

## Memorandum

Date: 20 March 2012

To: University Senate

From: Thomas A. Discenna, Chair  
Senate Planning & Review Committee

Re: Proposal for a Ph.D. in Applied and Computational Physics

The Senate Planning Review Committee (SPRC) reviewed the proposal from the Department of Physics for a new degree program leading to a Doctor of Philosophy. The SPRC read, reviewed, and discussed the proposal and offers the following summary and conclusions.

### Summary

The Department of Physics of the College of Arts and Sciences (CAS) proposes a new degree program of graduate education leading to a Ph.D. in Applied and Computational Physics. The proposed program contains a common core with concentrations in Applied Physics and Computational Physics. According to the department the degree is intended to “prepare graduates for industry and academic careers in areas related to various experimental and theoretical aspects of one of the largest areas in physics: Materials Sciences.” For example, the Applied Physics concentration may lead to employment in the “semiconductor sector, alternative energy (solar, wind), automotive-related research, and similar high-tech industries.”

The Department projects 4 students in the first year of the program with incremental increases in each year following before reaching a steady state of 15 students in the fifth year. The Department indicates that an informal survey of undergraduate students demonstrate an interest in pursuing a degree in Physics at OU and that some students have pursued such degrees at other institutions.

The Department rationalizes this new program on the basis of the importance of study in the Physical Sciences for economic development. The Department notes that, “in the framework of the American Recovery and Reinvestment Act, that funding of fundamental scientific research has significantly increased.” Further, the Department maintains that the program builds on current faculty strengths, noting that members of the Physics have been consistently successful in receiving federal funding for their research endeavors.

The Department has identified three schools in the state of Michigan as benchmarks for the program under review: Michigan Technological University, Western Michigan University, Central Michigan University. The Oakland University program is differentiated from these programs due to its specific focus on Applied and

Computational Physics. The degree programs at MTU and WMU are more “traditional programs without a well-defined focus in specific fields.” The CMU program is more focused but in the area of the Science of Advanced Materials which does not have a direct overlap with the concentrations being developed by OU. Moreover, the Department argues that recent improvements to current facilities and the large number of international faculty will make the program competitive with its benchmarks.

The Department anticipates hiring one new faculty member, a theorist in computational physics, in year four and requires a visiting professor for the first three years of the program. The Library report indicates sufficient resources for the program.

The SPRC has identified the following as the strengths of this program:

1. The program builds on current faculty strengths in both Applied and Computational Physics. The implementation of a graduate program will increase the research productivity of an already active and successful faculty.
2. The focus on Computational Physics puts OU in a competitive position with its peer institutions in the state.
3. Given the modest size of the program, enrollment projections are clearly attainable.
4. The employment prospects for graduates of the program seem excellent.
5. The program is interdisciplinary, bringing together faculty from the Department of Chemistry, Mathematics, Mechanical Engineering and Electrical Engineering.
6. The international reputations and backgrounds of current faculty give the program the ability to increase the international reach of Oakland University in competing for students.

The SPRC identified no serious concerns or weaknesses regarding this proposal. Thus, by a vote of 4-0, with three members absent, we offer our support for the Ph.D. in Applied and Computational Physics.