be used to evaluate competence in teaching and instructional methods in courses.

#### **Criterion Description:**

Mean IDEA scores will exceed 4.0 in all courses instructed by DTFs.

#### **Findings Description:**

This objective was met. During AY 21-22, six doctoral students taught seven sections of online classes in the Forensic Science Minor (FORS 3366 and for the first time FORS 4364). The scores ranged 4.3-4.7 and compares favorably with IDEA scores for the same courses taught by faculty (4.4-4.8). DTF instructional performance was comparable to full-time faculty, which ensures that undergraduate students enrolled in the minor received a quality experience regardless of the instructor type. This is important as the department prepares itself for growth related to licensing demands and curriculum changes in other colleges. These findings also demonstrate that students are being adequately prepared for online teaching responsibilities, which enhances their workplace readiness for academic-based careers. We have continued to enroll our doctoral students in Blackboard certification once they've successfully passed their Qualifying Exams. If faculty workload is revised, an increased availability in DTF will be much needed.

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#### RELATED ITEM LEVEL 3

### **Competence in Teaching and Instruction**

#### **Action Description:**

Continue to promote Blackboard Certification once doctoral students have successfully passed their Qualifying Exam. Increase use of students as Teaching Assistants in online courses to assist faculty with their workload and promote better use of time for graduate assistants.

#### RELATED ITEM LEVEL 2

### **Employer Survey**

#### **Indicator Description:**

An Employer Satisfaction Survey will be developed and conducted twelve months after graduation. Employers will be asked to assess whether SHSU graduates possess the appropriate workplace skills. Using a scale of 1 to 4, (1=very unsatisfactory, 2=unsatisfactory, 3=satisfactory, and 4=highly satisfactory), employers assess job readiness.

#### **Criterion Description:**

At least 90% of all responses must be ranked as 3 (satisfactory) or 4 (highly satisfactory).

#### **Findings Description:**

The survey was sent to 4 employers with a 75% response rate. 100% of respondents would hire another SHSU graduate. Responses were highly satisfied across all categories and the criteria were met.



Attached Files

 [PhD Employer Satisfaction Survey.pdf](#)

RELATED ITEM LEVEL 3

**Employer Survey**

**Action Description:**

Continue to monitor survey results to evaluate trends over time. Evaluate ways to increase response rate.

## Postgraduate Success

**Goal Description:**

This performance indicator is a measure of post-graduate success with respect to employment in the area of forensic science or a related field.

**Providing Department:** Forensic Science PhD

RELATED ITEMS/ELEMENTS -----

RELATED ITEM LEVEL 1

**Postgraduate Employment or Placement**

**Performance Objective Description:**

PhD graduates will be employed in the area of forensic science.

RELATED ITEM LEVEL 2

**Job or Advanced Program Placement**

**KPI Description:**

The percentage of PhD graduates that are successfully employed in forensic careers within 12 months of graduation.

**Results Description:**

All PhD graduates were employed in forensic science within 12 months of graduation. Moreover, most PhD graduates had job offers prior to graduation itself. Cumulative data for the 20 PhD graduates to date shows that 27% are employed in the private sector (compared to 19% for the MS graduates). A vast majority (95%) pursue careers in operational forensic laboratories compared to academia. Notably, more PhD graduates are recruited out-of-state (63%) compared to MS graduates (22%). More PhD students are also employed at the federal level (21%) compared to MS graduates (5%).

RELATED ITEM LEVEL 3

**Job or Advanced Program Placement**

**Action Description:**

Continue to monitor trends in PhD postgraduate success in terms of jurisdiction and geographical location and compare to MS program. Over time, evaluate curriculum and workplace readiness to ensure proper skills & knowledge for desired employment jurisdictions. Provide Texas Licensing Exam to doctoral students.

## Update to Previous Cycle's Plan for Continuous Improvement Item

**Previous Cycle's Plan For Continuous Improvement (Do Not Modify):**

**Closing Summary**

Carefully monitor postgraduate success and differences in trends between PhD and MS students moving forward so that this information can be effectively utilized for marketing and other decision-making purposes. Continue to promote (and require) Blackboard certification for all doctoral teaching fellows moving forward. Ensure that doctoral advisors are apprised of advising efforts, degree plans, policies and

timelines. A dissertation advisor handbook was developed during this academic year. This resource, which provides guidance to faculty on department, college and institutional policies, and expectations must be updated on a continual basis.

#### **Update of Progress to the Previous Cycle's PCI:**

Trends in job placement (type, location, and jurisdiction) are emerging as differences between MS and PhD graduates. This will be helpful for advising doctoral students in job searches but will also help us tailor curriculum to meet their career needs.

Doctoral students are enrolling in Blackboard Certification once pass Qualifying Exam which allows for increased number of online sections offered and will help prepare department if(when) workload changes are made.

The dissertation handbook was helpful and new dissertation advisors were paired with experienced faculty in order to help co-chair students. A handbook is underdevelopment at The Graduate School and will help further assist graduate students and graduate student research advisors.

### **New Plan for Continuous Improvement Item**

#### **Closing Summary:**

During the next AY 22-23, the department hopes to 1) evaluate faculty workload, 2) hire postdoctoral fellows, 3) improve student research experiences (workplace readiness, student satisfaction), 4) evaluate doctoral candidates at admission and at qualifying exam for dissertation readiness, and 5) execute curriculum mapping exercise.

Focus on workload and postdoctoral fellows will allow faculty to dedicate more time to research (supervision, publications, student skills, and grant writing) which will in turn allow for improved student research experience and increased workplace readiness. A comprehensive department Quality Review conducted over summer identified key action items that will be implemented over the next AY.

Focused recruitment and increased scrutiny at admissions will allow us to identify strong candidates for doctoral program. Increased scrutiny at the time of Qualifying Exam will ensure sufficient readiness to advance to dissertation-level research and decrease attrition early on in the dissertation.

Curriculum mapping will also benefit the department in order to ensure more predictive scheduling, improve academic advising, and ensure elective offerings are meeting the needs of the students. For example, as many students are working in operational laboratories, elective offerings should tailor to meet the needs of those career types (laboratory management, expert testimony, etc).