



## **ED.M. IN SCIENCE EDUCATION WITH INITIAL CERTIFICATION: PHYSICS AND/OR PHYSICAL SCIENCE K-12 TEACHING (4+1)**

Revised Summer, 2024 -- For students earning a bachelor's degree in May, 2026 or later

*Students who complete this program successfully will receive an Ed.M. in Science Education from the GSE as well as a nomination to the New Jersey Department of Education for a **Certificate of Eligibility with Advanced Standing (CEAS) in Physics (K-12) and/or Physical Science (K-12)***

**I. PROGRAM DESCRIPTION:** The Ed.M. in Science Education with Physics and/or Physical Science initial certification program is designed for Rutgers undergraduate students who wish to teach physics and/or physical science in grades K-12. This program provides undergraduates with an opportunity to earn their bachelor's degree, a master's degree, and an initial teacher certification with just one additional year of study. Rutgers undergraduates do preliminary coursework as advised during the first three undergraduate years, including undergraduate coursework in physics and/or physical science or a closely related field. They are admitted to the program during the spring semester of junior year and enter the professional education sequence during senior year. After students are awarded a bachelor's by the undergraduate college, they continue with the professional sequence for a fifth year of full-time graduate study at the GSE.

Upon completion of all program requirements, students earn an Ed.M. in Science Education and the GSE will make a nomination to the New Jersey State Department of Education on behalf of the student to receive a Certificate of Eligibility with Advanced Standing (CEAS) in Teacher of Physics and/or Physical Science (K-12).

The Ed.M. in Science Education with Initial Certification in Physics and/or Physical Science Teaching (4+1) program offers a range of foundational and specialized topics in physics and/or physical science education using a cohort model. These topics are designed to help students deepen their understanding of the learning and teaching of physics and physical science, with a focus on inquiry-based teaching that is aligned with the Next Generation Science Standards (NGSS).

In alignment with the GSE's mission, all teacher preparation programs and courses are designed to prepare teacher candidates to be culturally responsive practitioners and effectively teach diverse learners by fostering a deep understanding of students from historically underserved linguistic, economic, and cultural backgrounds and communities. Pedagogy courses aimed at meeting the specific learning needs of middle and high school students, along with carefully crafted internships under the guidance of experienced teachers and expert faculty providing feedback, ensure that candidates are well-prepared as teachers to advance equity and excellence in their content area.

**II. MAJOR:** Every candidate for certification in Physical Science Education must complete a full major in either chemistry or physics and at least 15 credits in the other subject, or a major in chemical and biochemical engineering from the School of Engineering. Candidates for certification in Physics Education need only complete a major in physics, mechanical engineering, civil and environmental engineering, industrial and systems engineering, or materials science and engineering.

**III. APPLICATION REQUIREMENTS:** To be considered for admission to the program, applicants must provide the following before the application deadline:

1. Personal statement
2. One letter of recommendation
3. Official undergraduate transcripts - the New Jersey Department of Education requires a minimum GPA of 2.75 to be admitted to a teacher education program.

(NOTE: Praxis Core, SAT, GRE, ACT or other basic skills exams are no longer required as of January 1, 2025. Admission to the GSE Teacher Education Programs is competitive. Meeting the minimum requirements above does not guarantee admission.)

**IV. HOW TO APPLY:** Applications are submitted online at the Graduate Admissions website:

<https://newbrunswickgrad.rutgers.edu/>

1. Click on "Create Account or Login" and follow the instructions given.
2. Under "Start an application today!", click **Apply Now**  
Application Selection
3. For "Level of Application", select **Graduate**
4. For "Applicant Type", select **Degree**
5. Continue filling out the application, following the on-screen instructions.  
Program of Study
6. Under "Program Information", make sure **Degree** is selected for "Applicant Type"
7. For "Degree Type", select **Master's (e.g. MA, MS, EdM, MFA)**
8. For "Area of Study", select **Education**
9. For "Location/Instructional Method", select **New Brunswick**
10. For "Program Selection", select **Education - Science - 5 Year (EDM) New Brunswick**  
Program Details
11. For "First Preference Concentration", select **Physics/Physical Science Certification**. (2nd and 3rd preferences can be left blank.)
12. For "Term", select the summer semester after your May undergraduate graduation date.
13. Complete the rest of the application by providing the requested information.
14. Enter payment information for the non-refundable application fee.
15. Submit your application.

**V. GENERAL EDUCATION REQUIREMENTS:** Students must complete coursework in each of the following areas by completion of the program; fulfillment of these courses is not required for admission into the program. It is highly recommended that you coordinate the elements of this list with those of the general distribution requirements of your undergraduate college to make the most efficient use of your time. Courses should be selected in conjunction with the undergraduate program advisor.

Some of these requirements may be taken during the fifth year as a graduate elective as noted below.

<b><u>General Education Requirements</u></b>	
<b>1. Math: two courses</b> (Follow SAS/SEBS Core Quantitative and Formal Reasoning requirement (QQ, QR))	
<b>2. Science: two courses</b> (Follow SAS/SEBS Core Natural Sciences requirement)	
<b>3. Educational Technology</b> 15:256:562 Demonstrations and Technology in Physics (take in Phase 4)	
<b>4. Human Development: one course</b> (Course may be used to fulfill one elective requirement if taken in the fifth year) 05:300:306 Educational Psychology: Principles of Classroom Learning <b>or</b> 05:300:307 Human Development: Birth Through the Transition to Adulthood	

#### **VI. PRE-ADMISSION REQUIREMENTS**

<b>Course Number</b>	<b>Course Name</b>
<b>(May be taken during Phase 1 or Phase 2 with advisor's permission)</b>	
05:300:368	Introduction to Teaching in Urban Schools & Communities

#### **VII. PROFESSIONAL EDUCATION REQUIREMENTS**

<b>Course Number</b>	<b>Course Name</b>	<b>Credits</b>
<b>Phase 1 Summer (0 credits)</b>		
n/a	Working with Minors	0
n/a	School Law	0
<b>Phase 1 Fall 1 (7 credits)</b>		
05:300:498	Clinical Experience Phase 1	1.0
15:253:512	Teaching Emerging Bilinguals in PK-12 Classrooms	3.0
15:256:551	Development of Ideas in Physical Science	3.0
<b>Phase 2 Spring 1 (9 credits)</b>		
05:300:499	Clinical Practice Phase 2	3.0
15:293:534	Classroom Organization for Inclusive and Special Classrooms	3.0
15:256:552	Teaching and Assessment in Physical Science	3.0
	<b>Undergraduate Total:</b>	<b>16.0</b>

Course Number	Course Name	Credits
<b>Phase 3 Summer 2 (3 credits)</b>		
	Elective	3.0
<b>Phase 3 Fall 2 (12 credits)</b>		
15:255:535	Clinical Practice Phase 3	9.0
15:255:532	Clinical Practice Phase 3 Seminar	3.0
<b>Phase 4 Spring 2 (15 credits)</b>		
15:255:539 <b>or</b> 15:253:522 <b>or</b> 15:253:523 <b>or</b> 15:253:539 <b>or</b> 15:293:539 <b>or</b> 05:300:406 <sup>G</sup>	Students, Communities, and Social Justice <b>or</b> Bilingual-Bicultural Education <b>or</b> Language and Culture Methods of Teaching and Assessing English Language Learners (TELL) <b>or</b> Students with Disabilities, Schools, and Social Justice <b>or</b> Community-Based Language Learning (CBLL)	3.0
15:293:523	Inclusive Teaching in Education	3.0
15:256:562	Demonstrations and Technology in Physics	3.0
	Elective	3.0
	Elective	3.0
	<b>Graduate Total:</b>	<b>30.0</b>
	<b>TOTAL CREDITS:</b>	<b>46.0</b>

<sup>G</sup> Course must be 300-level or above to count towards graduate credits. 300- and 400-level courses must be registered with a **G-prefix**.

### Additional Program Completion Requirements

**VIII. PRAXIS II TESTS:** Students seeking certification in physical sciences must achieve passing scores on the Chemistry: Content Knowledge (test code 0245/5245), Physics: Content Knowledge (test code 0265/5265), and General Science: Content Knowledge (test code 0435/5435) Praxis II examinations. Students seeking certification in physics alone must pass the Physics: Content Knowledge and General Science: Content Knowledge Praxis II examinations. **Students must pass all required tests prior to the start of full-time Clinical Practice Phase 3.**

**IX. PERFORMANCE-BASED ASSESSMENT (PBA):** All candidates must pass a designated performance-based assessment during Clinical Practice Phase 3.

**X. PHYSIOLOGY, HYGIENE, AND SUBSTANCE ABUSE ISSUES:** The Office of Student and Academic Services administers this New Jersey Department of Education exam during the final semester of the program.

## New Jersey Certification Options

Bilingual/Bicultural Teacher	English as a Second Language	Bilingual/Bicultural & ESL	Teacher of Students with Disabilities
12 credits - ONLINE	15 credits - ONLINE	18 credits - ONLINE	21 credits - ONLINE
15:253:522 Bilingual-Bicultural Ed		15:253:522 Bilingual-Bicultural Ed	15:293:533 Assessment and Measurement for Special Education
15:253:520 Principles of Language Learning: Second and World Language Acquisition	15:253:520 Principles of Language Learning: Second and World Language Acquisition	15:253:520 Principles of Language Learning: Second and World Language Acquisition	15:293:523 Inclusive Teaching in Education OR 05:300:304 Art Across the Curriculum in Inclusive Classrooms (FALL 2025 & AFTER)
15:253:530 (or 15:299:535) Foundations of Language	15:253:530 (or 15:299:535) Foundations of Language	15:253:530 (or 15:299:535) Foundations of Language	15:251:558 Reading & Teaching in the Social Studies with Diverse Literature or 15:299:516 Language Across Content Areas: Upper Elementary and Middle School
15:253:512 AND 15:253:513 Teaching Emerging Bilinguals	15:253:512 AND 15:253:513 Teaching Emerging Bilinguals	15:253:512 AND 15:253:513 Teaching Emerging Bilinguals	15:293:580 Literacy for Students with Disabilities
	15:253:539 Methods for Teaching and Assessing English Language Learners	15:253:539 Methods for Teaching and Assessing English Language Learners	15:293:522 Learning Disabilities OR 15:293:545 Characteristics & Methods for High Incidence Disabilities
	15:253:523 Language and Culture	15:253:523 Language and Culture	15:293:534 Classroom Organization for Inclusive and Special Classrooms
Demonstrated proficiency in an additional language required	Demonstrated proficiency in English required	Demonstrated proficiency in English and an additional language required	05:300:383/15:293:583 Introduction to Special Education OR 15:293:539 Students with Disabilities, Schools & Social Justice

## Rutgers Professional Certificate Options

Educational Technology	Gifted Education	Maker Education	Consider starting an additional state licensure program and/or a Rutgers certificate program while working on your master's degree requirements. In consultation with your advisor, you may consider taking courses from these areas in place of your graduate-level elective(s). *
9 credits - ONLINE	12 credits - ONLINE	15 credits - ONLINE	
15:255:503 Introduction to Teaching with Digital Tools	15:294:531 (OR 05:300:320) The Gifted Child	15:290:553 Developing a Maker Mindset	
15:255:504 Web-Based Multimedia Design for Educators	15:294:532 (or 05:300:322) The Social & Emotional Development of Gifted Children	15:290:554 Designing/Facilitating Maker-Centered Learning Environments	
15:255:506 Developing Digital e-Learning Environments	15:294:533 Curriculum & Instruction for the Gifted	15:290:556 Introduction to Design Thinking	
	15:294:534 Gifted Program Development	15:290:555 Makerspace Safety and Emergency Lab	
		15:290:559 Maker Education Capstone	

You must complete an application form and obtain a signature from your faculty advisor prior to the final semester of the program. The application forms are available in the Office of Student and Academic Services or by emailing Colleen McDermott at: [colleen.mcdermott@gse.rutgers.edu](mailto:colleen.mcdermott@gse.rutgers.edu). Some programs require licensure exams for admission and/or certification recommendation.

These programs do not lead to a degree of any kind.

It is your responsibility to enroll in all of the required courses through Rutgers University. No program requirements may be met at any other institution. You are expected to maintain a "B" or better average in the non-degree coursework.

After completing all program requirements, students should contact Ken Tufo at: [ken.tufo@gse.rutgers.edu](mailto:ken.tufo@gse.rutgers.edu). Students will be provided instructions on how to apply for their license(s). Please note that you cannot obtain an advanced certification until you complete the initial teacher certification. After completing all of the required courses in a GSE graduate certificate program, please contact Colleen McDermott to obtain your completion certificate.

\*Not all courses are available to students enrolled in a 4+1 program during their senior year.

It may not be possible to complete these programs until after you earn your master's degree. Please email [ken.tufo@gse.rutgers.edu](mailto:ken.tufo@gse.rutgers.edu) for specifics.