Graduate Program Review  
Texas Tech University

Program Reviewed: Forensic Science

Onsite Review Dates: March 2\textsuperscript{nd}, 2015

Name of Reviewers

\textit{Internal:}  
Please include name, title, and Department  
Kerry Griffis-Kyle, Associate Professor, Natural Resources Management, College of Agricultural Sciences & Natural Resources  
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Sulekha Coticone, Associate Professor, Department of Chemistry and Physics, Florida Gulf Coast University  
Frederic Tulleners, Coordinator, UC Davis Forensic Science graduate Program

I. Academic Unit Description and Strategic Plan

Please evaluate the following:

\textit{Vision, Mission and Goals}

- Excellent
- Very Good
- Appropriate
- Needs Improvement

\textit{Strategic Plan}

- Excellent
- Very Good
- Appropriate
- Needs Improvement
Please comment on the positive components and suggested areas of improvement.
The mission of the Forensic Science graduate program is “to provide quality graduate education in the scientific pursuit of legal issues related to how evidence is collected and assessed, to produce high quality research, and maintain an environment where research and creativity in forensic analyses flourishes.” This is a very good and commendable mission statement but it should be noted that the term research is used twice in that statement while research grants and scientific publications are quasi inexistent. There is incoherence between the stated mission and the forensic science program resources. With the current resources (faculty, staff, and facilities) it will be extremely difficult to fulfill the mission as described above. For example, it is unlikely that the number of MS with thesis will drastically increase in the near future. Indeed, the modest level of funding (institutional and grants) for this program hampers its ability to recruit more graduate students for thesis work which in turn leads to less publications than desirable giving very little visibility to the program. To correct this situation, the current program director developed a strategic plan that is going in the right direction. Nevertheless, a detailed timeline is needed as well as a clear step-by-step implementation plan. A few suggestions/recommendations are offered in the rest of this document.

II. Program Curriculum

Please evaluate the following:

Alignment of program with stated program and institutional goals and purposes
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Curriculum development coordination and delivery
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Program learning outcomes assessment
- Excellent
- Very Good
- Appropriate
- Needs Improvement
Program curriculum compared to peer programs

- Excellent
- Very Good
- Appropriate
- Needs Improvement

Please comment on the positive components and suggested areas of improvement.

Alignment of program with stated program and institutional goals and purposes

The core required graduate courses include three Forensic Science courses: Advanced Topics in Forensic Science, Crime Scene Investigation, and Serial Crimes/Serial Offenders (the name of the course was inconsistent in the self-study we received). Until recently, core courses were not being offered on a regular basis (e.g., as the self-study noted, it had been four years since the Crime Scene Investigation was offered). The Serial Crimes/Offenders course is designated as a core requirement for the “Forensic Scientific” track is a concern. This course does not fulfill requirements for accreditation and some current students in the Science Track indicated that although Serial Crimes class was interesting, it was not relevant to their master’s program. Dr. Tulleners, the external reviewer, also indicated this course was not relevant to the Forensic Science track. The program director also indicated that they did not offer a FS research methods course and this would be necessary for a rigorous program. The program is currently developing for the core curriculum an FS research methods course and a FS Ethics course. Students expressed wanting more courses focusing on skill development and practical experiences (e.g., evidence processing course, presenting in front of others through working with mock trial teams, digital forensics course).

In addition to the classroom requirements, non-thesis students are required to complete an Internship in Forensic Science; a “supervised internship in an aspect of forensic science designed to provide the student with practical experience in the field.” Students indicated enjoying and experiencing benefits from the internships, although some said that they were unable to take full advantage of the internship experience because of the way the internship was structured. The students recommended the process for internships begin earlier in the program, especially because background checks tend to take a considerable amount of time and may hold up a student if not done early enough in the program.

Currently, students can opt to complete a thesis or a report. The vast majority of students have elected to do a report and one faculty member raised questions about the quality of the reports. Consistent with the future goals of the FS graduate program, the graduate director is encouraging more students to pursue a thesis, with greater encouragement for a “scientific” thesis. One issue that arose with the ‘science’ thesis is that, unless the student is pursuing an anthropology thesis, the onus is on the student to find a faculty advisor in the departments of toxicology, chemistry, and/or biology. At this time, although several faculty members in the said departments work with FS students, none of the TTU faculty members in chemistry, biology, or toxicology have an official relationship/status with the FS graduate program. This creates a precarious condition for students wanting to pursue the “Scientific Track.” Also, according to some students, courses fulfilling FS degree requirements housed in the physical sciences.
departments are not focused on forensics. For example, a chemistry course might offer only a little information on forensics.

According to the self-study document, the future goals of the program are to focus on TTU’s top three goals in the strategic plan, including: (a) increase the enrollment and promote student success; (b) strengthen the academic quality and reputation; (c) expand and enhance research and creative scholarship. Consistent with these institutional goals, the program director wants the program to become an AAFS accredited program, although as he has indicated, becoming accredited is a long term goal. Other goals identified in the self-study included: “more rigorous internship and a comprehensive exam for students not completing a thesis; hiring more instructors with applied knowledge of FS; integrate the graduate program with the UG minor program by developing a series of FS concentrations in biology and chemistry in order to increase student enrollment and offer a sustainable source of graduate students; increasing teaching and research assistantships opportunities by 10% to recruit top graduate students.”

The goals and the prioritization of the goals needs to be further considered. Some of these goals are not feasible at this time. For example, increasing the teaching and research assistantships by 10% is not a realistic goal in the short term, especially because the program lacks the faculty in natural sciences to oversee research project for graduate students. Additionally, in contrast to the goal to increase the number of students, the growth of the program has declined recently. This decline, however, is partially explained by the fact that the program has implemented more rigorous standards for admission which is consistent with another TTU goal of increasing the rigor of the program.

**Curriculum development coordination and delivery**

According to student evaluations, there had been concerns with courses being offered on a regular basis over the last several years and a lack of a Forensic Science research methods course. We understand that the current program director has worked to find solutions to this problem (e.g., hiring police officers to teach crime scene investigation course) and he recently taught the Forensic Science introduction seminar. Additionally, an interdisciplinary Forensic Science research methods course is currently being developed.

The relationship between the Institute and the Graduate Program was, at times, unclear to us and we were not able to gain a full sense of the how the Institute and the Graduate Program work together to make decisions about curriculum development and implementation.

**Program learning outcomes assessment**

Information about program learning outcome assessments for the period of the review was lacking in the self-report. One of Dr. Paine’s goals is to develop a comprehensive exam for master students pursuing an internship.

**Program compared to peer programs**

According to the self-study, the TTU FS program had 36 master students enrolled in 2013-2014, compared to the University of California-Davis (UC-Davis) with 80 master’s student, and Chaminade University of Honolulu (CUH) had 18 master’s students enrolled during 2013-2014. Unlike TTU or UC Davis, CUH also offers a bachelor’s degree and had an enrollment of 58 students last year. CUH had 7 staff (3 tenure-track faculty; 3 non-tenure track faculty; 1 TA); UC-Davis had 7 staff members (4 tenure-track; 3 non-tenure track). During the time of the review period, TTU had 2
staff members, both of whom were non-tenured faculty members. We did not receive information about curriculum at peer programs. The external reviewers, however, did address this in their reports.

**Comment on positive components and suggested areas of improvement**

The FS master’s program is an innovative program that offers considerable opportunity for interdisciplinary collaboration. Appealing to a wide number of students, the program offers flexibility with the scientific track and the investigator track. Over the time of the review, the TTU master’s program had steady and comparatively large enrollment (especially given the fact that there were only 2 full-time staff) over the past several years. Current students and faculty were very invested in the program. The students we met were enthusiastic and committed. Drs. Paine and Sperry bring important expertise to the curriculum and Dr. Paine is member of the Forensic Science Academy.

**Recommendations for improvement:**

Although we understand the program has been in a state of flux and that some important improvements have been made to the curriculum recently, we recommend the faculty continue to have focused discussions about the existing curriculum and delivery of the curriculum as they solidify their goals and visions for the program. Based on our observations, we suggest:

- Make the Serial Crimes/Offenders course an elective for students pursuing the scientific track and substitute another course meeting the accreditation standards for a core requirement.

- As the faculty continues to prioritize curriculum decisions, we recommend some consideration given to course the students expressed wanting: courses on expert testimony, more classes in the law school, and more skill-based courses, including fingerprinting, digital forensics.

- Students also suggested that it would be beneficial if internships started earlier in their program, the internship hours were increased, and if the faculty could be more directive with the internships. We recommend the faculty consider internship requirements at reputable peer institutions and, if feasible, try to implement the same standards.

- We recommend that students receive automatic access to the TTU Health Science Center Libraries when enrolled in the FS master’s program.

- As mentioned in other parts of the review, a fundamental problem with the FS master’s program is that it is understaffed with faculty who can meet the needs of the ‘scientific track’ students. We recommend hiring two tenure/tenure track faculty with backgrounds in forensic biology, forensic toxicology, and/or forensic chemistry. In the short term, it might be useful to offer initiatives to TTU faculty in chemistry, toxicology, pathology, and/or biology who work with FS master students (see also Section 6).
III. Faculty Productivity

Please evaluate the following:

Qualifications
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Publications
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Teaching Load
- Excellent
- Very Good
- Appropriate
- Needs Improvement

External Grants
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Teaching Evaluations*
- Excellent
- Very Good
- Appropriate
- Needs Improvement
*Teaching evaluations were not included in the self-study report. Teaching evaluations for Dr. Sperry were available since 2009 and were assessed for this report.

**Professional Service**
- Excellent
- Very Good
- Appropriate
- Needs Improvement

**Community Service**
- Excellent
- Very Good
- Appropriate
- Needs Improvement

*Please comment on the positive components and suggested areas of improvement.*

**Qualifications, Publications, and External Grants**

The faculty assessed for this review are Dr. Kathy Sperry, Faculty in the Forensics MS Program and Dr. Robert Paine, Program Director of the Program and faculty in the Department of Sociology, Anthropology, and Social Work. Note that Dr. Paine became director of the program last year after the end of the evaluation period, but our committee was told by the graduate school to include him in the evaluation.

As one of the goals for the program is to achieve accreditation by the American Academy of Forensics Science, most students need to be producing theses in natural sciences. The current faculty in this program are in social sciences and do little research. In order for the program to become accredited they will need to recruit and hire scholars productive in research in natural sciences such as Biology, Chemistry, and Toxicology.

The publication record of the faculty in the Forensic Sciences Graduate Program is low. Dr. Sperry has 1 paper in review. The most recent previous peer-reviewed publication before that was in 2000, well before the 6 year assessment period. Dr. Paine has two papers submitted and has one traditional peer-reviewed research paper in the past 6 years. He also produced 2 reviews on the state of forensic science and 5 book chapters in the 6 year assessment period. For the program to move towards accreditation, faculty within this program must obtain research grants and publish their results.

Faculty associated with the Forensics MS Program have been below average in applying for and bringing in grant money; although, Dr. Sperry was able to get foundation money recently ($50,000 generating about $2,000/year in interest) that is being used for student scholarships. She also had three grants from the US Department of Justice.
that were ending as the evaluation period for this program review started. Her grant applications declined as she became the Forensics Program Director. Dr. Paine did not obtain competitive grants during this period; his reported funding consists of travel awards and honorariums. The last competitive grants he submitted were in 2009.

Teaching Load

Dr. Sperry teaches 1 course a semester, which is a light load for a faculty member, especially as she is not the Program Director and is not doing research. Dr. Paine teaches a 3 and 3 or 3 and 2 split, all of which is for the Department of Sociology, Anthropology, and Social Work. One class he has taught can be used as an elective for the Forensics Master’s (ANTH 5313 has had ~ 5 forensics students enrolled in total over the years he has taught it). This is a very heavy teaching load for a Program Director. Note however that teaching relief has been offered to Dr. Paine which he has declined as he will not stop teaching until he is comfortable there is someone available to cover the classes he would give up.

Teaching evaluations were not included in the Program Self-Evaluation. However, we did look up evaluations on the Texas Tech Institutional Research Website. We also requested copies of the paper student evaluations. Dr. Sperry provided us with the evaluations from 2009 to 2014. Dr. Paine has not taught graduate courses in forensics, so he is not evaluated. Dr. Sperry has an excellent overall student evaluation score of 4.75 for those semesters, never dropping below a 4.6 based on the summaries in the online database for 2012 and 2013. The paper evaluations we requested also indicated a students were satisfied with the courses taught.

Only one person, Dr. Sperry, is teaching core courses in forensics. Dr. Paine, the current director was appointed after the project evaluation period. If the goal of the program is to move towards having almost all thesis students and increasing student numbers then additional individuals should be hired for the program.

Community and Professional Service

Because forensics is interdisciplinary and provides direct services to the community and profession at the same time, we evaluate these together. The faculty, Drs. Sperry and Paine, are very different in their types of service which makes the graduate program well rounded in their participation in University, Community, and Professional Service. Dr. Sperry with the Forensics Institute, provides a number of regional continuing education services for law enforcement employees. Additionally, she has been involved in k-12 outreach, and participated on a number of university committees. Dr. Paine is very active as an invited lecturer on Forensics in the US and Europe and is also on the editorial board of the Journal of Anthropological Sciences.

IV. Students and Graduates

Please evaluate the following:

Time to degree

- Excellent
- Very Good
- Appropriate
Retention
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Graduate rates
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Enrollment
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Demographics
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Number of degrees conferred annually
- Excellent
- Very Good
- Appropriate
- Needs Improvement
Support Services
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Job Placement
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Student/Faculty Ratio
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Please comment on the positive components and suggested areas of improvement.

Time to Degree, Retention Enrollment, and Number of Degrees

Most of the students who graduated from the Forensics program have not produced a thesis and on average more than half are attending school part time. Consequently, we would expect students to finish in about 2 years or a little more. Confusion about the timing of the internship has led to a delay in graduation for a number of the investigative track students. The background checks take a significant amount of time so the students should be preparing to do their internship earlier in their program than currently advised. As more thesis students are enrolled the time to graduation will likely increase a little, which would be appropriate.

There are very different ideas about target enrollment for the Program’s future. The Director of the Forensics Institute, Dr. Morgan, is looking for a total of 30 students at a time in various stages of completion and the Program Director, Dr. Paine, would prefer a total of 15 students in the program at any time. These disparate goals need to be addressed and a realistic goal set based on the number of faculty in the program.
Demographics

The Forensics program has historically done a very good job of recruiting a diversity of ethnicities and genders.

Support Services

The support for students over the assessed period was below average. Up until this past year there had been no assistantships awarded. The faculty are aware that more needs to be done to financially support students. Last year the Institute changed a position for a graduate worker into a teaching assistantship. There are also plans to turn another hourly wage position into an assistantship, but this has not occurred yet.

The institute has also started awarding small research and travel grants (up to ~1K per student) to help students with expenses for thesis work. There was hope by the faculty and students that the university would grant them TA’s or RA’s to support more students.

Feedback from the students, in the form of the student survey included with the Self-Study, was very negative. Conversations with the students in the program was more hopeful, although many indicated there was still room for improvement in the way the program supports their students. There was consensus that the faculty within the program have problems with communication in a number of ways. First, students are not advised on how to get involved in professional societies to do activities such as presenting their work or attending conferences. There was also frustration at email communications with the current Director; according to the students he takes a long time to respond. Last, the students indicated a lack of communication between faculty and pointed out that any interactions are obviously tense, making the students uncomfortable.

Additionally, there was frustration at the way the internship is implemented. Students are told not to apply for the internship until into their second year. The background checks for many of these internships can take a significant amount of time and can consequently push a student’s graduation back by a semester.

Job Placement

Students are finding jobs in the field after graduation and the number of students going on to Ph.D. positions is excellent. However, it is our impression that those graduating from the Investigator Track are only finding positions that require a BS degree. It would be helpful if the program collected information on job duties and salaries of their graduates to evaluate how well their graduates are being placed.

Student Faculty Ratio

There are now two faculty to advise 36 Master’s students. This is not adequate as the program moves toward having most students complete theses.
V. Facilities and Resources

Please evaluate the following:

Facilities
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Facility Support Resources
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Financial Resources
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Staff Resources
- Excellent
- Very Good
- Appropriate
- Needs Improvement

Please comment on the positive components and suggested areas of improvement.

Facilities

The existing facilities share a building off the main TTU campus with the medical examiner’s office. At this time, there is no connection between the Institute, the Forensic Sciences Graduate program, and the Medical Examiner’s Office. The building has classroom space for lectures and examinations, a “lab” space (the lab space had a staged
crime scene, a large refrigerator, and some equipment (for forensic testing?), a quiet computer room for student use, and private offices for the Institute Director, one faculty member, the grant writer on staff, and the post-doc.

The classroom space appears to be utilized by the Graduate program and the Institute on a regular basis. Our tour of the building and discussions with faculty and students suggested that the classroom space for lectures and tests was very good. Some students indicated that the equipment available at the Institute was not being used to its full capacity. The Director of the Institute commented that the student computer room was underutilized.

The location of the building is not ideal because it is far away from the main campus and many of the elective courses are taught on the main campus. Having a central space for the students on main campus would be useful. The Forensic Sciences courses (except the Intro seminar) are taught at the Institute. Several students expressed concerns about getting to the building because the buses do not transport students from the main campus to the Forensic Science building. Most of the classes are on Thursday evenings, after the time campus and city buses run. That notwithstanding, even when buses are running, there is not a bus stop conveniently near the Institute.

Facility Support Resources

The building is adequate for the program as it is currently in operation now. The existing building, however, is not conducive for the stated goals of the future of the Forensic Science graduate program (i.e., accreditation). As previously mentioned, the requirements for accreditation require students to have background in physical sciences and to do lab research. The existing building is inadequate for a chemistry, toxicology, or a forensic science lab. In our estimation, it would not be feasible to change the existing space into a lab. The lab would have be in another building.

Financial Resources

We did not receive adequate documentation to fully evaluate the financial resources. In our oral interviews, the Institute director had said there was $500,000 and the Dean indicated that he budgeted $330,000. It is unclear which money goes to the graduate program and which goes to the Institute. With the move of the graduate program to The College of Arts & Sciences, we were told that the program is now able to offer one graduate assistantship and another is in the process of being created. Prior to this, no graduate assistantships were available. Currently, there is money to hire staff and the program director discussed the goal of quickly hiring a physical scientist. It is unclear how the goals for the grants being written are linked to the Forensic Science master’s program.

Staff Resources

Currently, the staff consists of one faculty member devoted to the program full-time, a grant writer, a post doc, and three community instructors. The director of the forensics master’s program does not have an official appointment with the Forensic Science graduate program and the director of the forensics institute has a limited appointment. Because of this, the program director appears overloaded. He is teaching multiple classes in his home department, engaging in his own research, advising his anthropology graduate students, and running the Forensic Science program. The Institute Director also appeared to have an extremely heavy workload with his obligations at the Institute and the Psychology Department. As we have already noted, the graduate program is understaffed and one
of the biggest gaps is the lack of a natural science tenure/tenure-track faculty. At the Institute, the offices for the staff appeared adequate.

**Comment on positive components and suggested areas of improvement**

The space for teaching, including the mock crime scene, appears to be effective and is well-utilized. Having a full-time grant writer position and a post-doc working on grants should put the Institute in a good position to receive grants. The graduate program also appears to have a good working relationship with several local law enforcement agencies.

**Suggested areas of improvement:**

There needs to be a step-by-step implementation plan and a clear prioritization of goals. For example, it was unclear how the current open positions would advance the broader goals and how the grants currently being written are intended to benefit the Graduate program and how the particular grants help move the Institute/Graduate program forward in the desired direction.

Dr. Paine needs a course release from Anthropology and more time to direct the Forensic science master’s program, especially as the program is in flux. Dr. Morgan also appeared over-committed and we recommend allocating him more time at the Forensic Science Institute.

Without a connection to the medical examiner’s office shared with the Institute, it is unclear why the program needs to stay in the building (e.g., classrooms and the mock crime scene could be on the main campus). If possible, we recommend re-establishing a relationship with the medical examiner’s office to take full advantage of the off-campus site. The feasibility of providing a shuttle from main campus to the forensic science building on the evenings when classes are held should be studied.

Hire two tenure/tenure-track faculty with expertise in forensic toxicology, forensic chemistry, and/or forensic biology. One possibility in the short term may be to have joint appointments.

Maximize the use of the available forensic science equipment.

With so many courses on the main campus, a central space in the main campus for students is necessary.

We encourage continued networking and making tighter links with forensic specialists in the area.

**VI. Overall Ranking**

*Overall Ranking*

- Excellent
- Very Good
- Appropriate
- Needs Improvement
Please provide summative conclusions based on the overall review.

The data, as presented in the report, clearly show that the program was not sustainable. The new direction of the program offers a vision to move forward. To summarize, the time to degree increased for the period 2010-11 to 2012-13 from 2.03 year to 2.52. It appears to be within the normal range as the vast majority of the graduate students pursue the non-thesis option and many are not full-time students (peak of 59% full-time students in 2011 and low of 21% in 2012). It should be noted that none of the 69 students admitted into the program since fall 2008 and during the review period have been appointed RA’s, TA’s or GPTI’s. One student is currently on a TA. The lack of financial support for graduate students is extremely concerning as it could hinder recruitment and retention (20% of the students enrolled in the program withdrew or were transferred to a different program). The graduation rate increased quite drastically between 2009 and 2012 (from 19% which is extremely low to 53%). It is an excellent trend but it is still too low. The efforts to increase the graduation rate needs to continue. In 2012 and 2013, the number of graduate applicants was 22 and 23 respectively. Among those 19 and 18 students were admitted. These are quite high percentages of admitted students (86.3% and 78.3% respectively). Among the admitted students 12 and 15 enrolled. On average the GRE and GPA of enrolled students are lower than expected (GRE: verbal/quantitative of 142/143 in 2012 and 144/146 in 2013; GPA: 3.47 in 2012 and 3.10 in 2013). More stringent admission criteria could be considered. Should we see a relationship between admission criteria and graduation rates? The enrollment increased between the years 2011/12 and 13/14 (from 3 to 36). It shows that this program has a strong potential for growth (even if tighter admission criteria were applied). In terms of number of degrees awarded by year the numbers are quite good for the size of the program (14 in 2011, 19 in 2012, and 10 in 2013). Regarding the place of employment of graduates, 62.1% of the 58 graduates listed are employed in the field of forensic science, 15.5% pursue a graduate degree (Ph.D. or Law), 3.4% are teaching forensic science, 5.2% are employed but not the in the field of forensic science, and 13.8% are listed with unknown employers. Among the graduates listed as employed in the field of forensic science, places of employment are quite diverse (Louisiana State Crime Lab, TDCJ Parole, DPS crime lab, Lubbock PD, KS bureau of investigation, research centers, child protective services, etc.). Unfortunately the initial positions after graduation were not listed. Therefore, it is impossible to tell in which capacity the new graduates were hired. Regarding the Student/Faculty ratio, it is where the major problem lies. Currently, only one faculty (Dr. Sperry - Assistant Professor of Practice) is listed. It is insufficient to grow the purely forensic aspect of this program. The other faculty left in 2013 and he was not replaced (Dr. Childers). These two faculty chaired 3 M.S. with thesis and 35 M.S. without thesis for the past 6 years. The Forensic Science degree is multi-disciplinary and other faculty, not appointed by the Forensic Institute, are teaching forensic related courses in their home department. Nevertheless, the lack of faculty totally dedicated to the program leads a very low number of students graduating with thesis which in turns leads to an extremely poor publication record (refereed publication (1 in 2011), presentations/posters (1 in 2008)). It also translates into an anemic number of grants submitted to funding agencies (2.25 disciplinary and 0.73 multidisciplinary grant proposals for the period 2008-2013. All were not awarded). Recruiting research personal is absolutely vital to the survival of this program. Finally, improving internal communication with faculty, staff, and graduate students is needed. The student surveys are quite negative and it could hamper the development of the program.
Please provide summative recommendations based on the overall review.

The forensic Science program is closely linked to the Institute for Forensic Science. The goal of both entities as we understand it is to grow the program and to modify its structure in order better fit the needs of the discipline and of the students. The proposed structure is depicted in Figure 1.

**Figure 1. Proposed structure of the Forensic Science Program**

In this configuration, the two tracks would be separated at some point (2 programs instead of one). It would allow the forensic science track to be accredited (to meet minimum accreditation standards new courses also need to be developed). The forensic science track would be mostly for MS with thesis students as it is a science based degree. The investigative track would be mostly for MS without thesis students. In this scenario, a strong emphasis on research is vital. Therefore, we propose the following to make a program evolve into a sustainable program:

**Phase 1:**
- Have a clear understanding of the current budget (no information was provided). In particular, is it possible to optimize the current resources?
- Recruit at least two research faculty at the institute in charge of developing a strong research program, (writing research grants and refereed publications, etc.) and to support the thesis work of graduate students. Significant startup funds will be necessary as well as new laboratory space.

*Light gray = dominant option*
• Recruit adjunct faculty and or joint appointees among TTU Departments with an interest in Forensic Science to support the thesis work of graduate students.

• Improve communication among faculty, staff, and students (regular faculty meetings, rapid follow up to student emails, advertise conferences where graduate students could present their research, regular newsletter, develop a relationship with alumni, etc.).

• The Program Director should have at minimum a 30% appointment with the Institute of Forensic Science in order to have the time to develop the program (a 12 month appointment should also be considered). Also, a clear line of command is needed. In general, a graduate program is under a department and the department chair is in charge of defining with the faculty the strategic objectives of the unit. Such a structure is not clearly defined between the institute and the graduate program. Apparently Dr. Morgan and Paine work well together but it could be a source of tension in the future.

• Develop new courses to meet the minimum standards for accreditation of the forensic science track.

**Phase 2:**

• After Phase 1 is completed and a significant number of graduate students are pursuing a MS in Forensic Science with thesis, split the two tracks into two programs and request the accreditation for the Forensic Science Program.