10KS0241MS: TEACHING OF PHYSICS, MS (ONLINE)

In Workflow

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Approval Path

1. Wed, 18 Mar 2026 16:22:25 GMT
   Emily Stuby (eastuby): Rollback to Initiator
2. Wed, 25 Mar 2026 20:17:34 GMT
   Brianna Vargas-Gonzalez (bv4): Approved for U Program Review
3. Tue, 07 Apr 2026 15:32:44 GMT
   Elaine Schulte (eschulte): Approved for 1244-PHYCS Committee Chair
4. Tue, 07 Apr 2026 15:42:42 GMT
   S. Lance Cooper (slcooper): Approved for 1244-PHYCS Head
5. Tue, 21 Apr 2026 18:35:29 GMT
   Keri Pipkins (kcp): Approved for KP Committee Chair
6. Tue, 21 Apr 2026 18:36:08 GMT
   Brittany Brunson (bhitchi2): Approved for KP Dean
7. Tue, 21 Apr 2026 18:37:35 GMT
   Tom Teper (tteper): Approved for University Librarian
8. Tue, 05 May 2026 14:44:57 GMT
   Allison McKinney (agrindly): Approved for Grad_College
9. Wed, 06 May 2026 03:28:11 GMT
   Suzanne Lee (suzannel): Approved for COTE Programs
10. Mon, 17 Aug 2026 14:28:55 GMT
    Brooke Newell (bsnewell): Approved for Provost

History

1. Mar 25, 2019 by Deb Forgacs (dforgacs)
2. Jul 1, 2019 by Mary Lowry (lowry)
3. Sep 15, 2022 by Mary Lowry (lowry)
4. Feb 23, 2023 by Brooke Newell (bsnewell)

Date Submitted: Mon, 23 Mar 2026 18:05:48 GMT

Viewing: 10KS0241MS : Teaching of Physics, MS (online)
Last approved: Thu, 23 Feb 2023 21:57:55 GMT
Last edit: Mon, 12 Oct 2026 19:31:55 GMT

Changes proposed by: Keri Pipkins

Proposal Type:

Major (ex. Special Education)

This proposal is for a:

Revision

Administration Details

Official Program Name

Teaching of Physics, MS (online)

Sponsor College

Grainger College of Engineering

Sponsor Department

Physics

Sponsor Name

Vidya Madhavan

Sponsor Email

vm1@illinois.edu

College Contact

Keri Carter Pipkins

College Contact Email

kcp@illinois.edu

College Budget Officer

Tessa Hile

College Budget Officer Email

tmhile@illinois.edu

If additional stakeholders other than the Sponsor and College Contacts listed above should be contacted if questions during the review process arise, please list them here.

Tim Stelzer: tstelzer@illinois.edu & Maggie Mahmood: maggiesm@illinois.edu

Does this program have inter-departmental administration?

No

Catalog Term

Desired Effective Catalog Term

Fall 2026

Effective Catalog

2026-2027

Proposal Title

Proposal Title (either Establish/Revise/Eliminate the Degree Name in Program Name in the College of XXXX, i.e., Establish the Bachelor of Science in Entomology in the College of Liberal Arts and Sciences, include the Graduate College for Grad Programs)

Revise the Master of Science in Teaching of Physics in the Grainger College of Engineering and the Graduate College

Are there other related proposals that should be considered simultaneously with this one? If yes, please list the program keys and/or titles. Consider Majors, Minors, Concentrations & Joint Programs in your department. Please know that this information is used administratively to move related proposals through workflow efficiently and together as needed. Format your response like the following "This BS proposal (key 567) is related to the Concentration A proposal (key 145)"

Program Justification

Provide a brief description, using a numbered item list, of the proposed changes to the program.

Provide a list of numbered items of what changed and why each change was necessary.

1.Specifying requirements within the existing framework: Core Courses: PHYS590, PHYS591, PHYS592, PHYS593, PHYS594 (15 hours), added min of 5 and max 8 credit hours of PHYS 597: individual study (previously only stated the maximum of 8); Up to 8 credit hours of education courses in C&I or EPSY at the 400 or 500 level (previously min of 8 hrs with no SUBJ specified); and a physics elective at the 400 or 500 level.
Reason: We have included more specific requirements in the program of study. These proposed specifications now include five new courses that have been tailor-designed by the Department of Physics (PHYS590 through PHYS594) to suit the needs of the intended population of in-service high school teachers (a population with which we have been working for over 6 years). Here is a list of the new program goals that these newly-specified requirements reflect:
• Focuses on inquiry-based laboratory experiences for high school students
• Emphasizes development and deployment of prelectures, checkpoints, and homework assignments; supports teachers in using student data to evaluate student learning and inform scaffolding of course assignments
• Promotes the design of in-class exercises to support productive student group engagement in physics problem solving
• Provides opportunities for teachers to lead their peers by designing and facilitating a professional development workshop for other teachers pertaining to their practice and curriculum during the summer meetings
• Gives teachers critical exposure to quantum information science, such that teachers would be able to teach a lesson or short unit on it to their high school class
• Includes a focus on Physics Education Research relevant to the high school teaching context and supports teachers in integrating research-based practices into their high school curriculum
• Requires teachers to propose and conduct action research in their own physics classroom that is well-aligned with current scholarly work in Physics Education Research

2. Limiting the program to in-service high school physics teachers

Reason: Creating an online program for in-service high school physics teachers to earn master's degrees in physics fills a societal need for supporting the professional growth and disciplinary expertise of physics teachers across Illinois. There is a shortage of secondary-level physics teachers across the nation, and an even more dire shortage of highly qualified physics teachers. As a result, physics teachers are some of the most geographically and pedagogically isolated teaching professionals. This program will at once allow teachers to work toward a master's degree (which affords them better salaries and the ability to teach dual-credit courses), interface with other physics teachers, and continue to transform their local school communities.

3. Moving the program entirely online to suit the in-service physics teacher population it intends to serve
Reason: Offering the program online would allow us to serve a much broader demographic of in-service teachers across the state. The Physics Department has made a commitment to supporting secondary physics education through a partnership program called Illinois Physics and Secondary Schools (IPaSS). This program currently serves 60 high school physics teachers from across the state through a professional development program, and by the 2026-2027 school year will support at least 65 teachers (this makes up ~10% of the schools that offer physics across the state of Illinois). Currently, all teachers in IPaSS are paid for their work in the program and receive research-based instructional materials from the University. The majority of teachers in this group have expressed interest in gaining graduate credits instead of earning a stipend and using the credits earned to pursue a master's degree in physics. Thus, we have identified a societal need and a specific potential graduate student population that is already engaged with the university in taking steps to improve their teaching practice. Offering this program online is the only feasible way to accommodate this group's needs.

4. Updated Learning Outcomes
Reason: Updated learning outcomes to make them more specific and measurable.

5. Added Assessment Plan
Reason: Fields were previously blank.

6. Added maximum program length, credit hours, and GPA min.
Reason: These have not changed. Fields were previously blank.

7. Changed admission status
Admission will resume upon approval of revision.

8. Added Admission Requirements.
Reason: Field was previously blank.

9. Added Enrollment Estimates.
Reason: Fields were previously blank.

10. Added Matriculation Terms.
Reason: Fields were previously blank. Plan to admit Fall, Spring, & Summer to offer flexibility for in-service teachers. Courses will be offered during summer.

11. Requested tuition Grad ONLNE Base Rate, consistent with online graduate programs in the college of education.
Reason: This rate is consistent with the rate charged for graduate programs for in-service teachers. This rate was already approved by our college and the graduate college as a NDEG rate for Teaching of Physics courses.

12. Indicated no impact on faculty resources.
Reason: The PER team is already teaching the courses required for this degree.

13. Responded to Library Resources question after consultation with Physics Librarian
Reason: Field was previously blank. Program has not and enrollment for several years.

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/ proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects outside of the sponsoring department impacted by the creation/revision of this program?

Yes

Please email the Department Head or a CIM User in the Department Head role of the units that own the courses that are impacted by the creation/revision/phase down or elimination of this program. For example, if you are adding a course, you will need support from the course owning unit to do so. Likewise, if you are removing a course or adding additional courses where enrollment in existing courses in the program of study could be impacted, you will need acknowledgement from the course owning unit. If the program has potential for perceived overlap with another unit on campus, you should have consultation with the other unit/stakeholders. Once this is complete, acknowledge that you have done so below.

Acknowledged

Indicate which departments/units/stakeholders were notified/consulted by listing the name of the department(s). For example, if you are adding a course owned by the Department of Philosophy and a course owned by the Department of Theatre and notified the units accordingly, you would include in the box below: 1. Department of Philosophy; 2. Department of Theatre.

1. Department of Curriculum & Instruction;
2. Department of Educational Psychology

Please attach any letters of support/acknowledgement for any Instructional Resources. Consider faculty, students, and/or other impacted units as appropriate.

TeachingPhysics MS Support - CI JD.pdf
EDPSY-Support-Teaching-MS-Physics Department.docx

Program Features

Academic Level

Graduate

Does this major have transcripted concentrations?

No

What is the longest/maximum time to completion of this program?

5 years

What are the minimum Total Credit Hours required for this program?

32

What is the required GPA?

2.75

CIP Code

131329 - Physics Teacher Education.

SOC Code(s) (Should be completed only for Certificates:)

Does this program prepare graduates for entry into a career or profession that is regulated by the State of Illinois?

No

Program of Study

Revised programs

Side-by-Side_TeachingofPhysicsMS_Revision.xlsx

Statement for Programs of Study Catalog

Requirements

Code	Title	Hours
~~At least 2 education courses selected in consultation with the Physics Advisor based on the student's interests~~		~~8~~
~~Elective courses (subject to Other Requirements and Conditions below)~~		~~24~~
Core Courses		**15**
PHYS 590	Secondary Physics Curriculum Design for In-Service Teachers I	
PHYS 591	Secondary Physics Curriculum Design for In-Service Teachers II	
PHYS 592	Secondary Physics Curriculum Design for In-Service Teachers III	
PHYS 593	Introduction to Quantum Information Science for Curriculum Design	
PHYS 594	Quantum Information Science Curricular Development and Delivery	
Individual Project		**5-8**
PHYS 597	Individual Study (two terms)	
Elective Courses (subject to Other Requirements and Conditions listed below)		**9-12**
Total Hours		**32**

Other Requirements and Conditions

Requirement	Description
Other Requirements and Conditions may overlap	
~~A minimum 16 PHYS credit hours, with 8 at the 500 level.~~	
~~A maximum of 8 hours of PHYS 597 (or other individual study) may be applied toward the elective course work requirement.~~	
~~A minimum of 12 500-level credit hours applied toward the degree.~~	
A minimum 24 PHYS credit hours, with a minumum 15 credit hours at the 500-level.	
A minimum of 5 and maximum of 8 credit hours of PHYS 597 may be applied toward degree requirement.	
A minimum of 4 credit hours of Electives must be from PHYS (not including PHYS 597).	
Up to 8 credit hours of courses in C&I or EPSY at the 400 or 500-level may count towards electives.	
Minimum GPA:	2.75

Corresponding Degree

MS Master of Science

Program Regulation and Assessment

Plan to Assess and Improve Student Learning

Illinois Administrative Code: 1050.30(b)(1)(D) Provision is made for guidance and counseling of students, evaluations of student performance, continuous monitoring of progress of students toward their degree objectives and appropriate academic record keeping.

Are the learning outcomes for the program listed in the Academic Catalog?

Yes

Student Learning Outcomes

1. Design and implement inquiry-based laboratory experiences for high school students

2. Develop and/or deploy prelectures, checkpoints and homework assignments; use student data to evaluate student learning and inform scaffolding of course assignments

3. Develop in-class exercises to support productive student group engagement in physics problem solving

4. Design and facilitate a professional development workshop for other teachers pertaining to their practice and curriculum during the summer in-person meetings

5. Gain exposure to quantum information science such that teachers would be able to teach a lesson or short unit on it to their high school class

6. Consider Physics Education Research, and other educational theories relevant to the high school teaching context, and integrate these frameworks and research-based practices into their high school physics curricula

7. Propose and conduct action research in their own physics classroom that is well-aligned with current scholarly work in PER

Did you make any revisions to the learning outcomes you copied and pasted from the current academic catalog?

Yes

Program Description and Requirements Attach Documents

Delivery Method

This program is available:

~~On Campus - Students are required to be on campus, they may take some online courses.~~
Online Only - The entire program is delivered online, students are not required to come to campus.

Describe the use of this delivery method:

This program was originally an on-campus program. It is being revised to an online-only program to meet the needs of the target audience, in-service teachers.

Admission Requirements

Is this revision a change to the admission status of the program?

Yes ~~No~~

Please describe the admission status change, whether suspension or resumption of the admission status:

Yes. Admission will resume.

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Hold (or, at the end of the current academic year, be a candidate for) a baccalaureate degree in a scientific discipline or science education from an accredited college or university in the United States or from an approved institution of higher learning abroad.

Have a grade point average (GPA) of at least 3.0 on a scale of A = 4.0, computed for the last 60 semester hours (90 quarter hours) of undergraduate work and a minimum GPA of 3.5 for previous graduate degree work, as required by the Graduate College.

Have at least one semester of high school physics teaching experience; currently teach at least one high school physics course. This requirement can be waived in extenuating circumstances wherein your school is not regularly offering physics, but you are reserved for the assignment.

1 Letter of Reference

Complete the online admissions application to the University of Illinois Graduate College, which includes a statement of purpose.

The GRE is not required.

Enrollment

Describe how this revision or phase down/elimination will impact enrollment and degrees awarded. If this is an elimination/phase down proposal include the plans for the students left in the program.

Year One Estimate: 10 students
5th Year Estimate: 30

What is the matriculation term for this program?

~~Fall ONLY~~

Spring/Summer/Other

Please give an explanation of what matriculation term(s) can be used for this program and why.

The program plans to admit students in Fall, Spring, and Summer.

Budget

Are there budgetary implications for this revision?

Yes

Please describe the budgetary implications for this revision, addressing applicable personnel, facilities, technology and supply costs.

The program is intended to generate tuition revenue via online tuition. No increase in staff or resources as the faculty & staff teaching and supporting these courses are already doing so.

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

No

Additional Budget Information

Attach File(s)

Financial Resources

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

Graduate Base Online

Are you seeking a change in the tuition rate or differential for this program?

Yes

If yes, briefly explain what tuition change you will make for this program, e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

Requesting the Graduate Base Rate to align with the online tuition rate in the College of Education because this program is speicifically for current High School teachers.

Is this program requesting self-supporting status?

No

Attach letters and self-supporting documents as applicable

Program Support

Provide a brief description of the support for this program, including the financial, faculty, space, advisors/staff. Discuss plans to acquire any additional support that will be needed. If new or additional facilities or significant improvements to already existing facilities is needed, describe the Facility Need, Year 1 and 5 cost, and any other applicable notes.

As this is an online program, it does not require additional facilities or improvement of existing ones. Several courses in the program of studies are already offered on a regular basis by the Departments of Physics, C&I, and EPSY (see accompanying letters for consent of these departments to include their courses in our program), so these will not require additional resources either.

The core courses in the program require staffing, but work has been done to consider and mitigate staffing resources. First, the instructors of the curriculum development course series (PHYS590, PHYS591, and PHYS592) staff a parallel physics teacher professional development program (IPaSS) that serves a much larger non-credit-seeking group of teachers, for which there is some overlap in curriculum. Thus, a portion of the planning and delivery of the curriculum for these courses is accomplished through that channel; the planning and delivery of the additional coursework to the credit-seeking subset of teachers will be a voluntary extension of this work by one instructor per term (fall, spring, summer). Second, the courses in quantum information science (QIS) (PHYS593 and PHYS594) will be offered as a sequence every other academic year (fall and spring respectively) staffed by one instructor of record. Depending on the instructor and their other teaching responsibilities for that semester, service-in-excess may be required.

Attach any supporting documents as applicable.

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

The proposal team consulted with Mary Schlembach, the Physics Librarian, and, based upon her input, determined that the Library's resources, collections, and services are sufficient to meet the needs of the program outlined in this proposal.

EP Documentation

EP Control Number

EP.27.030

Attach Rollback/Approval Notices

Non-EP Documentation

U Program Review Comments

Rollback Documentation and Attachment

DMI Documentation

Attach Final Approval Notices

Banner/Codebook Name

MS:Teaching of Physics -UIUC

Program Code:

10KS0241MS

Minor Code

Conc Code

Degree Code

MS

Major Code

0241

Senate Approval Date

Senate Conference Approval Date

BOT Approval Date

IBHE Approval Date

HLC Approval Date

DOE Approval Date

Effective Date:

Program Reviewer Comments

Emily Stuby (eastuby) (Wed, 18 Mar 2026 16:22:25 GMT): Rollback: Rollback Requested
Emily Stuby (eastuby) (Tue, 24 Mar 2026 15:45:03 GMT): Updated official program name to meet data standards and to highlight the change to online only.

Key: 412