

# CURRICULUM AND INSTRUCTION

## Integrated Undergrad-Grad Programs Integrated B.S. in Biology and M.Ed. in Curriculum and Instruction

This Integrated Undergraduate/Graduate (IUG) degree program combines the [Undergrad Degree in Major] with the [Grad Degree in Major] offered at the following campuses:

### Undergraduate Degree

- Abington
- Altoona
- Beaver
- Berks
- Brandywine
- Harrisburg
- Lehigh Valley
- Schuylkill
- Scranton
- University Park
- York

### Graduate Degree

- University Park
- World Campus

The graduate portion of this IUG is currently offered as face-to-face residential instruction. While the undergraduate curriculum for this IUG may be completed at multiple campuses, the ease and feasibility of completing the integrated program may be heavily dependent upon the location of the graduate instruction. Please discuss the feasibility of completing the IUG with a representative for the graduate program before beginning the application process.

Requirements listed here are in addition to requirements listed in GCAC-210 Integrated Undergraduate-Graduate (IUG) Degree Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-210-integrated-undergraduate-graduate-degree-programs/>).

This Integrated Undergraduate/Graduate (IUG) degree program combines the Bachelor of Science in Biology with the Master of Education in Curriculum and Instruction, Science Education emphasis. The program is designed to be completed in five years. The program enables highly qualified and motivated students to delve deeply into a scientific content area and to pursue graduate level preparation in the theory and practice of teaching. Most students in this option intend to seek Pennsylvania

teacher certification, and a semester of student teaching comprises part of their final year of studies. The IUG may also be suitable for a student who does not need to become certified, because they intend to teach in a private secondary school or a non-formal educational setting; in such cases, the second graduate semester will be a program of studies determined through consultation with the graduate advisor and customized for the student's specific needs.

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Students must apply to and meet admission requirements of the Graduate School (<http://www.gradschool.psu.edu/prospective-students/how-to-apply/>), as well as the graduate program in which they intend to receive their master's degree. Before applying to the Graduate School, students must have completed entrance to their undergraduate major and have completed no less than 60 credits. Students must be admitted no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree. Transfer students must have completed at least 15 credits at Penn State to enroll in an IUG. Application materials to be submitted include:

- a current undergraduate transcript,
- statement of purpose,
- draft plan of study,
- two letters of recommendation,
- and concurrent submission of an application for master's study to the graduate program in Curriculum and Instruction, Science Education emphasis area.

In addition, a minimum GPA of 3.5 in Science and Education courses is required. Admission will be based on a recommendation by the Science Education Program Coordinator in consultation with the Associate Chair for Undergraduate Education in the Biology Department. Additional details about the graduate application procedure can be found in the Admission Requirements section. Applications must be submitted via the Graduate School.

IUG students fulfill all degree requirements for a B.S. in Biology in the Eberly College of Science, listed in the Undergraduate Bulletin (<http://bulletins.psu.edu/undergraduate/>). If a student chooses to leave the program without completing M.Ed. requirements, they may still receive the relevant B.S. degree, after all B.S. requirements are completed.

For the M.Ed. degree, students must earn at least 30 credits at the 400/500 level, at least 18 of them at the 500 level. Degree requirements for the M.Ed. degree are listed on the Degree Requirements tab. One graduate semester is usually devoted to full time student teaching. Additional graduate course work is completed in a second semester. Courses required for the M.Ed. degree include a course in learning theory (e.g., SCIED 552), a course in research methods (e.g., SCIED 558), a course in curriculum (e.g., SCIED 550), and a course in research ethics (CI 590).

Students pursuing teacher certification (the usual option) additionally complete a 500-level EDTHP course, CI 595, and CI 496. SCIED 558, CI 496, and CI 595 comprise the student-teaching semester course load. Students who are not pursuing teacher certification substitute 15 credits of other 400- or 500-level coursework for the student teaching semester;

those courses are selected in consultation with their advisors, in order to address the students' specific career aspirations.

The following courses may be double-counted toward both the B.S. and the M.Ed. degrees, up to a limit of 12 credits: EDTHP 500-level courses, SCIED 411, SCIED 412, and SCIED 500-level courses. Note that at least 50% of credits proposed for double-counting must be at the 500 level. Independent study courses and credits associated with the culminating experience for the graduate degree cannot be double-counted. In addition to the double-counted courses taken during the first four years, the timeline for the M.Ed. is one year that includes these specified courses. The program is designed to be finished in five years.

There are a number of other requirements for Pennsylvania teacher certification, including state-required tests and clearances, as well as course work that can be completed at either the undergraduate or graduate level. Some courses, not enumerated above, that are usually required to satisfy teacher certification requirements include CI 280, SPLED 400, and CI 495C. Please note that changes in Pennsylvania certification requirements are common; students should check the Certification FAQ page at the Penn State Science Education website (<https://ed.psu.edu/academics/departments/departments-curriculum-and-instruction/program-areas/faq-science-education/>) for updates and clarification about the specific requirements that affect them, based on their admission date to the IUG program option. Note also that students in the IUG program option are not required to complete all Penn State teacher certification requirements in order to receive their B.S. and M.Ed. degrees, as long as they have completed the requirements for those degrees, as described in the Undergraduate and Graduate Bulletins. For example, a student who has completed all degree requirements but has not yet received a score for the Pennsylvania-required Biology content exam may be awarded both of the earned degrees.

Students must sequence their courses so all undergraduate degree requirements are fulfilled before taking courses to count solely towards the graduate degree. Students are expected to complete the undergraduate degree requirements within the typical time to degree for the undergraduate major. In the semester in which the undergraduate degree requirements will be completed, IUG students must apply to graduate, and the undergraduate degree should be conferred at the next appropriate Commencement.

## Integrated B.S. in Chemistry and M.Ed. in Curriculum and Instruction

This Integrated Undergraduate/Graduate (IUG) degree program combines the B.S. in Chemistry with the M.ED. in Curriculum and Instruction offered at the following campuses:

### Undergraduate Degree

- University Park

### Graduate Degree

- University Park
- World Campus

Requirements listed here are in addition to requirements listed in GCAC-210 Integrated Undergraduate-Graduate (IUG) Degree Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/>

[gcac-200/gcac-210-integrated-undergraduate-graduate-degree-programs/](#)).

These Integrated Undergraduate/Graduate (IUG) degree programs combine the Bachelor of Science in Chemistry with the Master of Education in Curriculum and Instruction, Science Education emphasis. The programs are designed to be completed in five years. The programs enable highly qualified and motivated students to delve deeply into a scientific content area and to pursue graduate level preparation in the theory and practice of teaching.

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Students must apply to and meet admission requirements of the Graduate School (<http://www.gradschool.psu.edu/prospective-students/how-to-apply/>), as well as the graduate program in which they intend to receive their master's degree. Before applying to the Graduate School, students must have completed entrance to their undergraduate major and have completed no less than 60 credits. Students must be admitted no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree. Transfer students must have completed at least 15 credits at Penn State to enroll in an IUG. Application materials to be submitted include:

- an undergraduate transcript,
- statement of purpose,
- draft plan of study,
- two letters of recommendation,
- and concurrent submission of an application for master's study to the graduate program in Curriculum and Instruction, Science Education emphasis area.

In addition, a minimum GPA of 3.5 in Science and Education courses is required. Admission will be based on a recommendation by the Science Education Program Coordinator in consultation with the Associate Chair for Undergraduate Education in the Chemistry Department. Additional details about the graduate application procedure can be found in the Admissions Requirements section. Applications must be submitted via the Graduate School.

IUG students fulfill all degree requirements for a B.S. in Chemistry in the Eberly College of Science, listed in the Undergraduate Bulletin (<http://bulletins.psu.edu/undergraduate/>). If a student chooses to leave the program without completing M.Ed. requirements, they may still receive the relevant B.S. degree, after all B.S. requirements are completed.

For the M.Ed. degree, students must earn at least 30 credits at the 400/500 level, at least 18 of them at the 500 level. Degree requirements for the M.Ed. degree are listed on the Degree Requirements tab. One graduate semester is devoted to full time student teaching. Additional graduate course work is completed in a second graduate semester. Courses required for the M.Ed. degree include:

Code	Title	Credits
SCIED 552	Science Teaching and Learning	3
SCIED 558	Research Problems in Science Teaching <sup>1</sup>	3
500-level EDTHP course		3

CI 590	Colloquium	1
CI 595	Internship in Curriculum, Supervision, or Instruction <sup>1</sup>	12
500-level course in curriculum (e.g. SCIED 550)		3

<sup>1</sup> Of these, SCIED 558 and CI 595 comprise the student teaching semester course load.

The following courses may be double-counted toward both the B.S. and the M.Ed. degrees, up to a limit of 12 credits: EDTHP 500-level courses, SCIED 411 & SCIED 412, and SCIED 500-level courses. Note that at least 50% of credits proposed for double-counting must be at the 500 level. Independent study courses and credits associated with the culminating experience for the graduate degree cannot be double-counted. In addition to the double-counted courses taken during the first four years, the timeline for the M.Ed. is one year that includes these specified courses. The program is designed to be finished in five years.

There are a number of other requirements for Pennsylvania teacher certification, including state-required tests and clearances, as well as course work that can be completed at either the undergraduate or graduate level. Some courses, not enumerated above, that are usually required to satisfy teacher certification requirements include CI 280, SPLED 400, and CI 495C. Please note that changes in Pennsylvania certification requirements are common; students should check the Certification FAQ page at the Penn State Science Education website (<https://ed.psu.edu/academics/departments/departments-curriculum-and-instruction/program-areas/faq-science-education/>) for updates and clarification about the specific requirements that affect them, based on their admission date to the IUG program option. Note also that students in the IUG program option are not required to complete all Penn State teacher certification requirements in order to receive their B.S. and M.Ed. degrees, as long as they have completed the requirements for those degrees. For example, a student who has completed all degree requirements but has not yet received a score for the Pennsylvania-required Chemistry content exam may be awarded both of the earned degrees.

Students must sequence their courses so all undergraduate degree requirements are fulfilled before taking courses to count solely towards the graduate degree. Students are expected to complete the undergraduate degree requirements within the typical time to degree for the undergraduate major. In the semester in which the undergraduate degree requirements will be completed, IUG students must apply to graduate, and the undergraduate degree should be conferred at the next appropriate Commencement.

## Integrated B.S. in Mathematics and M.Ed. in Curriculum and Instruction

This Integrated Undergraduate/Graduate (IUG) degree program combines the B.S. in Mathematics with the M.Ed. in Curriculum and Instruction offered at the following campuses:

### Undergraduate Degree

- University Park

### Graduate Degree

- University Park
- World Campus

Requirements listed here are in addition to requirements listed in GCAC-210 Integrated Undergraduate-Graduate (IUG) Degree Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-210-integrated-undergraduate-graduate-degree-programs/>).

The Mathematics and Curriculum Instruction with Emphasis in Mathematics Education Integrated Undergraduate-Graduate (MATH/CI-MTHED IUG) Degree Program consists of the integration of required courses for a B.S. in Mathematics Systems Analysis Option, a M.Ed. in Curriculum and Instruction with emphasis in Mathematics Education (MTHED), and Pennsylvania certification for Mathematics Grades 7-12.

The MATH/CI-MTHED IUG is a five-year program for highly qualified students seeking to teach mathematics at the secondary level. A hallmark of the program is its strong statistics strand in combination with its mathematics core. In addition to developing advanced understanding of mathematics and statistics, students will learn how to develop and implement lessons and to incorporate technology and research in instruction designed to reach all students.

Students are expected to complete courses required for the certification program integrated with their undergraduate and graduate experiences and will likely complete one summer in residence. Completion of the IUG (along with earning a passing score on Pennsylvania Department of Education required test[s]) leads to a B.S. in Mathematics, certification in Mathematics Grades 7-12, and a M.Ed. in Curriculum and Instruction.

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Students must apply to and meet admission requirements of the Graduate School (<http://www.gradschool.psu.edu/prospective-students/how-to-apply/>), as well as the graduate program in which they intend to receive their master's degree. Before applying to the Graduate School, students must have completed entrance to their undergraduate major and have completed no less than 60 credits. Students must be admitted no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree. Transfer students must have completed at least 15 credits at Penn State to enroll in an IUG. Admission to the MATH/CI-MTHED IUG Mathematics Grades 7-12 program will be based upon having attained a minimum GPA of 3.5 after completing at least 60 credits of the program, with a grade of C or better in all courses. Application materials to be submitted include:

- a current undergraduate transcript,
- statement of purpose,
- draft plan of study,
- two letters of recommendation,
- and concurrent submission of an application for master's study to the graduate program in Curriculum and Instruction, Mathematics Education emphasis area.

Admission will be based on a recommendation by the Mathematics Department in consultation with the Mathematics Education faculty in the Department of Curriculum and Instruction.

Students must fulfill all requirements for each degree in order to be awarded that degree, subject to the double-counting of credits as outlined below. Degree requirements for the B.S. in Mathematics are listed in the Undergraduate Bulletin (<http://bulletins.psu.edu/bulletins/bluebook/>). Degree requirements for the M.Ed. degree are listed on the Degree Requirements tab. For the B.S./M.Ed. Degree in integrated Mathematics B.S. and Curriculum and Instruction M.Ed., 129 credits are required for the B.S. degree, 30 credits are required for the M.Ed., and 41 credits are required for field experiences and additional courses required for secondary mathematics certification in Pennsylvania. A maximum of 12 credits, at least half of which are at the 500-level, may be dual-counted toward the B.S. and M.Ed. The following courses can be used in both the B.S. and the M.Ed. degrees: two MATH 400-level electives, STAT 501, STAT 502. Independent study courses and credits associated with the culminating experience for the graduate degree cannot be double-counted. Students can complete the B.S. in Mathematics and not advance to the M.Ed. Curriculum and Instruction degree if they desire. Students who have been accepted into the IUG program but are unable to complete the M.Ed. in Curriculum and Instruction may be awarded the B.S. in Mathematics after having completed all degree requirements for the B.S. The M.Ed. requires one full year beyond the B.S., including student teaching in the graduate year.

Students must sequence their courses so all undergraduate degree requirements are fulfilled before taking courses to count solely towards the graduate degree. Students are expected to complete the undergraduate degree requirements within the typical time to degree for the undergraduate major. In the semester in which the undergraduate degree requirements will be completed, IUG students must apply to graduate, and the undergraduate degree should be conferred at the next appropriate Commencement.

Code	Title	Credits
<b>Required Courses</b>		
9 credits - choose one course from each area		9
<i>Curriculum</i>		
CI 550	Overview of Contemporary School Curriculum (or equivalent)	
<i>Research</i>		
STAT 500	Applied Statistics (or equivalent)	
<i>Learning</i>		
EDPSY 421	Learning Processes in Relation to Educational Practices (or equivalent)	
<b>Emphasis in Mathematics Education</b>		
CI 590	Colloquium <sup>1</sup>	1-3
STAT 501	Regression Methods <sup>1</sup>	3
Select one of the following:		3
MATH 485	Graph Theory	
MATH 486	Mathematical Theory of Games	
MATH/CMPSC 451	Numerical Computations	
MTHED 511	Connections Between Mathematics and Mathematics Education (or equivalent) <sup>1</sup>	3
MTHED 524	<sup>1</sup>	

Select at least one additional 400-level MATH course <sup>2</sup>

Select at least one additional 400- or 500-level MTHED course

1 Required courses.

2 Other than:

- MATH 401
- MATH 405
- MATH 406
- MATH 441
- MATH 470
- MATH 471

A Master's paper is required for completion of the M.Ed.

A passing score on the state-required Mathematics Content Exam is required for Mathematics Grades 7-12 certification.

## Integrated B.S. in Special Education and M.Ed. in Curriculum and Instruction

This Integrated Undergraduate/Graduate (IUG) degree program combines the B.S. in Special Education with the M.ED. in Curriculum and Instruction offered at the following campuses:

### Undergraduate Degree

- University Park

### Graduate Degree

- University Park
- World Campus

Requirements listed here are in addition to requirements listed in GCAC-210 Integrated Undergraduate-Graduate (IUG) Degree Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-210-integrated-undergraduate-graduate-degree-programs/>).

The Special Education and Curriculum and Instruction with emphasis in Language and Literacy Education Integrated Undergraduate-Graduate (SE/CI-LLED IUG) leading to certification as a Reading Specialist.

The Special Education and Curriculum Instruction with Emphasis in Language and Literacy Education Integrated Undergraduate-Graduate (SE/CI-LLED IUG) Degree Program consists of integration of required courses for a B.S. in Special Education with courses required for certification as a Reading Specialist and a M.Ed. in Curriculum and Instruction with emphasis in Language and Literacy Education (LLED). The five-year, SE/CI-LLED IUG is an option for highly qualified students seeking certification to teach Special Education in Pennsylvania in grades K-12. Students in this IUG will be taught how to design and deliver appropriate instruction based on individual needs and incorporate a variety of materials and strategies. Students are expected to complete courses required for the graduate level K-12 reading specialist integrated with their undergraduate experiences and coursework in Special Education and will complete a summer practicum in an on-campus reading clinic as well as a capstone Special Education teaching experience in their final semester. Completion of the IUG (along with earning a passing score on PDE required content tests) leads to a B.S.

in Special Education, certification in special education and as a reading specialist in the state of Pennsylvania, and a M.Ed. in Curriculum and Instruction.

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Students must apply to and meet admission requirements of the Graduate School (<https://gradschool.psu.edu/graduate-admissions/how-to-apply/>), as well as the graduate program in which they intend to receive their master's degree. Before applying to the Graduate School, students must have completed entrance to their undergraduate major and have completed no less than 60 credits. Students must be admitted no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree. Transfer students must have completed at least 15 credits at Penn State to enroll in an IUG. In consultation with an adviser, students must prepare a plan of study appropriate to this integrated program, and must present their plan of study to the head of the graduate program or the appropriate committee overseeing the integrated program prior to being admitted to the program. The plan should cover the entire time period of the integrated program, and it should be reviewed periodically with an adviser as the student advances through the program.

In addition to the admission requirements for the Curriculum and Instruction M.Ed., admission to the SE/CI-LLED IUG Reading Specialist program will be based upon having attained a minimum GPA of 3.5 in Special Education courses, with a grade of B or better in SPLED 412. Admission will be based on a recommendation by the Reading Specialist Program Coordinator in consultation with the Coordinator of Teacher Education in Special Education.

Students must fulfill all requirements for each degree in order to be awarded that degree, subject to the double-counting of credits as outlined below. Degree requirements for the B.S. in Special Education are listed in the Undergraduate Bulletin (<http://bulletins.psu.edu/bulletins/bluebook/>). Degree requirements for the M.Ed. degree are listed on the Degree Requirements tab. For the B.S./M.Ed. Degree in integrated Special Education B.S. and Curriculum and Instruction M.Ed., a minimum of 150 credits is required. Up to 12 credits can apply to both undergraduate and graduate degrees; half of these must be at the 500-level. Independent study courses and credits associated with the culminating experience for the graduate degree cannot be double-counted. Students who have been accepted into the IUG program but are unable to complete the M.Ed. in Curriculum and Instruction may be awarded the B.S. in Special Education after having completed all degree requirements for the B.S.

Students must sequence their courses so all undergraduate degree requirements are fulfilled before taking courses to count solely towards the graduate degree. Students are expected to complete the undergraduate degree requirements within the typical time to degree for the undergraduate major. In the semester in which the undergraduate degree requirements will be completed, IUG students must apply to graduate, and the undergraduate degree should be conferred at the next appropriate Commencement.

### Curriculum

CI 550	Overview of Contemporary School Curriculum	
<b>Research</b>		
CI 501	Teaching as Inquiry	
EDPSY 400	Introduction to Statistics in Educational Research	
<b>Learning</b>		
EDPSY 421	Learning Processes in Relation to Educational Practices	
HDFS 429	Advanced Child Development	
<b>Emphasis in Language and Literacy Education with Reading Specialist</b>		
EDLDR 563	Designing Staff Development Programs	3
EDPSY 526	The Psychology of Reading	3
LLED 500	The Reading and Writing Classroom <sup>1</sup>	3
LLED 501	Teaching Writing in Elementary and Secondary Schools <sup>1</sup>	3
LLED 550	Theory and Practicum in Assessment and Remediation of Reading Difficulties <sup>1</sup>	3
LLED 595A	<sup>1</sup>	3-6
<b>Total Credits</b>		<b>30</b>

<sup>1</sup> Required courses.

A Master's paper is required for completion of the M.Ed.

A passing score on the state-required Reading Specialist Exam (qualifying score of 570) is required for Reading Specialist certification.

Code	Title	Credits
<b>Required Courses</b>		
9 credits - choose one course from each area:		9