

**Graduate Certificate in Teaching
Secondary Education (9-12)
Physics**

NOTE: School systems strongly prefer the comprehensive science license.

Required courses

- MDSK 6162:** Planning for K-12 Teaching (3)
READ 5255: Integrating Reading and Writing in the Content Areas (3)
EDUC 5100: Diverse Learners (3)
SECD 5140: The Secondary School Experience (3)
MDSK 5251: Middle and Secondary Science Methods

Final course

- MDSK 6161:** Analysis of K-12 Teaching (3)

This final course is a full time internship requiring employment as a secondary teacher in your field of licensure in an approved high school or a non-paid placement with a licensed teacher in a public high school. It requires application and approval during the semester prior to the internship.

Additional requirements for licensure

Other specific background courses in science, if applicable – See two options below.

Technology portfolio

Applying for the teaching license

Application for NC Standard Professional I license to be filed in TEAL Office, with all appropriate forms regarding completion of coursework, technology portfolio, and internship

Looking ahead

You may wish to apply to the Master of Arts in Teaching (MAT) in Secondary Education at the completion of the Graduate Certificate program: <http://www.uncc.edu/gradmiss/index.asp> . All your coursework for the Graduate Certificate will be applied toward the requirements for that degree. Completion of the master's degree leads to the advanced "M" teaching license and a 10% pay raise.

Option 1: Secondary Physics (9-12) Background Requirements

For Physics majors

Candidates must have at least a bachelor's degree with a major or equivalent in Physics and coursework in the competency areas below. The GPA for background requirements must be at least a 2.5, and no courses may be presented for licensure with grades lower than a C.

Competencies already met through the major in physics:

- Force, motion, and energy: (electricity, magnetism, heat, thermodynamics, optics, wave phenomena)
- Mechanics
- Nuclear physics
- Laboratory experience in experimental physics
- Advanced calculus and differential equations
- Use of math and computers to solve problems in physics

Competency areas which may not have been met through the major in physics:

Understands the nature of science: process, content, & interrelationships among the sciences	Requirements: Coursework in three other areas of science: <i>Introductory chemistry (or higher), e.g.,</i> CHEM 1251+L: Principles of Chemistry I <i>Introductory biology (or higher), e.g.,</i> BIOL 1110+L: Principles of Biology I <i>Introductory geology (or higher), e.g.,</i> ESCI 1200+L: Introductory Geology
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Option 2: Secondary Physics (9-12) Background Requirements

For candidates creating the equivalent of a major in Physics

Candidates must have at least a bachelor's degree. For licensure in physics, students must earn a minimum of 24 hours in physics and take courses in all competency areas below. The GPA for background requirements must be at least a 2.5, and no courses may be presented for licensure with grades lower than a C.

Competency Area	Examples of UNC Charlotte courses There must be at least one course in each cell unless otherwise noted	Candidate's courses	Grade	Plan for satisfying Deficiencies
Force, motion, and energy: <ul style="list-style-type: none"> ▪ electricity ▪ magnetism ▪ heat ▪ thermodynamics ▪ optics ▪ wave phenomena 	<i>An introductory <u>two-course sequence</u> with treatment of electricity and magnetism, e.g.,</i> PHYS 1101+L, 1102+L or 2101+L, 2102+L AND <i>One 2000 level or above course re: electricity/electronics, e.g.,</i> PHYS 2181: Electronics & Microcomputer Interfacing			
Mechanics	<i>An upper division course re: mechanics, e.g.,</i> PHYS 3121: Classical Mechanics I (3)			
Nuclear physics	<i>An upper division course re: nuclear physics, e.g.,</i> PHYS 3141: Introduction to Modern Physics			
Mathematical competency	<i>Coursework in advanced calculus & differential equations, e.g., :</i> MATH 2241: Diff. & Integrated Calculus III and MATH 2172: Differential Equations AND <i>An upper division course re: using math and computers to solve problems in physics, e.g.,</i> PHYS 3101: Topics/Methods - Gen. Physics (4)			
Understands the nature of science: process, content, & interrelationships among the sciences	Coursework in three other areas of science: <i>Introductory chemistry (or higher), e.g.,</i> CHEM 1251+L: Principles of Chemistry I <i>Introductory biology (or higher), e.g.,</i> BIOL 1110+L: Principles of Biology I <i>Introductory geology (or higher), e.g.,</i> ESCI 1200+L: Introductory Geology AND <i>At least one upper division laboratory in experimental physics, e.g.,</i> PHYS 3281: Adv. Lab. in Waves and Optics (2) PHYS 3282: Adv. Lab. In Modern Physics (2) PHYS 3283: Adv. Lab. In Classical Physics (3)			

Note: Courses required to satisfy deficiencies may have prerequisites.