SPECIAL REPORT

OF THE

ACADEMIC MATTERS AND
GRADUATE COUNCILS

concerning

CREATION OF AN ACCELERATED
MASTER’S PROGRAM: PHYSICS
(#4512)

Presented at the
784th Regular Meeting of the Faculty Senate
February 14, 2019

COUNCIL MEMBERSHIP

ACADEMIC MATTERS COUNCIL


GRADUATE COUNCIL

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The proposed accelerated Master’s program would allow undergraduates to take up to 9 credits of graduate-level coursework during their senior year, with the credits applied to the Master’s degree. The credits used for the Master’s program cannot also be used to satisfy BS degree requirements.
The Graduate Council recommends approval of this proposal.

I. Accelerated Master’s Program

Title: Accelerated Master’s Degree in Physics

Proposed Starting Date: (Date or Semester) 2018-01-02

II. Proposal Development

A. Briefly describe the Proposal

The Physics Department proposes to create an accelerated Master’s program that students would be admitted into during their junior or senior year. Students would complete the Master’s degree in one additional year of study at UMass. The department already has a Master’s program.

B. Provide a brief overview of the process for developing the proposal.

The Department Head formed a committee to consider practical aspects of creating an accelerated Master’s program in the department. The committee wrote a proposal for the program, which was distributed to the faculty. Input to the proposal was invited from the faculty. A faculty meeting was called to discuss the Master’s proposal, and the proposal was unanimously approved by the Department.

Purpose and Goals

Describe the proposal’s purpose and the particular knowledge and skills to be acquired and provide a rationale for creating this accelerated degree program.

We believe this degree option will be attractive to undergraduate students for the following reasons: (i) the student needs an extra semester in residence to graduate, because of double major requirements for example, and an extra semester allows them to complete a Master’s degree; (ii) the student is interested in getting a PhD in Physics or some other field, and a Master’s degree can help prepare for a PhD program; and (iii) the student wants a specialized Master’s to help prepare for jobs in industry.

We believe this program is a good match to the educational mission of the Department: (i) Broadening the educational mission of the Department: as a public university, UMass has a mission to train students with a broad range of post-graduate career interests, including students with little interest in becoming professors or PhD level researchers. Students would use their MS degree to work in industry or teach.

(ii) There is very considerable interest among undergraduates in our department for a 5th year Master’s program. Many of our best students are engaged in research with faculty, and would use the extra year to continue their research, as well as to take graduate level courses before applying for a Ph.D. program.
(iii) Building student numbers in the graduate program. The number of incoming graduate students over the past decade has averaged 13, making it difficult to build a cohort of students in the incoming graduate class. Master’s students will increase student numbers in the graduate courses. (iv) Many students are double majors. If students seek an additional challenge, they should have an opportunity to build on their physics knowledge by doing an MS.

Particular skills and knowledge in the MS program would be in areas including data analysis, scientific instrumentation, electronics, and optics.

Accelerated Master’s Information

Does the accelerated master's option apply to all master's degrees in this field, or only to certain tracks or concentrations?

Applies to all master's degrees in the field.

What type of degree program does this accelerated master's option pertain to?

Note: second and third require separate approval.

An existing degree

Comments: Master’s degree in Physics.

Describe the projected course sequence for this degree and the timeline to completion for students.

Fall Senior year:
Choose one class from 531 Electronics (4cr)#, 556 Nuclei (3cr)#, 568 Cosmo (3cr)#, or 596 I.S. (3cr)+.

Spring Senior year:
Choose two classes from 553 Optics (4cr)#, 558 Solid State (3cr)#, or 596 I.S. (3 cr)+.

First semester of Master’s study:
605 Math methods (4cr), and 691 Colloq. (1cr). Choose two classes from 531 Electronics (4cr)*, 596 I.S. (3cr)+, or 601 Mech (3cr)

Second semester of Master’s study:
606 E&M (3cr), 614 QM I (3cr), and 691 Colloq. (1cr). Choose one course from 553 Optics (4cr)*, 558 Solid State (3cr)*, or 596 I.S. (3cr)+.

# Can’t be used to satisfy BS degree requirements.
* Excluded if already taken
+ GPD approval required

What undergraduate degree program is this accelerated Master’s associated with, if any.

BS in Physics
If this proposal requires no additional resources, say so and briefly explain why. If this proposal requires additional resources, explain how they will be paid for. For proposals involving instruction, indicate how many new enrollments are expected and whether the courses have room to accommodate them.

The proposed courses for the Accelerated Master’s program are all on the books, and taught every year for the benefit of our undergraduate and graduate students. No new courses must be taught. The department plans to admit no more than 10 students per year in the advanced master program. This would not tax the capacity of the 500 and 600 level courses in the department.

Provide the curriculum to the applicable Master’s degree as it currently appears in the Graduate Bulletin and explain how this curriculum will be scheduled over the student's undergraduate and graduate careers. Note that total number of credits must be 30 plus the minimum number required for undergraduate degree (generally 120, making total number of credits required 150).

Note: For Master's programs under 36 credits, a maximum of 9 graduate-level credits taken as an undergraduate may be applied to both degrees. For Master's programs over 36 credits, a maximum of 12 graduate-level credits taken as an undergraduate may be applied to both degrees.

First semester of Master’s study:
605 Math Methods (4cr), and 691 Colloq. (1cr). Choose two classes from 596 I.S. in ILab (4 cr)+, 596 I.S.(3 cr)+, or 601 Mech (3cr).

Second semester of Master’s study:
606 E&M (3cr), 614 QM I (3cr), and 691 Colloq. (1cr). Choose one class from 553 Optics (4cr), 558 Solid State (3cr), or 596 I.S.(3cr)+.

Third semester of Master’s study:
Choose three classes from 531 Electronics (4cr), 556 Nuclei (3cr), 568 Cosmo (3cr), 596 I.S. (3cr)+, 602 Stat Mech (3cr), or 615 QM II (3cr).

+ GPD approval required

Who can apply to pursue this accelerated master’s degree? 
_UMass students, Five College Students, Students in specific degree programs, etc._

Restricted to UMass and Five College undergraduate students majoring in Physics

Are there any admissions exceptions to this degree program, such as a waiver of the GRE requirements?

Yes

Comments: The GRE exam would not be required.

MOTION: That the Faculty Senate approve the Creation of an Accelerated Master’s 16-19 Program: Physics, as presented in Sen. Doc. No. 19-040.