
Interdisciplinarity@WMU- Phase One planning Template

1. **Brief Overview:** Provide a brief overview of the proposed interdisciplinary initiative. What types of questions would the initiative ask? What types of complex problems would it seek to solve?

This proposal seeks to establish a new PhD program at WMU in the interdisciplinary field of Neuroscience. Historically scientists were trained to work in a single discipline, and they became more specialized throughout their careers. Several decades ago, Neuroscience was classified as a subdivision in biology. However, with continual breakthroughs in the field, it now encompasses researchers in other disciplines such as mathematics, linguistics, engineering, computer science, chemistry, psychology, medicine, and philosophy. Indeed, each of these fields now house a subfield with the name "Neuroscience" e.g. Philosophical Neuroscience\Neurophilosophy.

The National Institute of Health sub-institute National Institute of Neurological Disorders and Stroke outlines in its strategic plan that the health needs of the new millennium will only be met through an interdisciplinary approach. This strategic plan calls for integrated efforts to develop methods for understanding the basic mechanisms of brain and behavior and for the prevention, diagnosis, and treatment of disease. We welcome the opportunity to expand upon the Neuroscience strengths already in place at WMU, and develop an interdisciplinary PhD program in Neuroscience by incorporating courses currently offered in the Biological Sciences, Psychology, and Health Sciences curricula. Neuroscience is a growing field of interest for college graduates, including those pursuing careers in academia and industry.

2. **Impacted units:** What existing units, programs, and colleges would be involved in the proposed initiative? What other possibilities for collaboration across campus or in the broader community might exist now or in the future?

We initially see this program involving Biological Sciences and Psychology within CAS; however, it could potentially incorporate Chemistry, Philosophy, CEAS, and CHHS. Additionally, in the future, an undergraduate Major in Neuroscience emphasizing interdisciplinary and integrative approaches would enhance the PhD program and WMU as a whole.

3. **Impact on teaching, learning, and curricula:** Describe the anticipated impact of the proposed initiative on teaching, learning, and curricula. How might this initiative help to grow enrollment, including by reaching new audiences of learners through continuing education, dual enrollment, or professional certification? How will the proposed initiative positively impact the training of undergraduate and graduate students? How does it enhance our institutional commitment to diversity, equity, and inclusion?

According to a commissioned report by the Society for Neuroscience, the average number of applicants to each U.S. Neuroscience PhD program in 2019 was 170. The number of applicants is increasing by 4-8% every year, indicating a growing interest for this interdisciplinary field. There are three target audiences for this initiative. The first audience is our outstanding undergraduate majors in Biological Sciences and Psychology who may wish to continue their studies at WMU, but due to the lack of a Neuroscience PhD program, elect to pursue a graduate education elsewhere. Our undergraduate programs do an outstanding job in preparing undergraduates for graduate endeavors in Neuroscience, and we lose these students to other programs.

The second audience is closely related to the first and encompasses undergraduates preparing to graduate from other institutions. There are talented students interested in the research and didactic education here at WMU. However, they see interdisciplinary studies as a necessary component of their education and elect to go elsewhere for their PhDs in order for their diploma to state Neuroscience. With a Neuroscience program, they could receive the same if not a more well-suited education at WMU.

The third target audience is working professionals within the Kalamazoo area. Pfizer, Stryker, Charles River, and Zoetis have research projects and/or entire divisions focused on Neuroscience. We already have individuals from these companies who were trained or would like to train here. A doctoral degree in Neuroscience can help individuals from these companies further their careers, and some of our current faculty have successfully trained scientists for these companies in the past.

- 4. Impact on research and creative activity:** Describe the anticipated impact of the proposed initiative on research and creative activity. How will this initiative promote discovery and creative scholarship? How might it result in increased external funding?

This proposal has the potential to have a substantial impact on research, discovery, and external funding. By being part of an interdisciplinary graduate program, engaging students in research training across multiple laboratories will lead to increased collaboration among labs and departments, which can produce novel avenues for research and extramural funding opportunities. Grant foundations are highly favorable to interdisciplinary research and multiple investigator grants. The creation of an interdisciplinary program offers a unique bottom-up approach to facilitate research discovery and scholarly productivity among neuroscience researchers across campus.

- 5. Efficiencies and/or cost savings:** How might the proposed initiative contribute to increased efficiencies and/or cost savings, for example by reducing administrative positions (e.g. chairs/directors), sharing staff support services and/or by sharing facilities?

The proposed initiative will be designed to take advantage of existing coursework within CAS and courses within the broader WMU catalog serving as electives. Administrative resources would be utilized across the departments involved in developing the curriculum. Initially applicants will submit their graduate application to the department that houses the potential research mentor, who would be duly considered a member of the Neuroscience graduate program. Upon request, the student would be transitioned to the Neuroscience PhD program. This will serve to reduce the administrative burden in the early stages of this program. After the program is well established, we anticipate creating a separate application portal and admissions committee.

- 6. Impact on course offerings and workload:** At present, proposed initiatives will only be feasible and sustainable if they can be supported by existing resources, including instructional capacity, faculty and staff time, and facilities. Will the proposed initiative streamline existing course or program offerings? Could the initiative help create more equitable and sustainable workload for faculty, for example, by reducing the need to offer under enrolled courses, reducing the frequency of course offerings or eliminating the need to teach some courses?

The proposed program does not require additional hiring of faculty or graduate assistants. At its inception, existing resources will be utilized. The faculty assigned to this program will seek extramural funding to secure additional resources, such as future graduate assistant lines. The goal of the program is to attract more students to attend WMU and increase enrollment in selected courses.

- 7. Additional Information:** What additional information would you like to provide in support of this proposal?

Unlike some STEM fields, there is a broad diversity of applicants to Neuroscience PhD programs. Fifty-seven percent of Neuroscience PhD applicants are women and 18% have a minority background. Having a graduate program in Neuroscience increases inclusion by offering a program that is pursued by a more diverse applicant pool.

8. Contact

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