

## **Accelerated B.A./M.A.T. Program in Physics/Science Education**

This program intends for students to complete a B.A. in Physics (College of Arts and Sciences) and a M.A.T. in Secondary Science (College of Education) over the span of five years. Students completing this program will be eligible for high school and/or middle school science teacher certification. Completion of this program requires students to complete 12 credits toward the M.A.T. in Science Education during the senior year of their B.A. in Physics.

This accelerated program shares 12 credits between already existing degrees/concentrations:

B.A. in Physics  
M.A.T. in Science Education

### **Target students and expected outcomes**

The accelerated Bachelor's to M.A.T. in Science Education program is a collaborative effort between the College of Arts and Sciences and the College of Education. This program is an attractive and viable career path for students in the Department of Physics degree programs that results in secondary science teacher certification. Students who complete this program receive the necessary science content and pedagogy coursework to be highly qualified physics teachers at the secondary level.

### **Description and Requirements**

For admission to the program a student must:

1. Have completed 15 hours in the B.A. in Physics major upon applying and thirty (30) semester hours in science (includes twenty-five (25) semester hours in physics plus 5 hours of upper level work in math or minor science content area) with associated laboratory experiences to be fully admitted as a graduate student in the M.A.T. Science Education Program. Evidence of successfully completing all sections of the General Knowledge Test (GKT) is also required for full admission to the graduate program
2. Have a minimum 3.0 GPA overall; and
3. Have a minimum undergraduate 3.25 GPA in the major.

## **Undergraduate Degree Requirements for the B.A. in Physics**

### **B.A. in Physics Degree Requirements**

All Physics, BA students will complete graduation requirements listed in the undergraduate catalog. Specifically, according to the BOG Articulation Regulation 6A-10.030; earn a minimum of 48 semester hours of upper-level work (courses numbered 3000 and above), therefore, the Physics, BA students will take 18 credits of additional 3000+ level coursework in addition to their required major and exit courses listed below.

### **Foundations of Knowledge and Learning Coursework – 36 credit hours:**

English Composition (CAEC)	(6 credits)
Fine Arts (CAFA)	(3 credits)
Human and Cultural Diversity in a Global Context (CAGC)	(3 credits)
Humanities (CAHU)	(6 credits)
Mathematics (CAMA) or 3 Mathematics and 3 Quantitative Reasoning (CAQR)	(6 credits)
Natural Sciences (Life Science) (CANL)	(3 credits)
Natural Sciences (Physical Science) (CANP)	(3 credits)
Social and Behavioral Sciences (CASB)	(6 credits)

### **Required Physics Courses – 33 credit hours**

PHY 2048 General Physics I  
PHY 2048L General Physics I Lab  
PHY 2049 General Physics II  
PHY 2049L General Physics II Lab  
PHY 3101 Modern Physics  
PHZ 3113 Mathematical Methods in Physics  
PHY 3822L Intermediate Lab  
PHY 3221 Mechanics  
PHY 3323 Electricity and Magnetism I  
PHY 4823L Advanced Laboratory  
PHY 4930 Undergraduate Seminar  
PHY 4604 Introduction to Quantum Mechanics  
Physics electives subject to approval of undergraduate advisor.

### **Required Supporting Courses in Natural Sciences and Mathematics – 20 credit hours**

CHM 2045 General Chemistry I  
CHM 2045L General Chemistry I Lab  
CHM 2046 General Chemistry II  
CHM 2046L General Chemistry II Lab  
MAC 2311 Calculus I **or** 2281 Engineering Calculus I  
MAC 2312 Calculus II **or** 2282 Engineering Calculus II  
MAC 2313 Calculus III **or** 2283 Engineering Calculus III

*Residency Requirement*

A minimum of 20 credit hours of physics courses in residency.

*Minimum Grade Requirement*

A minimum grade of "C" is required for all physics classes in the curriculum.

### **Shared B.A./M.A.T. Requirements**

According to the BOG Articulation Regulation 6A-10.030; earn a minimum of 48 semester hours of upper-level work (courses numbered 3000 and above), therefore, the Physics B.A. students will take 18 credits of additional 3000+ level coursework in addition to their required major and exit courses listed above. Of these 18 credits, 12 credits will be shared with the M.A.T. Science Education program. The shared courses are listed below:

SCE 6938 Topics in Science Education: Field Practicum (3 credits)  
SCE 5325 Methods for Middle Grades Science Education (3 credits)  
SCE 5337 Methods for Secondary Science Education (3 credits)  
SCE 6456 Teaching the Physical Sciences (3 credits)

### **Graduate Degree Requirements For Accelerated M.A.T in Science Education PROGRAM REQUIREMENTS**

Note: that all M.A.T. programs include as an admission requirement the passing of all sections of the General Knowledge Test (GKT). Applicants who can document they lived outside the state or country and did not have access to take the GKT before the application deadline may submit passing Praxis scores or GRE scores to be considered for admission. Whether admitted with passing Praxis scores or acceptable GRE scores, the applicant must submit passing scores on the GKT before the last day of classes of the semester of first enrollment, or admission to the College of Education will be revoked,

#### **Total Minimum Program Hours 39 hours minimum**

The courses required for the M.A.T. in Science Education are listed below. Please check with the program for other program requirements.

#### **Core Requirements**

##### **Process Core 33 hours minimum**

EDF 6432 Foundations of Measurement (3 credits)  
ESE 5342 Teaching the Adolescent Learner (3 credits)  
ESE 5344 Classroom Management for a Diverse School and Society (3 credits)  
TSL 5325 ESOL Education in Content Areas (3 credits)  
SCE 5564 Reading and Communication Science Education (3 credits)  
SCE 5325\* Methods for Middle Grades Science Education (3 credits)  
SCE 5337\* Methods for Secondary Science Education (3 credits)  
SCE 6416 Teaching Secondary School Biology (3 credits)  
SCE 6456\* Teaching Secondary School Physical and Earth Science (3 credits)  
SCE 6634 Current Trends in Secondary Science Education (3 credits)  
SCE 6938\* Topics in Science Education: Field Practicum (3 credits)  
SCE 6947 Internship (6 credits) (PR: CI and passing scores of FTCE exam)

- Student's participation in the internship experience in classes that correspond to the specific area in which he or she will be certified.
- Passing score on the appropriate subject area exam.
- Student's content degree or equivalent (an admission's requirement).

\*Shared courses between B.A. Physics and M.A.T. Science Education

#### **Comprehensive Examination**

A written narrative exam tailored to the individual student. Exam needs to be completed by two weeks before final exam week of the student's graduating semester. Exams will only be accepted during fall or spring semester, unless previous contract is established with the student's advisor.

**TOTAL 39 hours**

## **COURSES**

See <http://www.ugs.usf.edu/sab/sabs.cfm>.

### **Timeline and benchmarks:**

1. To be considered for acceptance into the Accelerated B.A./M.A.T. Physics/Science Education students must have completed a minimum of 15 credit hours in the Physics undergraduate major.
2. Students must have a minimum undergraduate GPA of 3.0 overall, and a minimum GPA of 3.25 in the major and passing scores on all sections of the General Knowledge Test (GKT) to be eligible for the accelerated degree program. You can find information on the General Knowledge Test on the Florida Teacher Certification section of the following webpage: <http://www.fl.nesinc.com/>
3. Following completion of a minimum of 15 hours in the undergraduate major, students may be considered for acceptance into the accelerated program through faculty nomination or student self-nomination, via submission of an *Accelerated Program Application Form*. Both B.A. and M.A. T. programs will review the applications and approve the nominations. All applications require the approval of the College of Education Graduate Program, the College of Arts and Sciences, and the USF Graduate School.
4. To be promoted to graduate status, students must meet all admission requirements of the M.A.T. in Science Education in the College of Education. Specifically, the following materials must be submitted:
  - a. Undergraduate transcripts; and evidence of possessing a degree in a science discipline (biology, chemistry, physics, geology, etc.) that is taught in a middle or high school, or comparable coursework in a science teaching field acceptable to the program faculty. Note, to teach secondary physics the state of Florida requires: A bachelor's or higher degree in physics or a bachelor's or higher degree with thirty (30) semester hours in science to include twenty-one (21) semester hours in physics with associated laboratory experiences.
  - d. Documentation of GKT scores.
5. Students must earn a minimum of a "B" (3.00) in all graduate courses. Failure to earn at least a "B" in a graduate course will result in academic review by the graduate program. Failure to maintain a minimum 3.0 GPA will result in academic probation, according to the procedures of the USF Office of Graduate Studies.

A comprehensive plan of study to complete the integrated B.A./M.A.T program will be developed with the guidance of an advisor and a faculty member. A possible plan of study could be as follows. Summer sessions may also be included in the study plan.

### **First and Second Year**

Courses and credits as designated for freshman and sophomore years

### **Third Year**

Apply for Admission to the Integrated B.A/M.A.T. program

### **Fourth Year**

**Student accepted in M.A.T. in Science Education program complete the following shared credits:**

SCE 6938 Topics in Science Education: Field Practicum (3 credits)  
SCE 5325 Methods for Middle Grades Science Education (3 credits)  
SCE 5337 Methods for Secondary Science Education (3 credits)  
SCE 6456 Teaching the Physical Sciences (3 credits)

### **Fifth Year**

EDF 6432 Foundations of Measurement (3 credits)  
ESE 5342 Teaching the Adolescent Learner (3 credits)  
ESE 5344 Classroom Management for a Diverse School and Society (3 credits)  
TSL 5325 ESOL Education in Content Areas (3 credits)  
SCE 5564 Reading and Communication Science Education (3 credits)  
SCE 6416 Teaching Secondary School Biology (3 credits)  
SCE 6634 Current Trends in Secondary Science Education (3 credits)  
SCE 6947 Internship (6 credits) (PR: CI and passing scores of FTCE exam)  
Comprehensive Examination

## **Accelerated B.A./M.A.T. Program in Physics/Science Education**

### **M.A.T. Graduate Course Descriptions (39 hours)**

EDF 6432 Foundations of Measurement 3: Basic measurement concepts, role of measurement in education, construction of teacher-made tests and other classroom assessments, interpretation of standardized tests, and fundamental descriptive statistics for use in test interpretation. (Note the GPC paperwork was submitted for this course)

ESE 5342 Teaching the Adolescent Learner 3: Emphasis is placed on adolescent developmental and learning needs linking them to practices in the classroom appropriate to the diverse secondary education population (ESOL, special education, multicultural, at-risk, etc.) in preparation for planning responsive standards-based instruction.

ESE 5344 Classroom Management for a Diverse School and Society 3: This course covers practical, theoretical, philosophical and ethical aspects of school and society, the education profession, and secondary schools with particular focus on classroom management, school violence, school safety, educational law and other critical social issues.

TSL 5325 ESOL Education in Content Areas 3: Course designed for public school teachers working with limited English Proficient (foreign) students in the classroom. The new ESOL requirements specify that this course be offered to content area teachers and to ESOL teachers.

SCE 5564 Reading and Communication Science Education 3: This course prepares secondary science teachers to teach literacy practices in science. It includes methods for selecting appropriate reading and language approaches. Communication in science and functional aspects of scientific literacy are examined.

SCE 5325 Methods for Middle Grades Science Education 3: Prepare 5-9 sci teachers to tch sci skills, content; interrelationship, applications of sci as a human endeavor; nature of sci; instructional methods; nature scientific inquiry; development of sci process skills; integration of subj areas; & assessment.

SCE 5337 Methods for Secondary Science Education 3: Course concentrates on goals, subject matter teaching strategies for high school curricula; assessment and using data to improve student achievement; and development pedagogical content knowledge as it pertains to the teaching and learning of science.

SCE 6416 Teaching Secondary School Biology 3: Effective use and production of instructional materials in the biological sciences. Interrelation of philosophy, materials, and classroom practices.

SCE 6456 Teaching Secondary School Physical and Earth Science 3: Effective use and production of instructional materials in the physical and earth sciences. Interrelation of philosophy, materials, and classroom practices.

SCE 6634 Current Trends in Secondary Science Education 3: Curricular patterns and instructional practices in secondary science.

SCE 6938 Topics in Science Education: Field Practicum 3: This seminar provides teacher candidates with opportunities to interact with peers, public school faculty and university faculty regarding classroom and related school-based experiences. This course is restricted to science education majors.

SCE 6947 Internship 6 (PR: CI and passing scores of FTCE exam) Students will work with a cooperating teacher and university supervisor to complete their internship requirements in a classroom setting assigned by the university.