

**Master of Arts in Teaching  
Secondary Education  
Physics**

**NOTE: School systems strongly prefer the Comprehensive Science license.**

**Phase One (18 hours)**

**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 in this phase:**

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

This final course is a full time internship requiring employment as a secondary physics teacher in an approved high school or a non-paid placement with a licensed physics 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.**

*Praxis II Specialty Area exams passed – for lateral entry teachers \_\_\_\_\_ (date)*

*Technology competencies completion form \_\_\_\_\_ (date)*

*Fast track completion form signed by advisor and filed with TEAL office \_\_\_\_\_ (date)*

*Application for Standard Professional I license filed in TEAL Office \_\_\_\_\_ (date)*

**Phase Two (21 hours)**

**Requirements to begin this phase:** Completion of Phase One and full-time employment as a secondary physics teacher.

**RSCH 6101:** Educational Research Methods (3)  
**PHYS xxxx:** Graduate courses in physics (9) **Note:** See advisor for approved choices.  
**MDSK 6351:** Advanced Methods in Middle and Secondary Science

**Final courses in Phase Two:**

**MDSK 6260:** Principles of Teacher Leadership (3)  
**MDSK 6691:** Seminar in Professional Development (3)

*Completion of 39 graduate hours to be applied to the degree \_\_\_\_\_*

*Application for candidacy filed with the Graduate School \_\_\_\_\_ (date)*

*Application for graduation filed with the Graduate School \_\_\_\_\_ (date)*

*Report of project/portfolio sent to the Graduate School \_\_\_\_\_ (date)*

*Application for “M” license filed in TEAL Office \_\_\_\_\_ (date)*

## 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. Whenever possible, candidates with a degree in physics may satisfy background deficiencies with graduate physics courses applied to the M.A.T. Age of courses or relevant work experience in physics will affect the plan for satisfying competencies before attempting graduate work in physics in areas of recent major advancements. 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:

<b>Understands the nature of science: process, content, &amp; interrelationships among the sciences</b>	<b>Requirements: Coursework in three other areas of science:</b>  <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
---	---

## 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. Age of courses or relevant work experience in physics will affect the plan for satisfying competencies before attempting graduate work in physics in areas of recent major advancements. 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
<b>Force, motion, and energy:</b> <ul style="list-style-type: none"> <li>▪ electricity</li> <li>▪ magnetism</li> <li>▪ heat</li> <li>▪ thermodynamics</li> <li>▪ optics</li> <li>▪ wave phenomena</li> </ul>	<i>An introductory <u>two-course sequence</u> with treatment of electricity and magnetism, e.g.,</i> PHYS 1101+L, 1102+L <b>or</b> 2101+L, 2102+L <b>AND</b> <i>One 2000 level or above course re: electricity/electronics, e.g.,</i> PHYS 2181: Electronics & Microcomputer Interfacing			
<b>Mechanics</b>	<i>An upper division course re: mechanics, e.g.,</i> PHYS 3121: Classical Mechanics I (3)			
<b>Nuclear physics</b>	<i>An upper division course re: nuclear physics, e.g.,</i> PHYS 3141: Introduction to Modern Physics			
<b>Mathematical competency</b>	<i>Coursework in advanced calculus &amp; differential equations, e.g., :</i> MATH 2241: Diff. & Integrated Calculus III <b>and</b> MATH 2172: Differential Equations <b>AND</b> <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)			
<b>Understands the nature of science: process, content, &amp; interrelationships among the sciences</b>	<b>Coursework in three other areas of science:</b> <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 <b>AND</b> <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.**