

## ED.M. CERTIFICATION PROGRAM IN PHYSICAL SCIENCE OR PHYSICS EDUCATION (for post-baccalaureate students)

Revised October, 2023

- I. **PROGRAM DESCRIPTION:** The Ed.M. program with (K-12) teacher certification in physical science or physics education is designed for individuals who possess a bachelor's degree in physical science or a closely related field and who wish to pursue certification and a master's degree in education at the same time. Certificates are recommended only in conjunction with the completion of the requirements for the Ed.M. degree.

The program has four major goals:

- to help students learn pedagogical content knowledge of physical sciences, i.e., content-specific teaching methods in physics and chemistry;
- to provide students with a grounding in the historical and philosophical contexts of the discipline that they will be certified to teach, i.e., history and philosophy of physical science;
- to provide students with research experiences in physical science. This will help them better understand how scientists work and how discipline-specific knowledge develops; and
- to provide students with the knowledge and skills to integrate technology into physical science instruction.

- II. **SUBJECT MATTER SPECIALIZATION:** Before teacher certification can be recommended, students must complete at least 30 credits in a physical science (either physics or chemistry). Every candidate for certification in Physical Science Education must complete a minimum of 30 credits in either chemistry or physics, and at least 15 credits in the other subject. Candidates for certification in Physics Education need only complete a minimum of 30 credits in physics. The courses should be distributed evenly among different fields within the discipline. Physics coursework should include mechanics, electricity and magnetism, thermodynamics, optics, atomic and nuclear physics. Chemistry coursework should include organic and non-organic chemistry, physical chemistry, and quantum chemistry. At least 12 credits in one physical science must be taken at the 300 or 400 level. Students should consult with their advisor to determine if additional coursework in a physical science is required.

- 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. Passing Praxis Core test scores **or** one of the following:
  - a. SAT: greater than 50<sup>th</sup> SAT User Percentile in both Math and Evidence-Based Reading and Writing
  - b. ACT: greater than 50<sup>th</sup> percentile in both Math and English
  - c. GRE: greater than 50<sup>th</sup> percentile in both Verbal and Quantitative Reasoning  
(Any test scores submitted must be less than five years old at the time of the application deadline. Scores must be official, not self-reported.)
4. Official undergraduate transcripts - the New Jersey Department of Education requires a minimum GPA of **2.75** to be admitted to a teacher education program.

Praxis Core – see [ets.org/test/5752.html](https://ets.org/test/5752.html)  
Combined test code: 5752  
Reading: 5713, minimum score 156/200  
Writing: 5723, minimum score 162/200  
Math: 5733, minimum score 150/200

(NOTE: 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:

<http://gradstudy.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 - Certification (EDM) New Brunswick**  
Program Details
11. For "First Preference Concentration", select **Physics/Physical Science Certification**. (2nd and 3rd preferences can be left blank.)
12. Complete the rest of the application by providing the requested information.
13. Enter payment information for the non-refundable application fee.
14. 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.

General Education Requirements	Course Number—Course Title—Term/Year—Grade
<b>1. Educational Technology: one course</b> 05:300:462 <sup>G</sup> Demonstrations and Technology in Science Teaching (see professional sequence Phase 4 below)	1. _____
<b>2. Human Development: one course</b> 05:300:307 <sup>G</sup> Human Development: Birth through the Transition to Adulthood	2. _____

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

VI. **LIBERAL ARTS:** Students must complete a minimum of **60 credits** in liberal arts to earn the master's degree. Neither Education courses, nor any other performance-based or vocationally-oriented coursework (accounting, engineering, human resource management, public health, social work, etc.) may be counted toward the 60 liberal arts credits; no School 05, School 15, or E-credit courses may be included.

VII. **GSE COMMUNITY-SCHOOL PARTNERSHIP NETWORK (GSE-CSPN):** All field experiences will take place in a GSE-CSPN school.

VIII. **HIB TRAINING:** All candidates for teacher certification must complete pre-service training in the prevention of harassment, intimidation, and bullying (HIB) prior to Clinical Practice II.

**IX. PROFESSIONAL EDUCATION REQUIREMENTS: Ed.M. Certification Program in Physical Science or Physics Education**

Phase/ Semester	Course Number	Course Name	Credits	
			Grad	Total
Phase 1 First Summer	n/a	Working with Minors Online Training	NC	0
	n/a	School Law Module	NC	
Phase 1 First Fall	15:255:530	Clinical Experience Phase 1	1	10
	05:300:450 <sup>G</sup>	Urban Education 1	1.5	
	05:300:452 <sup>G</sup>	Teaching Emerging Bilinguals in PK-12 Classrooms 1	1.5	
	05:300:306 <sup>G</sup>	Educational Psychology: Principles of Classroom Learning	3	
	15:256:551	Development of Ideas in Physical Science	3	
Phase 2 First Spring	15:255:531	Clinical Practice Phase 2	4	10
	05:300:451 <sup>G</sup>	Urban Education 2	1.5	
	05:300:453 <sup>G</sup>	Teaching Emerging Bilinguals in PK-12 Classrooms 2	1.5	
	15:256:552	Teaching and Assessment in Physical Science	3	
Phase 3 Second Summer	15:293:534	Classroom Organization for Inclusive and Special Classrooms	3	6
	15:256:593	Topics in Engineering Education	3	
Phase 3 Second Fall	15:255:535	Clinical Practice Phase 3	9	15
	15:255:532	Clinical Practice Phase 3 Seminar	6	
Phase 4 Second Spring	05:300:406 <sup>G</sup>	Community-Based Language Learning; <b>or</b> Teaching English Language Learners; <b>or</b> Students, Communities, and Social Justice	3	12
	15:253:540			
	15:255:539			
	05:300:462 <sup>G</sup>	Demonstrations and Technology in Science Teaching (Physical Science)	3	
	15:256:557	Multiple Representations in Physical Science	3	
	15:293:523	Inclusive Teaching in Education	3	
<b>Total Credits</b>			<b>53</b>	<b>53</b>

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

- X. 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.**
- XI. PERFORMANCE-BASED ASSESSMENT (PBA):** All candidates must pass a designated performance-based assessment during the Clinical Practice Phase 3.
- XII. PHYSIOLOGY, HYGIENE, AND SUBSTANCE ABUSE ISSUES:** During their final semester, students must pass the official New Jersey Department of Education examination addressing issues of human physiology, hygiene, and substance abuse.

## New Jersey Certification Options

<b>Bilingual/Bicultural Teacher</b>	<b>English as a Second Language</b>	<b>Bilingual/Bicultural &amp; ESL</b>	<b>Teacher of Students with Disabilities</b>	<b>Preschool through Grade 3</b>
12 credits - ONLINE	15 credits - ONLINE	18 credits - ONLINE	21 credits - ONLINE	24 credits
15:253:522 Bilingual-Bicultural Ed	15:253:523 Language and Culture	15:253:522 Bilingual-Bicultural Ed	05:300:383 Intro to Special Ed	05:300:304 Art Across the Curriculum
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	05:300:410 Learning and Development in a Social Context: Preschool and Primary Years
15:253:530 Foundations of Language	15:253:530 Foundations of Language	15:253:530 Foundations of Language	15:299:516 Literacy Development in the Elementary and Middle School	15:251:574 Integrated Curriculum with Young Children
05:300:452 and 05:300:453 Teaching Emerging Bilinguals in PK-12 Classrooms 1 and 2	05:300:452 and 05:300:453 Teaching Emerging Bilinguals in PK-12 Classrooms 1 and 2	05:300:452 and 05:300:453 Teaching Emerging Bilinguals in PK-12 Classrooms 1 and 2	05:300:480 Literacy for Students with Disabilities	15:251:581 Early Childhood Curriculum and Assessment
	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	15:253:540 or 15:255:539 Teaching English Language Learners or Students, Communities, and Social Justice
		15:253:523 Language and Culture	15:293:533 Assessment and Measurement for Special Education	15:295:521 Child, Family, and Community: Relationships in Development
			15:293:534 Classroom Organization for Inclusive and Special Classrooms	15:295:522 Cognition and Language Birth to Age 8: Normal Development and Implications for Risk and Disability
<i>Demonstrated proficiency in an additional language required</i>	<i>Demonstrated proficiency in English required</i>	<i>Demonstrated proficiency in English and an additional language required</i>	<i>Not available to students in ESL-only programs</i>	15:299:514 Literacy Development in the Early Years

## Rutgers Professional Certificate Options

<b>Educational Technology</b>	<b>Gifted Education</b>	<b>Maker Education</b>
9 credits - ONLINE	15 credits - ONLINE	15 credits
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 Environment	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
	15:294:535 Clinical Placement and Practicum	15:290:559 Maker Education Capstone

**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).\***

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 Marie Pavelchak at: [marie.pavelchak@gse.rutgers.edu](mailto:marie.pavelchak@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 of the required courses in a NJ certification program, you should contact Ken Tufo in the Office of Student and Academic Services for instructions on applying for the state endorsement. Please note that you cannot obtain an endorsement until you complete the initial teacher certification. After completing all of the required courses in a GSE certificate program, you contact Marie Pavelchak to obtain your completion certificate.

\*Not all courses are available to five-year students during their senior year. You may not be able 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.