

## Assessment #1

**This assessment addresses NSTA standard 1a) Know and understand the major concepts and principles of the teaching discipline(s) as defined by state and national standards of the science community.**

The state of Rhode Island and Providence Plantations does not have a state licensure test. Instead, the state assesses content knowledge with the Praxis II tests as shown below. Because the alignment between Praxis tests and NSTA standards is well-known, it will not be reproduced here.

Table 1: Praxis II tests

<b>Subject</b>	<b>Name of Test</b>	<b>Passing Score</b>
Biology	0235	152
Chemistry	0245	151
Physics	0265	141
General Science	0435	152

At Rhode Island College (RIC), teacher candidates in science education must complete a full major in the science they study. This includes 67 credit hours in biology and cognates, 66 credit hours in chemistry and cognates, 68 credit hours in physics and cognates, and 56-58 credit hours in general science and cognates. We believe this offers a strong foundation in the subject. As seen below, our Praxis II scores support this claim.

Table 2a: undergraduate Praxis II results 2007-2008

2007-2008	possible points	minimum score	mean	range of scores	# of students	completion rate
<b>biology</b>		152	172.33	153-191	3	100%
basic principles	12 pts	*	*			
molecular and cell	39 pts	*	*			
genetics and evolution	23 pts	*	*			
diversity	41 pts	*	*			
ecology	22 pts	*	*			
STS	10 pts	*	*			
<b>chemistry</b>		151		-	1	100%
matter and energy		*	*			
structure		*	*			
nomenclature		*	*			
periodicity		*	*			
solutions		*	*			
<b>physics</b>		141		-	0	-
<b>general science</b>		152		-	5	100%
scientific methodology, techniques, and history		*	*			
the physical sciences		*	*			
the life sciences		*	*			
the earth sciences		*	*			
science, technology, society		*	*			

\*Note: Our dataset from this year is incomplete.

Table 2b: undergraduate Praxis II results 2008-2009

2008-2009	possible points	minimum score	mean	range of scores	# of students	completion rate
<b>biology</b>		<b>152</b>		-	<b>0</b>	-
<b>chemistry</b>		<b>151</b>		-	<b>0</b>	-
<b>physics</b>		<b>141</b>	<b>153</b>	<b>152-154</b>	<b>2</b>	<b>100%</b>
mechanics	31 pts	-	17.5	17-18		
electricity and magnetism	22 pts	-	13.5	12-15		
optics	16 pts	-	11	10-12		
heat	11 pts	-	6.5	6-7		
atoms, molecules, nuclear	10 pts	-	7	7-7		
<b>general science</b>		<b>152</b>		-	<b>0</b>	-

Table 2c: undergraduate Praxis II results 2009-2010

2009-2010	possible points	minimum score	mean	range of scores	# of students	completion rate
<b>biology</b>		<b>152</b>	<b>169</b>	<b>168-170</b>	<b>2</b>	<b>100%</b>
basic principles	12 pts	-	9.5	9-10		
molecular and cell	39 pts	-	28	27-29		
genetics and evolution	23 pts	-	16	13-19		
diversity	41 pts	-	29	28-30		
ecology	22 pts	-	15	15-15		
STS	10 pts	-	8	8-8		
<b>chemistry</b>		<b>151</b>	-	-	<b>0</b>	-
<b>physics</b>		<b>141</b>		-	<b>0</b>	-
<b>general science</b>		<b>152</b>		-	<b>0</b>	-

Table 3a: post degree (RITE program) Praxis II results 2007-2008

2007-2008	possible points	minimum score	mean	range of scores	# of students	completion rate %
<b>biology</b>		<b>152</b>	*	*	<b>1</b>	<b>100</b>
<b>chemistry</b>		<b>151</b>	*	*	<b>1</b>	<b>100</b>
<b>physics</b>		<b>141</b>			<b>0</b>	-
<b>general science</b>		<b>152</b>			<b>0</b>	-

\*Note: Our dataset from this year is incomplete.

Table 3b: post degree (RITE program) Praxis II results 2008-2009

2008-2009	possible points	minimum score	mean	range of scores	# of students	completion rate %
<b>bio</b>		<b>152</b>	<b>185</b>	<b>185</b>	<b>1</b>	<b>100</b>
basic principles	12 pts	-	11	11		
molecular and cellular	39 pts	-	31	31		
genetics and evolution	23 pts	-	19	19		
diversity	41 pts	-	38	38		
ecology	22 pts	-	18	18		
STS	10 pts	-	10	10		
<b>chemistry</b>		<b>151</b>	<b>158</b>	<b>158</b>	<b>1</b>	<b>100</b>
matter and energy			*			
structure			*			
nomenclature			*			
periodicity			*			
solutions			*			
STS			*			
safety			*			
<b>physics</b>		<b>141</b>	-	-	<b>0</b>	-
<b>general science</b>		<b>152</b>	-	-	<b>0</b>	-

\* Note: no subscores were included on ETS report

Table 3c: post degree (RITE program) Praxis II results 2009-2010

2009-2010	possible points	minimum score	mean	range of scores	# of students	completion rate %
<b>biology</b>		<b>152</b>	<b>174</b>	<b>167-180</b>	<b>4</b>	<b>100</b>
basic principles	12 pts	-	10	9-11		
molecular and cellular	39 pts	-	28	22-32		
genetics and evolution	23 pts	-	16.5	13-20		
diversity	41 pts	-	29.25	24-31		
ecology	22 pts	-	17.5	15-19		
STS - 10 pts		-	8.75	8-10		
<b>chemistry</b>		<b>151</b>	-	-	<b>0</b>	-
<b>physics</b>		<b>141</b>	-	-	<b>0</b>	-
<b>general</b>		<b>152</b>	-	-	<b>0</b>	-

It is worth noting that at Rhode Island College, teacher candidates have to pass the applicable Praxis II test **prior** to student teaching. This more rigorous standard has the unintended effect of making all of our completion rates equal 100%, because teacher candidates are not allowed to student teach without passing the Praxis II, and they cannot complete the program without student teaching. We do not and will not put unqualified teacher candidates into classrooms.

That said, it is possible to see areas of relative strength and weakness in the data, even if the numbers of students are too small for statistical certainty. Firstly, record keeping needs to improve. Over the last three years, we have a new president, vice-president of academic affairs, dean of education, dean of partnerships and placements, chair of educational studies, coordinator for secondary science education, and departmental secretary. In addition, we have moved our department to new quarters twice in the last three years. As a result, some data on 2008 graduates has been misplaced. While regrettable, this loss represents a unique circumstance that will not occur a second time.

Secondly, some subscores, like diversity within biology, or electricity and magnetism within physics could have stronger scores. While 100% of students are passing the test and mastering the content, it is always possible to improve. With these areas in mind, new plans of study have been created for Physics and Chemistry. These new plans of study, effective for students beginning the 2010-2011 school year, will place a greater emphasis on laboratory methods, electricity and magnetism, and quantum mechanics in physics.

While an indirect effect, we also believe that the changes in the state requirements for admission to a teacher education program will result in stronger candidates in the future, including but not limited to content knowledge, because of the strong correlations between reading, math, and science. Rhode Island's requirements on the PLT exam (Praxis I) were a 170 minimum in math, reading, and writing until August 20, 2010. For the year after that, the minimum scores will be a 175 minimum in math and reading, and a 173 minimum in writing. On August 20, 2011, the scores will arrive at their final destination of a 179 minimum in math and reading, and a 177 minimum in writing.

**UNDERGRADUATE PROGRAM  
BIOLOGY / SECONDARY EDUCATION  
PLAN OF STUDY**

NAME \_\_\_\_\_ EMPL# \_\_\_\_\_

COURSE	TITLE	CREDITS	GRADE / SEMESTER
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**GENERAL EDUCATION SEQUENCE (25 - 29 CREDIT HOURS)**

English 161	Core 1: Western Literature	4	_____
History 161	Core 2: Western History	4	_____
One Course	Core 3: Non-Western Worlds	4	_____
One Course	Core 4: Critical Inquiry into Cultural Issues	4	_____
Two Courses	(SB) Social & Behavioral Sciences ( <b>2 different</b> )	6	_____
One Course	(A) Visual & Performing Arts	3	_____
Writing 100	Writing Competency	0 - 4	_____

**BIOLOGY MAJOR COURSES (67 CREDIT HOURS)**

**REQUIRED BIOLOGY COURSES**

111 Introductory Biology I (LS)	4	_____
112 Introductory Biology II (LS)	4	_____
221 Genetics	4	_____
318 Ecology	4	_____
320 Cell & Molecular Biology	4	_____
335 Human Physiology	4	_____
348 Microbiology	4	_____
491 Problems in Biology	1	_____

**ELECTIVE: *One course from any of the following:***

300 Developmental Biology	4	_____
329 Comparative Vertebrate Anatomy	4	_____
354 Plant Growth & Development	4	_____
321 Invertebrate Zoology	4	_____
353 The Plant Kingdom	4	_____

**COGNATES**

*Chemistry*

103 General Chemistry I (LS)	4	_____
104 General Chemistry II (LS)	4	_____
205 Organic Chemistry I	4	_____
206 Organic Chemistry II	4	_____

*Physics*

101 General Physics I (LS)	4	_____
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*Physical Science*

212 Geology (LS)	4	_____
357 Historical & Contemporary Contexts of Science	3	_____

*Mathematics*

209 Pre-calculus	4	_____	_____
240 Statistical Methods I (M)	3	_____	_____

**PROFESSIONAL STUDIES (31 CREDIT HOURS)**  
*A Minimum Grade of B- Is Required in All Professional Studies Courses*

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***RECOMMENDED COURSE SEQUENCE***

<i>FNED 346 Schooling in a Democratic Society</i> (Foundations is taken prior to application to FSEHD)	4	_____	_____
<i>SED 406 Instructional Methods, Design and Technology</i> And CEP 315 Counseling & Educational Psychology (should be taken only within the 2 semesters prior to Student Teaching	2	_____	_____
SED 407 Instructional Methods, Design and Literacy	4	_____	_____
SED 407 Instructional Methods, Design and Literacy	2	_____	_____
SPED 433 Adaptive Instruction for Inclusive Education	3	_____	_____
SED 410 Practicum in Secondary English	5	_____	_____
SED 421 Student Teaching In Secondary Schools And SED 422 Student Teaching Seminar	10	_____	_____
	2	_____	_____

PROGRAM TOTAL: 123 - 127 CREDIT HOURS

**Note: Designated courses fulfill Mathematics (M) or Laboratory Science (LS) General Education category.**

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To enroll in *Secondary Education 410: Practicum*, students must have completed at least 55 credit hours of required and cognate courses in the major, or have the consent of the program advisor. Content exam(s) and the PLT exam must be completed and passed prior to admission to SED 410

Prior to enrollment in *Secondary Education 421: Student Teaching*, students must have completed all but two content area requirements. Also, students must have maintained a minimum grade point average of 2.50 in all science and mathematics courses, with a minimum grade of C in these courses. .

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**UNDERGRADUATE PROGRAM  
CHEMISTRY / SECONDARY EDUCATION  
PLAN OF STUDY**

NAME \_\_\_\_\_ EMPL# \_\_\_\_\_

COURSE                      TITLE    CREDITS      GRADE / SEMESTER

**GENERAL EDUCATION SEQUENCE (25 - 29 CREDIT HOURS)**

English 161	Core 1: Western Literature	4	_____	_____
History 161	Core 2: Western History	4	_____	_____
One Course	Core 3: Non-Western Worlds	4	_____	_____
_____	_____			
One Course	Core 4: Critical Inquiry into Cultural Issues	4	_____	_____
_____	_____			
Two Courses	(SB) Social & Behavioral Sciences <b>(2 different)</b>	6	_____	_____
_____	_____			
One Course	(A) Visual & Performing Arts	3	_____	_____
_____	_____			
Writing 100	Writing Competency	0 - 4	_____	_____

**CHEMISTRY MAJOR COURSES (66 CREDIT HOURS)**

REQUIRED CHEMISTRY COURSES

103	General Chemistry I (LS)	4	_____	_____
104	General Chemistry II (LS)	4	_____	_____
205	Organic Chemistry I	4	_____	_____
206	Organic Chemistry II	4	_____	_____
403	Inorganic Chemistry	3	_____	_____
404	Analytical Chemistry	4	_____	_____
405	Physical Chemistry I	3	_____	_____
406	Physical Chemistry II	3	_____	_____
407	Physical Chemistry Lab I	1	_____	_____
408	Physical Chemistry Lab II	1	_____	_____
410	Biochemistry I	3	_____	_____
491	Research in Chemistry	1	_____	_____

COGNATES

*Biology*

111	Introductory Biology I (LS)	4	_____	_____
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*Physics*

200	Mechanics (LS)	4	_____	_____
201	Electricity & Magnetism	4	_____	_____

*Physical Science*

212	Geology (LS)	4	_____	_____
357	Historical & Contemporary Contexts of Science	3	_____	_____

*Mathematics*

212	Calculus I (M)	4	_____	_____
213	Calculus II	4	_____	_____
314	Calculus III	4	_____	_____



**PROFESSIONAL STUDIES (31 CREDIT HOURS)**  
***A Minimum Grade of B- Is Required in All Professional Studies Courses***

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***RECOMMENDED COURSE SEQUENCE***

<i>FNED 346 Schooling in a Democratic Society</i> (Foundations is taken prior to application to FSEHD)	4	_____	_____
<i>SED 406 Instructional Methods, Design and Technology</i> And CEP 315 Counseling & Educational Psychology (should be taken only within the 2 semesters prior to Student Teaching)	2  4	_____	_____
<i>SED 407 Instructional Methods, Design and Literacy</i>	2	_____	_____
<i>SPED 433 Adaptive Instruction for Inclusive Education</i>	3	_____	_____
<i>SED 410 Practicum in Secondary English</i>	5	_____	_____
<i>SED 421 Student Teaching In Secondary Schools</i> And <i>SED 422 Student Teaching Seminar</i>	10  2	_____	_____

PROGRAM TOTAL: 122 - 126 CREDIT HOURS

**Note: Designated courses fulfill Mathematics (M) or Laboratory Science (LS) General Education category.**

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Prior to enrollment in *Secondary Education 421: Student Teaching*, students must have completed all but two content area requirements. Also, students must have maintained a minimum grade point average of 2.50 in all science and mathematics courses, with a minimum grade of C in these courses.

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**UNDERGRADUATE PROGRAM  
GENERAL SCIENCE / SECONDARY EDUCATION  
PLAN OF STUDY**

NAME \_\_\_\_\_ EMPL# \_\_\_\_\_

COURSE                      TITLE    CREDITS              GRADE / SEMESTER

**GENERAL EDUCATION SEQUENCE (25 - 29 CREDIT HOURS)**

English 161	Core 1: Western Literature	4	_____	_____
History 161	Core 2: Western History	4	_____	_____
One Course	Core 3: Non-Western Worlds	4	_____	_____
_____	_____	_____	_____	_____
One Course	Core 4: Critical Inquiry into Cultural Issues	4	_____	_____
_____	_____	_____	_____	_____
Two Courses	(SB) Social & Behavioral Sciences <b>(two different)</b>	6	_____	_____
_____	_____	_____	_____	_____
One Course	(A) Visual & Performing Arts	3	_____	_____
_____	_____	_____	_____	_____
Writing 100	Writing Competency	0 - 4	_____	_____

**GENERAL SCIENCE MAJOR COURSES (54 - 58 CREDIT HOURS)**

REQUIRED COURSES

*Biology*

111	Introductory Biology I (LS)	4	_____	_____
112	Introductory Biology II (LS)	4	_____	_____

*Chemistry*

103	General Chemistry I (LS)	4	_____	_____
104	General Chemistry II (LS)	4	_____	_____

*Physics*

101	General Physics I (LS)	4	_____	_____
102	General Physics II (LS)	4	_____	_____

*Physical Science (Two courses from any of the following three)*

212	Geology (LS)	7 - 8	_____	_____
214	Meteorology		_____	_____
217	Oceanography (LS)		_____	_____

*And*

357	Historical & Contemporary Contexts of Science	3	_____	_____
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*Mathematics*

209	Pre-calculus	4	_____	_____
212	Calculus I (M)	4	_____	_____
240	Statistical Methods I (M)	3	_____	_____

*Research*

491	Research in Science	1	_____	_____
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ELECTIVES      Three courses at the 300-level or above (9 - 12 credit hours)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**PROFESSIONAL STUDIES (31 CREDIT HOURS)**  
***A Minimum Grade of B- Is Required in All Professional Studies Courses***

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***RECOMMENDED COURSE SEQUENCE***

<i>FNED 346 Schooling in a Democratic Society</i> <i>(Foundations is taken prior to application to FSEHD)</i>	4	_____	_____	
<i>SED 406 Instructional Methods, Design and Technology</i> And CEP 315 Counseling & Educational Psychology (should be taken only within the 2 semesters prior to Student Teaching)	2	_____	_____	
SED 407 Instructional Methods, Design and Literacy	4	_____	_____	
SED 407 Instructional Methods, Design and Literacy	2	_____	_____	
SPED 433 Adaptive Instruction for Inclusive Education	3	_____	_____	
SED 410 Practicum in Secondary English	5	_____	_____	
SED 421 Student Teaching In Secondary Schools And SED 422 Student Teaching Seminar	10	_____	_____	
	2	_____	_____	

PROGRAM TOTAL: 110 - 118 CREDIT HOURS

FREE ELECTIVES: 2 - 10 CREDIT HOURS

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

**Note: Designated courses fulfill Mathematics (M) or Laboratory Science (LS) General Education category.**

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To enroll in *Secondary Education 410: Practicum*, students must have completed at least 55 credit hours of required and cognate courses in the major, or have the consent of the program advisor. Content exam(s) and the PLT exam must be completed and passed prior to admission to SED 410.

Prior to enrollment in *Secondary Education 421: Student Teaching*, students must have completed all but two content area requirements. Also, students must have maintained a minimum grade point average of 2.50 in all science and mathematics courses, with a minimum grade of C in these courses.

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**UNDERGRADUATE PROGRAM  
PHYSICS / SECONDARY EDUCATION  
PLAN OF STUDY**

NAME \_\_\_\_\_ EMPL# \_\_\_\_\_

COURSE                      TITLE    CREDITS    GRADE / SEMESTER

**GENERAL EDUCATION SEQUENCE (25 - 29 CREDIT HOURS)**

English 161	Core 1: Western Literature	4	_____	_____
History 161	Core 2: Western History	4	_____	_____
One Course	Core 3: Non-Western Worlds	4	_____	_____
_____	_____	_____	_____	_____
One Course	Core 4: Critical Inquiry into Cultural Issues	4	_____	_____
_____	_____	_____	_____	_____
Two Courses	(SB) Social & Behavioral Sciences <b>(two different)</b>	6	_____	_____
_____	_____	_____	_____	_____
One Course	(A) Visual & Performing Arts	3	_____	_____
_____	_____	_____	_____	_____
Writing 100	Writing Competency	0 - 4	_____	_____

**PHYSICS MAJOR COURSES (66 CREDIT HOURS)**

REQUIRED PHYSICS COURSES

200	Mechanics (LS)	4	_____	_____
201	Electricity and Magnetism	4	_____	_____
202	Thermodynamics, Waves and Optics	4	_____	_____
300	Atomic and Nuclear Physics	4	_____	_____
312	Mathematical Methods in Physics	3	_____	_____
401	Advanced Electricity and Magnetism	3	_____	_____
403	Intermediate Mechanics	3	_____	_____
407	Quantum Mechanics	3	_____	_____
413	Senior Laboratory	3	_____	_____
491	Research in Physics	1	_____	_____

COGNATES

*Biology*

111	Introductory Biology I (LS)	4	_____	_____
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*Chemistry*

103	General Chemistry I (LS)	4	_____	_____
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104	General Chemistry II (LS)	4	_____	_____
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*Physical Science*

212	Geology (LS)	4	_____	_____
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357	Historical & Contemporary Contexts of Science	3	_____	_____
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*Mathematics*

212	Calculus I (M)	4	_____	_____
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213	Calculus II	4	_____	_____
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314	Calculus III	4	_____	_____
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416	Ordinary Differential Equations	3	_____	_____
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**PROFESSIONAL STUDIES (31 CREDIT HOURS)**  
*A Minimum Grade of B- Is Required in All Professional Studies Courses*

***RECOMMENDED COURSE SEQUENCE***

FNED 346 <i>Schooling in a Democratic Society</i> (Foundations is taken prior to application to FSEHD)	4	_____	_____
SED 406 <i>Instructional Methods, Design and Technology</i>	2	_____	_____
And			
CEP 315 <i>Counseling &amp; Educational Psychology</i> (should be taken only within the 2 semesters prior to Student Teaching)	4	_____	_____
SED 407 <i>Instructional Methods, Design and Literacy</i>	2	_____	_____
SPED 433 <i>Adaptive Instruction for Inclusive Education</i>	3	_____	_____
SED 410 <i>Practicum in Secondary English</i>	5	_____	_____
SED 421 <i>Student Teaching In Secondary Schools</i>	10	_____	_____
And			
SED 422 <i>Student Teaching Seminar</i>	2	_____	_____

PROGRAM TOTAL: 122 - 126 CREDIT HOURS

**Note: Designated courses fulfill Mathematics (M) or Laboratory Science (LS) General Education category.**

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To enroll in *Secondary Education 410: Practicum*, students must have completed at least 55 credit hours of required and cognate courses in the major, or have the consent of the program advisor. Content exam(s) and the PLT exam must be completed and passed prior to admission to SED 410.

Prior to enrollment in *Secondary Education 421: Student Teaching*, students must have completed all but two content area requirements. Also, students must have maintained a minimum grade point average of 2.50 in all science and mathematics courses, with a minimum grade of C in these courses. .

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