

MEMO

To: Thomas Borchert, President of the Faculty Senate
From: Stephen Everse (Chair), Christopher Burns, Louis deRosset, Anthony Julianelle, Catherine Paris, Christie Silkotch, Cory Teuscher, Timothy Tourville, and Scott Van Keuren
Date: March 13, 2022
Re: Review of A Proposal to Transition the Physics Department from the College of Arts & Sciences to the College of Engineering & Mathematical Sciences

Executive Summary

As required by *Senate Procedures Related to the Establishment, Reorganization, and Elimination of Colleges and Schools*, this committee has reviewed a proposal submitted by CAS Dean Bill Falls and CEMS Dean Linda Schadler to move the Physics Department from the College of Arts & Sciences (CAS) to the College of Engineering & Mathematical Sciences (CEMS). Currently the Physics Department is in crisis: its faculty has shrunk from 15 in 2016 to 8 in 2022. Though the faculty have, through creative scheduling, continued to offer both the Department's service courses and those in support of its major, faculty numbers are insufficient to support a robust program of research and graduate education. Given the ongoing financial crisis in CAS, new faculty hires are unlikely to happen in Physics in the near future, especially with the need for expensive start-up funds. To address the situation in which the Physics Department currently finds itself, a move of Physics from CAS to CEMS was proposed by the Deans of those units after being initiated by the Physics faculty. The Physics faculty unanimously endorsed the proposal, which has also been supported by the faculties of both the sending and the receiving colleges. The proposed Physics move would include current faculty and staff, the Ph.D. programs in both Physics and Materials Science, the Physics B.S. degree program (but not the B.A., which would remain in CAS), and the minors in Physics and Astronomy.

Physics is not only a core liberal arts discipline, it is also foundational to many STEM fields; therefore, it is important that UVM have a strong and vibrant Physics Department that excels at its teaching and research missions. To that end, CEMS has committed to hiring – including startup costs - two tenure-track Physics faculty members in FY23 and a third in FY24. If enrollments continue to grow, a fourth tenure-track hire could occur in FY25. CEMS will also assume responsibility for Physics space costs. To support the move of Physics from

CAS to CEMS, Provost has committed moving subvention funds of \$550,000/year for three years from CAS to CEMS with the endorsement of both Deans.

Following review and discussion of the proposal, the ad hoc committee voted unanimously to recommend that the Senate approve the proposal. Further, we anticipate that the interactions promoted by the movement of the Physics Department into CEMS will strengthen the research, teaching, and scholarship missions of both units.

If approved by the Faculty Senate and the UVM Board of Trustees, the move of Physics to CEMS would be effective July 1, 2022.

Description and Rationale

Over the last 6 years, the Physics Department has, as a result of retirements and an untimely death, decreased in size from 15 faculty members to 8. Though it has, as a result of creative scheduling, continued to offer its broad portfolio of service and majors courses, the loss of faculty bench strength has significantly impacted its graduate programs and research mission. The Department supports Physics M.S. and Ph.D. programs and contributes to the interdisciplinary Materials Science Ph.D. program, which it shares with Chemistry (also in CAS) and with CEMS. The recent APR of the Materials Sciences program highlighted the contribution the program makes to the UVM research portfolio. In the last few years, more than 90% of the collaborative research proposals between CAS and CEMS involved Physics and CEMS faculty, including participation in the NASA-funded Vermont Space Grant Consortium. A strong Physics Department is evidently critical to the continued success of Engineering and Mathematical Sciences.

CEMS, currently on stronger financial ground than CAS, is in a position to absorb the Physics Department and to support its continued growth with an investment in three tenure-track faculty hires over the course of the next two years. (A fourth might also be added if enrollments continue to grow.) CEMS anticipates that the opportunity for productive research collaborations, growth of vibrant graduate programs, and development of innovative pedagogies in the undergraduate curriculum will prove its decision to invest in Physics a sound one.

The committee explored why CEMS can make a substantial investment in Physics at this time while CAS is unable. When the IBB resource allocation model was implemented in 2016, student enrollments in CAS were declining. Vice President Cate and Dean Falls indicated that expenses were rapidly outpacing income in the CAS, leaving the College with a year over year deficit and making it difficult for them to replace faculty who retired or left the University. Both Vice President Cate and Dean Schadler describe CEMS as small and nimble at the start of IBB. Their small classes had room to absorb additional students,

combined with use of non-tenure track faculty, and reduction of space allowed them to build up a substantial reserve fund, which they are now proposing to invest in Physics.

Goals

Goals of the proposed Physics Department move from CAS to CEMS are to:

- 1) build a strong and stable research portfolio that is collaborative with the strengths on campus and supports “Amplifying our Impact.”
- 2) support Physics’ commitment to high quality undergraduate instruction and further innovate in physics education.
- 3) revitalize the Physics Department through investment in TT faculty.
- 4) build a Physics Department that is financially viable and supports the need for physics courses across the University.

Impact

The impact of the Physics move from CAS to CEMS on current undergraduate and graduate students is expected to be minimal; the Department’s move would not impede their route to degree completion. Students entering in the Fall of 2022 will be advised that they can complete a B.S. in Physics in CEMS or a B.A. in Physics in CAS. These students will have access to:

- Stronger introductory physics courses
- An engineering physics BS degree
- Preservation of courses in astronomy

New hires in Physics will not only enhance research opportunities for graduate and undergraduate students, they will augment course offerings for students at all levels. Presently the Physics Department teaches required courses for many units across campus and CEMS will be well incentivized to enhance these courses to maintain these interdisciplinary connections.

Budget

It is anticipated that during the transition period, the impact on the budget of each of the two colleges, CAS and CEMS, will be minimal, an outcome that will be achieved by transferring to CEMS over the course of the next three years \$550,000 subvention currently being directed to CAS.

Evaluation Metrics

The success of the Physics Department in CEMS will be evaluated against the following criteria established for all CEMS departments, as articulated in the proposal:

- Hire and mentor tenure-track faculty to develop strong and stable research groups, and to become outstanding teachers;
- Have a stable MS and PhD program. CEMS is moving towards a goal of an equal number of internally and externally supported PhD programs with a similar number of either self-supported or externally supported MS students;
- Hire and mentor non-tenure track to become exceptional educators;

- Balance service courses, required courses and electives to ensure an appropriate SCH/faculty member to create a financially stable department.
- Participates in recruiting that either maintains or grows its undergraduate and graduate programs.
- Receives strong student teaching evaluations and focuses on continuous improvement.
- Creates an affirming and welcoming environment for all faculty, staff, and students.

Summary of Input Received During the Public Comment Period

Per Faculty Senate policy, the proposal to Transition the Physics Department was circulated to all UVM faculty for public comment; the comment period was open for two weeks.

Comments were received both in support of the proposal and against it. Concerns focused largely on the effect of resource distribution under IBB; how it came to be that CEMS could afford Physics while CAS could not; whether this move is justified solely as a workaround to evade the constraints imposed by our budgeting rules, so that the Physics department can access existing University funds for start-up support. Questions were also raised about prospects for basic research in Physics following its move to CEMS. These points were addressed in a series of conversations between the review committee and the senior leaders named below.

The move of Physics to CEMS is viewed by about half of the respondents as a big win not only for Physics, which would be nurtured financially, but also for CEMS, whose research and scholarship – especially in Materials Science - is closely linked to the fortunes of Physics: a strong Physics Department would benefit the research, teaching, and scholarship goals of Engineering and Mathematical Sciences.

Summary of Committee Actions

This ad-hoc review committee for the Transition of Physics proposal was charged on January 20th by Senate President Thomas Borchert. We met for the first time on January 26 to discuss the proposal, review input received during the public comment period, identify people with whom we should meet, and develop questions that needed exploration. Following that initial meeting, we met with Physics Chair Randy Headrick (February 7), Dean Bill Falls and Dean Linda Schadler (February 10), and Provost Patty Prelock and Vice-President Richard Cate (February 24). The committee met for the last time on March 4 to vote on the proposal and discuss the report.

Final Recommendation

The ad-hoc committee unanimously endorses the move of the Physics Department from the College of Arts and Sciences to the College of Engineering and Mathematical Sciences.