2022-2023

Forensic Science MS

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 MS

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 0.5 publication/student (50%) at the MS level. Publication rates will be calculated as follows: Number of publications involving MS students / number of full-time students enrolled during the academic year. Publications may include peer-reviewed journal articles or conference proceedings.

Findings Description:

There were 0.5 publications per MS student during AY 22-23, which met the objective for this criterion. This included 10 publications from 20 MS students. The 10 publications were comprised of 3 peer-reviewed journal articles and 7 conference proceedings. We maintained the same 0.5 publications per student average from AY 21-22 to AY 22-23 even though we had one less MS student. In general, it is difficult to produce conference papers or publications during the MS program due to the timing of abstract deadlines and the fact that publications are typically submitted post-graduation. The recent increase in publications per MS student (AY 21-22 and AY 22-23) may reflect increased virtual or hybrid opportunities for conference presentations because of the COVID pandemic.

Attached Files

Publications by AY 22-23.pdf

Publications by AY - July 2023.pdf

RELATED ITEM LEVEL 3

Student Preparation of Research Materials for Publication/Presentation

Action Description:

Even though our criterion was met in AY 22-23 and we have seen an increase in student publications the last two assessment cycles, the department is going to continue to encourage increased dissemination of MS-student research through conference presentations and peer-reviewed publications. One specific action item identified at the annual departmental quality review was to

encourage first year MS students to identify a research advisor and topic by the end of the fall semester. This will enable the spring semester to be used to start assimilating the student into the research laboratory and begin familiarization with the relevant scientific literature, with the goal of producing higher quality research outputs. In addition, the format of the formal written capstone report is going to be standardized to match that of a journal submission rather than a thesis to increase the likelihood of manuscript submission shortly after the completion of the student's capstone research project.

Integration of Knowledge, Skills, and Abilities

Goal Description:

Students completing the MSFS 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 MS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

MS Students will Demonstrate Competency in Research

Learning Objective Description:

Students completing the Master of Science in Forensic Science will demonstrate competency in technical writing and technical laboratory performance during their independent research project.

RELATED ITEM LEVEL 2

Capstone Research Report Scoring Methodology

Indicator Description:

Consistent faculty-developed scoring methodology will be applied to the capstone research report for FORS 6094 – Forensic Science Research. The scholarly report will demonstrate advanced discipline-specific knowledge, investigation, and problem-solving ability.

Criterion Description:

At least 90% of students will be assessed as "satisfactory" (comparable to a B) or higher (A) using the uniform faculty-developed rubric. The final report will be scored by each member of the committee, consisting of a minimum of three individuals (one of whom must be external to the department).

Findings Description:

There were 9 students who completed capstone research in AY 22-23. This does not include the 3 additional doctoral students who were involved in capstone research. All final report evaluations were satisfactory (B or higher). Each student received an evaluation from two internal faculty and one external evaluator. Our oral defenses were conducted in-person and with a virtual Zoom option, which enabled increased participation from external evaluators. All students received satisfactory or higher evaluations for their laboratory performance (100% As), technical writing (89% As and 11% Bs), and oral presentation (78% As and 22% Bs). The criterion for this objective was met during AY 22-23.

Attached Files

MS Research Performance.pdf

RELATED ITEM LEVEL 3

Capstone Research Report Scoring Methodology

Action Description:

The proposed changes to the timeline and written capstone report format as discussed in the Student Preparation of Research Materials for Publication/Presentation section should also have an impact on the report scoring. The increased time that students can dedicate to their capstone research should help improve their laboratory performance, technical writing, and oral presentation.

However, moving forward, the written student report will be evaluated based on the ability to submit to a peer-reviewed scientific journal, rather than a report of publishable quality. This decision was made at the annual departmental quality review to encourage the dissemination of MS-student research through presentations and peer-reviewed publications.

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 MS

RELATED ITEMS/ELEMENTS

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

Employer Survey

Indicator Description:

An Employer Satisfaction Survey is conducted twelve months after graduation. Employers are asked to assess whether SHSU graduates posses 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:

There were 12 graduating students in AY 21-22, including 9 students who sought employment and 3 students who transferred into our PhD program. There was a 78% response rate for the MS employer survey (7 responses out of 9 surveys). 100% of respondents were “satisfied” or “highly satisfied” for all categories, so the criterion for AY 21-22 was met. Of note, 100% of respondents indicated that they would hire additional MSFS graduates in the future. A total of 86% of respondents were highly satisfied that graduates had appropriate workplace skill and were adequately prepared for the workplace, which corresponded to a 15% increase since AY 20-21. These responses were also reflected in the high satisfaction rating of the graduating MS students in the Postgraduate Survey.

Attached Files

MS Employer Satisfaction Survey.pdf

MS Postgraduate Preparedness.pdf

RELATED ITEM LEVEL 3

Employer Survey

Action Description:

The department will continue to monitor the employer satisfaction survey to verify the appropriate workplace readiness of our graduates. We will continue to focus on providing students with hands-on experience with scientific instrumentation, developing critical thinking and problem-solving skills, and familiarization with industry standards and forensic science licensing. Moving forward, the Texas Forensic Science Commission General Forensic Analyst Licensing Examination will be made available to MS students in the Quality Assurance course to complete prior to graduation. Finally, the faculty will continue to foster graduate student culture and the development of soft workplace skills in addition to the necessary scientific knowledge.

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 the pursuit of research or an advanced graduate degree.

Providing Department: Forensic Science MS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Postgraduate Employment or Placement

Performance Objective Description:

MS graduates will be employed in the area of forensic science or will pursue advanced graduate studies or research.

RELATED ITEM LEVEL 2

Job or Advanced Program Placement

KPI Description:

The number of MS graduates that are successfully employed in forensic careers or pursue advanced degrees or full time research within 12 months of graduation.

Target Description:

Our departmental target is 90% of MS graduates being successfully employed in forensic careers or pursuing advanced degrees or full-time research within 12 months of graduation. The lengthy hiring process for federal positions, due to extensive background checks, may delay our graduates beyond the 12-month mark depending on when the job posting becomes available.

Results Description:

Post-graduate success during this assessment cycle was 100%. This was the third consecutive year with 100% post-graduate success. Our 5-year and 10-year average post-graduate success is 95% and 96%, respectively. None of our MS students applied to transfer to the doctoral program during this assessment cycle (AY 22-23). All our MS graduates were employed in the forensic science field within 12 months of graduation. The breakdown of our cumulative MS student employment is research (23%), state (23%), county (23%), private (19%), city (7%), and federal (5%). Our overall discipline distribution is DNA (42%), toxicology (32%), drugs (14%), trace (5%), firearms (5%), latent fingerprints (1%), questioned documents (1%), and arson (<1%).

Attached Files

Postgraduate Success - July 2023.pdf

RELATED ITEM LEVEL 3

Job or Advanced Program Placement

Action Description:

The faculty will continue to assist students with searching for employment, preparation of application materials, and career advising at the department level to maintain our historical success with job placement. The department is also going to continue to encourage student involvement with the Society of Forensic Scientists club, as well as professional development organizations and opportunities through the Graduate and Professional School. Finally, the department is going to continue to assess why we have seen a drop in the number of MS applicants for the PhD program. Feedback from recent graduates indicates that financial needs may be taking precedence over continuing education, which perhaps may be a remaining artifact from the COVID pandemic.

Update to Previous Cycle's Plan for Continuous Improvement Item

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

Closing Summary

During the next AY 22-23, the department hopes to 1) evaluate faculty workload, 2) hire postdoctoral fellows, 3) improve student research experience (workplace readiness, student satisfaction), 4) evaluate student research interests prior to admission, and 5) execute curriculum mapping exercises.

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.

Evaluation of student research interests prior to admission will allow us to provide a balance of interests, ensure sufficient elective offerings, and reduce clustering associated with research supervision.

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 while also meeting licensing requirements and professional standards published by Standards Development Organizations (SDOs).

Update of Progress to the Previous Cycle's PCI:

The department has continued to struggle with faculty and staff burnout to meet the student's educational needs, while maintaining research productivity and service commitments. Although the department was able to add a postdoctoral fellow in fall 2022 to assist with teaching and instrument maintenance, this postdoctoral fellow has already been hired as faculty, which has left a void in our postdoctoral fellow position. Ideally, we would like two postdoctoral fellows to support teaching and research moving forward. Adding postdoctoral fellows will help support minor growth and research activity through reducing the existing burden on our faculty. One tenured Associate Professor left the department in AY 22-23 for an alternative employment opportunity. This position has since been filled by a new Assistant Professor this summer.

The general Forensic Analyst Licensing Examination was offered through the laboratory management course in fall 2022 due to workload availability. Moving forward, this examination will be offered each spring to the second year MS students in the Quality Assurance course. We believe this licensure offers our students a leg-up during the application and hiring process and demonstrates the knowledge they have acquired during their graduate education.

New Plan for Continuous Improvement Item

Closing Summary:

During AY 23-24, the department hopes to 1) increase MS student publications, 2) execute a new curriculum mapping exercise, and 3) work to rebalance our MS students by discipline.

The department aims to increase the number of MS student publications by changing the timeline of MS student incorporation into research activities and the format of the final capstone reports. Getting first year MS students involved in shadowing students currently working on their capstone or PhD research will help expedite the research advisor selection process and enable higher-quality scholarly products due to additional project development during the spring semester before students leave for their internship. Shifting the final capstone report from a thesis-based format to a manuscript-based format should also increase the number of MS student publications by expediting the manuscript submission process.

Given faculty turnover during AY 22-23 and the new 12-credit workload policy that the college is implementing this year, the department will undergo an additional curriculum mapping exercise to balance the new workload policy with available faculty. This will include developing discipline-specific pathways through our program that have sufficient faculty coverage to meet both the core courses and the advanced elective needs of our students. The department is in the process of hiring two additional Assistant Professors to accommodate an increase in MS student enrollment requested by the Texas Legislature. The successful onboarding and training of three new faculty members is a major objective of the department over the next year.

The discipline balance of our MS program is another major focus for the department over the next year. Even though we have worked to improve discipline balance in the past, due to faculty turnover, this past year our discipline balance was altered to avoid overburdening our incoming faculty. As the new faculty settle in and develop their research agendas, it will be important to rebalance our student distribution within the MS program, which will be experiencing a 10-student increase over the next two years. The addition of postdoctoral fellows would also help address the burden of additional MS students in the coming years.