**Post Audit Report Form - Review for Final Approval**

**Narrative Responses**

**Northeastern State University** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Institution submitting request) (Program name and State Regents’ program code)

**Status report summarizing the new program’s progress**

*(limit response to three pages)*

The M.S. Natural Sciences program provides students with advanced training in the biological, chemical, and physical sciences. The program was originally developed to meet the growing need for STEM-related jobs within the State of Oklahoma. A 2017 report by the Oklahoma Employment Security Commission[[1]](#footnote-1) places nearly 5% of the total state employment in STEM occupational groups. Moreover, the job demand for STEM occupational groups is projected to increase by 10% from 2016 to 2026. Therefore, the program meets a critical need facing Oklahoma.

The program provides two pathways for students to earn a M.S. Natural Sciences degree. The first is by completing a thesis over an original research topic. A second, non-thesis pathway, allows students to complete degree requirements through additional coursework and a culminating capstone experience. Both pathways are designed to train students in current scientific theories and methodologies so they can meet the growing demand for STEM employees in Oklahoma. Most recently, an accelerated degree plan (ADP) was approved and implemented for the B.S. Chemistry/M.S. Natural Sciences in the 2018-19 academic year. Three students applied for admission to the ADP in its inaugural year. One student was granted admission, one application is currently pending per student-initiated action, and the third was denied acceptance due to not meeting the minimum GPA requirements.

The Department of Natural Sciences also provides students within the M.S. Natural Sciences program competitive graduate assistantship (GA) opportunities. Students selected for a teaching GA gain additional training by serving as a classroom instructor, under the guidance of a faculty member. Research GAs are available from the Gregg Wadley College of Science and Health Professions. These appointments are designed to support student research towards their thesis. GAs are compensated with a combination of tuition waivers and salary, which provides financial relief for the students. The Department of Natural Sciences typically offers eight GA appointments each academic year, depending on available funding.

The M.S. Natural Sciences was granted an extension for final approval by the Oklahoma State Regents for Higher Education. Successful performance metrics are defined as 15 students enrolled in the program with 5 degrees conferred per year. The average number of students participating in the program meets the enrollment goal. However, the program did not meet the target number of graduates for the review period. Despite this, we very are proud of the accomplishments our graduates have made. Many have gone on to successful careers in their chosen industries or continued their education in doctoral programs.

To provide context for the low graduation rate, we have gathered data for 19 students involved with our program between spring 2018 to present into the following table. The two-year window is identified to give a snapshot of the program. Students are classified according to last semester enrolled and credit hours earned. Names are concealed to protect the identities of our students.

**Table 1**. Selected student data from spring 2018-fall 2019.

| **Identifier** | **Last Semester Enrolled** | **Credit Hours** | **Status** |
| --- | --- | --- | --- |
| Student 1 | Spring 2018 | 33 | Non-thesis |
| Student 2 | Fall 2018 | 39 | Thesis |
| Student 3 | Fall 2018 | 37 | Thesis |
| Student 4 | Fall 2018 | 20 | Thesis |
| Student 5 | Fall 2018 | 1 | Not degree seeking |
| Student 6 | Spring 2019 | 56 | Not degree seeking |
| Student 7 | Spring 2019 | 40 | Thesis |
| Student 8 | Spring 2019 | 40 | Non-thesis |
| Student 9 | Spring 2019 | 38 | Thesis |
| Student 10 | Spring 2019 | 34 | Thesis |
| Student 11 | Spring 2019 | 34 | Non-thesis |
| Student 12 | Spring 2019 | 29 | Thesis |
| Student 13 | Spring 2019 | 18 | Thesis |
| Student 14 | Spring 2019 | 17 | Thesis |
| Student 15 | Spring 2019 | 9 | Thesis |
| Student 16 | Fall 2019 | 0 | ADP |
| Student 17 | Fall 2019 | 0 | Thesis |
| Student 18 | Fall 2019 | 0 | Thesis |
| Student 19 | Fall 2019 | 0 | Thesis |

Four students are included in Table 1 from spring 2018 and fall 2018. Two of these students are no longer pursuing their degree. This is due to failing to meet degree requirements (student 2) and financial limitations (student 4). The two other students (1 and 3) are not currently enrolled, but they are actively working on their culminating thesis or capstone projects. Since these students met all other degree requirements, they chose to not enroll in additional credit hours while they write. Two additional students (5 and 6) are non-degree seeking.

Students with more than 30 credit hours have nearly completed their degree. Excluding students 2 and 4-6 leaves seven students that are nearing degree completion. An additional seven students are in the early phase of their degree plan. Based on this data set, the M.S. Natural Sciences program needs to identify new recruitment strategies to increase enrollment and develop procedures to identify students at risk of not completing their degree. The thesis/capstone defense is among the more stringent requirements for a student to meet in a science-based graduate curriculum. Thus, it is not surprising that many of students are struggling to meet this requirement. Once students have been identified as at-risk, support structures need to be implemented to aid the student in completing their degree. We now turn to our plan to develop these goals.

**Extension of the Review Period**

Provide a brief explanation of the future plans that will enable the program to meet productivity requirements and the time frame required to accomplish these plans *(limit response to two pages)*.

The M.S. Natural Science program proposes the following steps to stimulate enrollment numbers in the program and increase graduation rates.

**1. Targeted advertising for the ADP for B.S. Chemistry/M.S. Natural Sciences.**

The accelerated B.S. Chemistry/M.S. Natural Sciences pathway was recently approved for implementation. Eligible students are expected to apply for the ADP in their junior year and must meet certain admission requirements to participate in the program. The M.S. Natural Sciences program will aggressively advertise the ADP to our undergraduate chemistry students through two steps.

Our first step is to target advertising for this program to General Chemistry II students. All chemistry majors in Tahlequah are required to take General Chemistry II. Thus, an advertising campaign focusing on these students will reach all of our majors and give students an early glimpse at the opportunities available to them for graduate studies at NSU. Special attention will be spent on the reduced amount of time for degree completion, financial savings, and career enhancement.

Our second step is to advertise the ADP again in CHEM 3515 (Quantitative Chemistry). This class is typically taken by chemistry majors at the beginning of their junior year. Hence, students in this course are typically in the correct semester to initiate an application for the ADP. Additionally, the course reaches students on both the Tahlequah and Broken Arrow campuses. This is important because NSU does not offer General Chemistry II on the Broken Arrow campus.

**2. Enhanced advertising campaign for M.S. Natural Sciences to NSU’s chemistry, biology, and physics majors.**

We propose coordinating with the Department of Natural Sciences academic advisers to identify senior chemistry, biology, and physics majors who are graduating with B.S. degrees from NSU. These students will then be provided recruitment information for our graduate program. As noted in Table 1, over two-thirds of our students select a thesis-based route for degree completion. Thus, we plan to emphasize this route.

**3. Reinvigorated Recruitment Efforts at Regional Technical Meetings.**

The M.S. Natural Sciences program has implemented recruitment efforts at regional technical meetings in the past. These efforts typically include setting up a table among the various vendors and providing literature to students attending the meeting. We have found few students approach the table for information, yielding a low return for the effort involved in pursuing these venues. Therefore, we propose a more direct recruitment effort at these meetings wherein the program committee members and department faculty intentionally seek out students during scientific poster presentations with recruitment literature. Student presenters are required to stand near their posters during the poster presentation. Thus, it is possible to focus recruitment efforts toward specific students. The program will focus on Oklahoma Research Day and the Oklahoma Academy of Sciences Technical Meeting since those meetings contain a large number of undergraduate science students.

**4. Identification of At-Risk Graduate Students.**

The data provide provided in Table 1 shows a sufficient number of students in the pipeline to meet the annual graduation rate. The primary roadblock appears to be completing the thesis/capstone requirement. We propose a model that identifies at-risk students so that appropriate faculty can intervene before the student withdraws from the program. All graduate students are required to form a graduate advisory committee. Our current policy is that students are expected to meet with this committee at least annually to go over progress on their degree. We plan to augment the annual meetings with documentation from faculty advisers on student progress on a semester-by-semester basis. Each semester, faculty mentors will be asked whether or not their student is making adequate progress towards his or her degree. Faculty mentors are in the best position to know the student’s progress. In the event a student is not making satisfactory progress, the faculty member will be asked to convene a meeting with the student and his or her advisory committee to chart a plan for student success. Our goal is to shift graduate mentoring into a more proactive model wherein challenges (and their solutions) are identified early.

A second element of our proposed model has the program chair contact each student after they have earned 75% of their required credit hours; this typically falls in the student’s penultimate semester. The goal of the correspondence is to allow students an opportunity to self-identify roadblocks to graduation. In this way, the program chair will also take a more proactive role in student success. The NSU Graduate College has automated systems for program-student correspondence, which we will leverage for this purpose.

1. <https://www.ok.gov/oesc/documents/lmistemreport.pdf> [↑](#footnote-ref-1)