



Program Assessment Report (PAR)

Physiology + Neuroscience (PN) Masters Degree

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ACADEMIC YEAR COVERED BY THIS REPORT: 2020-2021

I. PROGRAM LEARNING OUTCOMES

MS in PN program has two different options; students can choose course option or thesis option. Some learning outcomes might differ between two options. After completing the MS in Physiology and Neuroscience (PN) program, course option, graduates will be able to: 1. Demonstrate depth of understanding of human physiology and neuroscience disciplines. 2. Critically read and analyze data from scientific papers. 3. Develop skills, which prepare students to continue study to more advanced degrees (such as Ph.D., M.D., and D.O., D.D.S., P.A. or the equivalent). After completing the MS in Physiology and Neuroscience (PN) program, thesis option, graduates will be able to: 1. Demonstrate depth of understanding of human physiology and neuroscience disciplines. 2. Develop skills to perform different research techniques. 3. Complete a novel work or project that contributes to field of physiology and neuroscience sciences. 4. Produce competent and professional writing through planning, drafting, revising, and editing a thesis project.

II. PROCEDURES USED FOR ASSESSMENT

A. Direct Assessment

1. Demonstrate depth of understanding of human physiology and neuroscience disciplines. All students in MS in the Physiology and Neuroscience program (both options) are required to complete three core courses Human Physiology (4-credit hrs.), Neuroscience and Physiology (3-credit hrs.) and Molecular Biochemistry (3-credit hrs.). The average percentage score and calculated GPA after completion of the course was used as a direct assessment of this learning outcome. 2. Critically read and analyze data from scientific papers. Students who chose course option in MS in the Physiology and Neuroscience program are required to complete ANT 6030 - Biomedical Article Review course and ANT 6040 - Biomedical Experimental Design course. The goal of those courses is to write a scientific review article, design an experimental approach to test their

hypothesis and predict the results that would support their hypothesis, as well as write a scientific paper and give a seminar on the chosen topic. In academic year 2020-2021, two graduate students completed these courses. The course option was implemented in Summer 2020. 3. Develop skills, which prepare students to continue to study for more advanced degrees (such as Ph.D., M.D., and D.O., D.D.S., P.A. or the equivalent). Most of the students in MS in Physiology and Neuroscience program intend to continue their education in the Ph.D. programs or health professional schools. Our program provides training for continuing in their professional endeavors. Direct assessment of these learning outcomes are the number of graduates who were accepted into professional schools or programs. 4. Complete a novel work or project that contributes to field of physiology and neuroscience disciplines. 5. Produce competent and professional writing through planning, drafting, revising, and editing a thesis project. Students who choose Thesis Option in the MS Physiology and Neuroscience program are required to work with a faculty supervisor in one of the research laboratories within or outside of WSU. They must complete the project, write a thesis paper, and complete the project with an oral defense. Students performance was assessed by the student's committee members evaluation based on the rubrics.

B. Scoring of Student Work

1. Demonstrate depth of understanding of human physiology and neuroscience disciplines. Scoring was done by faculty members, who taught each of the core courses. Data were collected after each exam, including the final examination, and the average percentage and GPA was calculated in the end of the courses. 2. Critically read and analyze data from scientific papers. All students who chose the thesis option must take the Principles of Biomedical Research course, which includes rigorous analysis of scientific literature. Furthermore, the writing of a thesis involves detailed analysis of scientific articles related to the thesis topic. Indeed, the entire design of the thesis project requires the student to have a thorough understanding of relevant literature in order to effectively design a series of experiments that they can test a novel hypothesis with. 3. Develop skills, which prepare students to continue their course of study to more advanced degrees (such as Ph.D., M.D., and D.O., D.D.S., P.A. or the equivalent). Success of our graduates who decided to continue study to more advanced degree was scored by their acceptance to the professional school or programs after graduation. The data were collected by the program coordinator and are based on student's willingness to share this information with us. 4. Complete a novel work or project that contributes to field of anatomical sciences. 5. Produce competent and professional writing through planning, drafting, revising, and editing a thesis project. Specific rubrics were developed to score this learning outcome. They are used by student's thesis committee members. Rubrics will be attached at the end of this assessment report.

C. Indirect Assessment

Although we didn't use any of indirect assessment tools in 2020-2021 academic year, we know through several conversation with students, that they perceive the program as challenging, but rewarding and extremely helpful for their future scientific or professional career. Our graduates very often promote our program and recruit new students, by telling them how excellent the program is. In the future we will develop the survey, which would help us to do an indirect assessment more efficiently.

III. ASSESSMENT RESULTS/INFORMATION:

Demonstrate depth of understanding of human physiology and neuroscience disciplines. Based on average percentage score and calculated GPA after completion of the three-core course Critically read and analyze data from scientific papers. Based on final grade in ANT 6030 and ANT 6040 courses. Develop skills, which prepare students to continue study to more advanced degrees (such as Ph.D., M.D., and D.O., D.D.S., P.A. or the equivalent). Based by the number of graduates who were accepted into professional schools or programs. Complete a novel work or project that contributes to field of physiology and neuroscience disciplines. Produce competent and professional writing through planning, drafting, revising, and editing a thesis project. Based on students' performance assessment during thesis defense. Committee members use the rubrics.

Student Knowledge of Molecular Biochemistry 87% Student Knowledge of Human Physiology, 85.6% Student Knowledge of Neuroscience Physiology 96.7% In academic year 2020-2021, two graduate students completed ANT 6030 and ANT 6040 courses. The course averages 97% Among six graduates in 2020-2021 academic year 2 was accepted into Ph.D. program, 2 accepted research work position, and 2 are applying to medical school. The overall performance of 4 students who completed thesis option in MS Anatomy program Oral Thesis Introduction – 4.0 Terminology – 4.0 Logic Underlying Presentation – 3.3 Conclusions – 3.8 Written Thesis Explanation of Issues – 3.2 Evidence – 3.5 Influence of context and assumptions – 3.6 Conclusions and related outcomes – 3.5

All scores are the average GPA/percentage students received after completion respective core courses. They indicate that students achieved high level of understanding of physiology and neuroscience disciplines. High score in those intense writing courses indicate that students possessed ability to critically read and analyze scientific papers. Although it is difficult to monitor the next step career of 100% students, the provided numbers indicate that our program is a good preparation/training for those who wants to continue their education on the higher level. All students who completed thesis option in MS in Physiology and Neuroscience program possessed ability complete independent research project and write scholarly paper based on the results.

IV. ACTIONS TO IMPROVE STUDENT LEARNING

Information regarding the assessment has been shared between faculty in the graduate curriculum committee meetings. During last few years several changes were made in the program curriculum. One of which was to offer a course option in the Physiology and Neuroscience program. In place of completing and defending a research project student took ANT 6030 and ANT 6040 courses, which assess student's ability to critically read and analyze data from scientific papers (this way the new learning outcome has been create). In ANT 6040 students must demonstrate the ability to orally present their research article. In the future, the NCBP Graduate Curriculum Committee will develop a more efficient assessment tool.

V. SUPPORTING DOCUMENTS

Additional documentation, when provided, is stored in the internal Academic Program Assessment of Student Learning SharePoint site.