

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?

We propose to develop an interdisciplinary M.S. in Computational Engineering within the College of Engineering and Applied Sciences. The initiative would address student preparedness to apply computation to engineering problems. This allows students to model complex physical processes using software and address the future needs of industry to use computation to improve efficiency and sustainability of manufacturing.

We also propose to develop a graduate certificate in Computation that will allow students from across the university to obtain the necessary computing background to apply computing solutions in their own discipline.

- 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?

All departments within the College of Engineering and Applied Sciences will be involved in the M.S. in Computational Engineering. The certificate will allow any department across campus to receive training in basic computational problem solving.

- 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?

The M.S. in Computational Engineering will draw students interested in interdisciplinary studies and will provide training in computation applied to a variety of engineering problems. The graduate certificate will be open to anyone interested in getting a foundation in computing as applied to a range of scientific and engineering disciplines.

- 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?

The M.S. in Computational Engineering is interdisciplinary in nature. The program will promote interdisciplinary computational research by connecting domain researchers and students with experts in computation. This will create new opportunities for external funding.

- 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?

No new courses will be added for this degree. The goal will be to fill existing courses that have capacity with new students.

- 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 initiatives will add students to existing courses with capacity. No new instructional resources are required. For the M.S. degree, existing courses will be selected and taught in multiple departments.

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

A number of departments in CEAS have so far expressed considerable interest in the M.S. in Computational Engineering.

8. Contact

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