# FSU-Teach Student Handbook

Revised 6/2015

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#### FSU-Teach Program Summary

#### **FSU-Teach**

FSU-Teach is a collaborative effort of the Colleges of Arts and Sciences and Education at Florida State University funded by those colleges as well as through National Mathematics and Science Initiative and Helios foundation. The FSU Program is modeled after the highly successful UTeach program at the University of Texas, Austin (<u>http://www.uteach.utexas.edu/</u>) – a program that has dramatically increased the number of secondary science and math teaching graduates primarily by attracting science and math majors into the teaching profession.

FSU-Teach works to meet the need for qualified and skilled teaching professionals in the secondary classroom by actively recruiting and preparing excellent students to become reformminded science and mathematics teachers, then supporting these teachers after graduation to facilitate retention. FSU-Teach seeks to contribute to the research base on preparing and retaining math and science teachers.

FSU-Teach includes the aggressive recruitment of science and math majors largely via an array of student benefits, including paid tuition for the first two courses; paid work opportunities that provide experience in education, research, and/or community outreach; and a community structure for their university experience.

FSU-Teach students will complete courses that build the content and pedagogical preparation necessary to begin the life-long learning process that defines a successful teacher through a double major (one in the content disciplines and one in education).

FSU-Teach coursework begins with intensive early field experiences via Step 1 and Step 2 courses. In these courses students use research based math and science curricula to teach elementary (Step 1) and middle school (Step 2) students. The emphasis of these courses is for FSU-Teach students to experience teaching using high quality curricula and for the elementary and middle school students to have an opportunity to further develop their math and science content knowledge. These field experiences begin early in the students' coursework.

Additional FSU-Teach education coursework beyond the Step courses is streamlined, including 3 methods courses (each with a field component) followed by the apprentice teaching experience (internship).

FSU-Teach has streamlined academic requirements, working with each of the content and pedagogy disciplines to design an FSU-Teach track to enable students to graduate with a double major within four years.

FSU-Teach has at its core a close mentoring of students, through the dedicated Master teachers that help them work in the schools, through mentor teachers in the schools, and through university faculty committed to excellence in science and math teacher preparation.

FSU-Teach mentor relationships will extend beyond graduation through an induction program with the goal of supporting the FSU-Teach graduates during their first year of teaching.

FSU-Teach will seek to build an endowment to provide financial support to students and graduates of the program.

FSU-Teach will institute a rigorous, continuing program evaluation component that will focus on data collection on all of its aspects including, but not limited to, student recruitment and retention, teaching success and retention of its graduates, program quality and success, student demographic data, and graduation rates.

FSU-Teach goals are for its graduates to be well-prepared:

- In their teaching content area and in pedagogy.
- To practice research-based pedagogical techniques for science or mathematics teaching and to achieve the goals of the NSES or NCTM as appropriate in their classrooms.
- To meet the challenges of the modern secondary-school environment.
- To become reflective science or mathematics teaching practitioners who engage in extensive, life-long professional development and who will understand ongoing content and pedagogical development as an integral part of their profession.
- To understand and involve their students in inquiry in their content discipline.

### **FSU-Teach Phone Directory**

FSU-TEACH Line	209 MCH	644-1935
Logan Chalfant	lchalfant@fsu.edu	645-9877
Clark, Kathleen	<u>kclark@fsu.edu</u>	644-8497
Dyar, Cindy	<u>cdyar@fsu.edu</u>	645-8901
Gardner, Vicki	vagardner@fsu.edu	645-9463
Granger, Ellen	<u>egranger@fsu.edu</u>	644-6747
Harper, Kristine	<u>kcharper@fsu.edu</u>	644-5888
Kelso, MaLynn	<u>mkelso@bio.fsu.edu</u>	645-9462
Larson, Christy	<u>cilarson@fsu.edu</u>	
Rose, Karen	<u>kr04@fsu.edu</u>	645-9546
Smith, Robin	<u>smith@bio.fsu.edu</u>	645-8927
Southerland, Sherry	ssoutherland@fsu.edu	645-4667
Faculty Offices Line	203 MCH	645-9464
Student Resource Room Line	218 MCH	645-9488
Affiliated Faculty:		
Bellenot, Steve	bellenot@math.fsu.edu	644-7405
Chanton, Jeff	jchanton@fsu.edu	644-7493
Cottle, Paul	cottle@phyics.fsu.edu	644-5777
Goldsby, Ken	kagoldsby@fsu.edu	644-3204
Kercheval, Alec	akercheval@fsu.edu	644-8701
Miller, Tom	<u>tmiller@fsu.edu</u>	644-9823
Winn, Alice	<u>awinn@fsu.edu</u>	644-9833
OASIS		
Malone, Patrick	pmalone@fsu.edu	644-0031
Department Advising		
Biology	<u>tzornes@bio.fsu.edu</u>	644-3099
Chemistry	ekistner@admin.fsu.edu	644-1897
Environmental Science	<u>tmcgann@fsu.edu</u>	644-8580
Geoscience	<u>tmcgann@fsu.edu</u>	644-8582
Math	andrews@math.fsu.edu	644-2278
Physics	fsuteachphysics@gmail.com	644-5777

#### FSU-Teach Suggested Course Sequence Entering at any Point in Academic Career

Semester	1	2	3	4	5	6	7	8
Freshman Entry	Step 1	Step 2	K&L <b>P</b>	CI F&M*	RM CAR <b>F</b>	Persp TFE	PBI	AT
Sophomore Entry	Step 1	Step 2 K&L <b>P</b>	CI F&M* CAR F	PERSP TFE RM	PBI	AT		
Junior Entry	Step 1 K&L F&M* <b>P</b>	Step 2 CI RM CAR <i>F</i>	Persp TFE PBI	AT	Pir prov	ndicates visional d	timing accepta	of nce;
Senior Entry	Step 1 Step 2 K&L F&M* CAR <b>P</b>	CI RM PBI TFE <b>F</b>	Persp AT		Fin form *Math	ndicates nal accej n majors on	timing otance ly	of

- Step 1 SMT 1043, Inquiry Approaches to Teaching
- Step 2 SMT 1053, Inquiry-based Lesson Design
- K&L SMT 3100, Knowing & Learning
- F&M MAC 3503, Functions & Modeling (math only)
- CI SMT 4301, Classroom Interactions
- RM ISC 3523C, Research Methods
- Persp –HIS 3505, Perspectives
- TFE TSL 4324, ESOL in the Content Area
- PBI SMT 4664, Project-Based Instruction
- CAR RED 4335, Content Area Reading
- AT SMT 4945, Apprentice Teaching

#### **FSU-Teach Advising Checklist**

Name	M	ajor	 	

Date (Check here \_\_\_\_\_\_ if this is a graduation check.)

Items in **bold** must be **completed before the end of the course listed immediately above it**, with the exception of the student teaching application, which must be submitted at the beginning of SMT 4664 and your graduation application, which must be submitted in the first two weeks of the semester in which you take Apprentice Teaching. FSU-Teach requires a 2.5 overall GPA.

		Date or Term	<u>Grade</u>
SMT 1043	Step 1		
SMT 1053	Step 2		
<sup>1</sup> SMT 3100	Knowing and Learning		
<sup>2</sup> FTC	E General Knowledge Exam (all 4 sections)		(date passed)
Add s	second major in teaching in COE's OASIS		(date added)
<sup>1</sup> SMT 4301	Classroom Interactions		
<sup>3</sup> MAT 3503	Functions and Modeling (math students only)		
<sup>4</sup> HIS 3505	Perspectives on Science and Mathematics		
<sup>5</sup> ISC 3523C	Research Methods (science liberal studies)		
<sup>5</sup> TSL 4324	ESOL Instruction in the Content Area		
<sup>5</sup> RED 4335	Content Area Reading		
<sup>2</sup> FTC	E Professional Education Exam		(date passed)
<sup>2</sup> FTC	E Subject Area Exam		(date passed)
<sup>1</sup> SMT 4664	Project Based Instruction (oral comp course)		
Subm	it student teaching application to OASIS		(date submitted)
<sup>6</sup> Grac	luation check with A&S (Longmire)		(date checked)
<sup>1</sup> SMT 4945 A	Apprentice Teaching & SMT 4930 AT Semina	r	
Apply	y for graduation with A&S during first 2 we	eeks of semeste	<b>r</b> (da
Capsto	one project due		(date submitted)

Student Signature: Advisor Signature:

<sup>1</sup> Courses that must be taken in the order listed.

<sup>2</sup> All 3 tests of the Florida Teacher Certification Exam must be passed before application to Apprentice teaching.

<sup>3</sup> Calculus II prerequisite.

<sup>4</sup> Strongly recommended to have Junior standing for this writing intensive history course, and take before ISC 3523C.

<sup>6</sup> Your content area graduation check is not complete until you pick up the grad check form from A&S.

<sup>&</sup>lt;sup>5</sup> Courses that can be taken anytime after prerequisites of Step 1 and 2 are passed.

#### Dress Code for Students Participating in Clinical Experiences for FSU-Teach

- Dresses and all outer garments shall fit properly and be of an acceptable length.
- Halters, tank tops, see-through garments, or clothing with revealing/ provocative necklines, bare backs, bare midriff, or spaghetti straps shall not be permitted. In addition, clothing with symbols, phrases, or slogans advertising tobacco, alcohol products, or any controlled substances are unacceptable.
- If shirttails are made to be worn tucked in, they must be tucked in. If shirttails are worn in, and pants are designed to be worn with a belt, a belt or suspenders shall be worn.
- No hats, caps or other head coverings shall be worn inside the building.
- Hair shall be clean, neatly trimmed and well groomed.
- Beards and mustaches shall be allowed if they are neatly trimmed.
- Footwear shall exclude flip flops and slippers.
- Clothing that reveals undergarments shall not be worn.
- Hemlines for skirts and dresses should be long enough not to be distracting.
- Shorts, leggings, warm-ups, spandex or similar tight pants, exercise clothes, or any garment that may appear to be an undergarment are unacceptable.
- Jeans may be worn on days designated by the principal or supervisor, designated spirit days, and teacher in-service days.
- All administrative staff are expected to dress in a professional manner. Male administrative staff are encouraged to wear shirts and ties.
- Male instructional staff shall be expected to wear slacks and collared shirts or other appropriate professional attire. Ties are encouraged and may be required by the principal. Acceptable alternatives for shirt and tie are shirt and pullover sweater or turtleneck sweater and sport coat.
- Jewelry shall not be worn in a visible pierced area other than the ear.



#### **Student Financial Support**

#### **Noyce Scholarships:**

Junior and Seniors who are enrolled in the FSU-Teach program may apply for up to two years of support from the National Science Foundation through the Robert Noyce Phase II Scholarship Program. Each one-year award of \$10,000 carries a requirement to teach for two years in a high-needs school district, which is defined as one where one of the following applies: 1) at least half the students are eligible for reduced lunches, 2) a third of teachers are out of field, or 3) 15% of teachers are leaving annually over the last three years. The goal of this National Science Foundation program is to attract a diverse representation of students into mathematics or science teaching and support these students as they prepare for and begin teaching secondary science or mathematics in high-needs schools. To best prepare students to excel in such settings in their first years of teaching, The Noyce Program will support these students during their teacher preparation as they gain experience in high-needs settings under the guidance of successful teachers who have met the challenges of teaching in these settings and chosen them for their practice. This support will continue through an induction period during their first years of teaching. For more information go to http://www.fsu-teach.fsu.edu/noyce/.

#### **STEM Scholarships:**

The FSU-Teach program has funding from the National Math and Science Initiative to fund scholarships for \$1000 a semester for up to two semesters. The scholarships are primarily need-based, but academic record is also considered. See <u>http://fsu-teach.fsu.edu/Financial-Support</u> for an application.

#### Federal Financial Aid:

Federal financial aid for students majoring in many of the sciences and mathematics. For more information go to <u>https://studentaid.ed.gov/sa/types/grants-scholarships</u>.

#### **TEACH Grants:**

The TEACH Grant program was created to assist in the development and recruitment of teachers for high need programs in public or private elementary or secondary schools that serve low income families. Receive up to \$4000 annually for full-time enrollment. For more information go <u>https://studentaid.ed.gov/sa/types/grants-scholarships/teach</u>.

#### The FSU-Teach STEM Scholarship Fund

FSU-Teach STEM scholarships are designed to increase the number of highly qualified secondary teachers in the areas of mathematics and science.

#### **Eligibility:**

- Students must be enrolled in the FSU-Teach Program and have evidenced a solid commitment to complete the program. (*a secondary factor*)
- Minimum overall GPA of 2.5 on a scale of 4.0. (*a secondary factor*)
- Financial need. (*primary factor*)
- Participation in extra-curricular school activities, work, and/or in other life-directing activities.
- Evidence of a high degree of interest in and commitment to a career in the field of science or mathematics education.

#### **Requirements (ALL of the following):**

- 1. Scholarship recipients must enroll each regular semester in a minimum of 12-15-hours or complete a minimum of 30 hours during a calendar year (including summer session). Exceptions will be made for the semester of student teaching.
- 2. Scholarship recipients must maintain a minimum overall grade point average of 2.5 or above on a scale of 4.0; with a minimum acceptable grade of C or better in all courses taken (a grade of D or below will result in termination of the scholarship).
- 3. Scholarship recipients are required to provide reports to the FSU-Teach Program within 45 days of conclusion of each academic period (for example, each semester); reports are to include:
  - a. Unofficial FSU Transcript, official transcript for all other colleges attended.
  - b. Evidence of subsequent enrollment and class schedule.
  - c. Written update by the recipient of degree completion plans and progress toward such completion.

#### Award:

• Scholarship awards are \$1000.00 per semester. Students may apply for and receive the Scholarship up to two times.

#### FSU-Teach Student Scholarship Due Date: Return to FSU-Teach Office (209 MCH) by the second Friday of classes each semester

#### Please type or print legibly

Name			Campus ID (email)
Local Address	Zip	Phone	
Permanent Address	Zip	Phone ()	
e-mail Address			

Expected Semester of Apprentice Teaching

Expected Date of Graduation?

#### **EDUCATION**

Please provide: 1) an official transcript of all colleges (e.g., community colleges) for which you have grades

- 2) an **unofficial** FSU transcript
- 2) a semester-by-semester plan of your remaining classes, showing 12-15 hour course-load,
  3) the following information on your educational experience:

Will you be a full-time student at Florida State Univer-	sity next semest	er?		
Classification	Major			
Number of semester hours completed at Florida State				
Number of hours completed in your major     GPA in your major				
Cumulative FSU GPA:				

Rank at high school graduation:					
Cumulative high school GPA	SAT or ACT score				
Name of other college(s) attended					
Number of hours taken and GPA earned at Other college(s)					
Major and Degree Earned at other colleges (s)					
GPA in Major at other college(s)					

#### WORK EXPERIENCE

Employer	Duties	Dates

#### ACTIVITIES WHILE IN COLLEGE

Community Involvement	

Extracurricular Activities

#### FACULTY REFERENCES

Please have two individuals provide a reference for you and list their names below. At least one should be a faculty member from either your content area or FSU-Teach. Use the "Reference for FSU-Teach STEM Scholarship" form and have them fax it or return it to you in a sealed envelope to submit with application.

Name	Relationship	Phone Number

**ESSAY:** In an essay of 250 to 500 words please describe your goals for the future. Explain the circumstances and experiences that have contributed to how you plan to achieve those goals.

#### FINANCIAL INFORMATION

Please complete to the best of your knowledge.	Financial need will be verified through FSU Financial Aid.
Name	Campus ID

Estimato	dIncomo	Estimat	ad Expanses		
for the Upcoming Semester		for the Upc	for the Upcoming Semester		
Savings	\$	Tuition and Fees	\$		
Loans (Itemize below)	\$	Books and Supplies	\$		
Employment	\$	Housing	\$		
Parental Support	\$	Food	\$		
Spouse/Family Support	\$	Utilities	\$		
Social Security	\$	Personal Care	\$		
Scholarships (Specify)	\$	Medical Care	\$		
	I	Insurance Costs	\$		
		Transportation	\$		
Other (Specify and include	\$	Other (Specify)	\$		
any financial aid)					
Total Income	\$	Total Expenses	\$		

Please explain any unusual expenses.				
Please provide any additional information pertinent to making an assessment of your financial need.				
Are you currently employed? Yes No	Where are you employed?			
How many hours per week?	What type of position is this job?			

#### AUTHORIZATION TO RELEASE INFORMATION

Student Name (type or print):\_\_\_\_\_Campus ID\_\_\_\_\_

The Family Educational Rights and Privacy Act (FERPA) of 1974, also called the Buckley Amendment, applies to any institution of higher education receiving federal aid. This act contains detailed requirements regarding the maintenance and disclosure of student records. Records protected by this regulation cannot be provided to parents, legal guardians or others unless students so authorize.

As a student at The Florida State University, I hereby give The Florida State University permission to release and/or discuss privileged information related to my status and relationship with the university to The FSU-Teach Student Scholarship Program for the purpose of determining my qualifications and eligibility to receive The FSU-Teach Student Scholarship.

Student Signature

Date

#### REFERENCE FORM FOR FSU-TEACH STEM SCHOLARSHIP Fax 850-645-8902

Name of Student	
Name of Evaluator	
How do you know this student?	

How long have you known this student? \_\_\_\_\_

*Please rate the student on the following items by marking the appropriate box. Return to student in sealed envelope that the student provides.* 

Evidence	of commitm	nent to teach					
Strong		Moderate		Weak			Don't Know
Overall P	romise as a '	Teacher					
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
1	-	1	-	Average	0	Average	
Conscient	tiousness in	performing	duties and o	completing a	assignments	1	
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
1	1	1	1	Average	0	Average	
Donth of	knowladge	in contont ar			4		N
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
100 170	1000000	100 1070	100 20 /0	Average	ivelage	Average	
<b>.</b>	( , 1	•		1101480		1101480	
Enthusias	Ton 5%	$\frac{1 ng}{T_{or} 10\%}$	Top 25%	Aborro	A	Polour	Don't Vnort
10p 1%	10p 5%	10p 10%	10p 25 %	Above	Average	Auorago	Dont Know
				Average		Average	
Ability to	connect wi	th students					
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
				Average		Average	
Ability to	work with	diverse stud	ent populati	ons			
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
•	-	1	-	Average	Ũ	Average	
Displays	notential fo	r leadershin					
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
- I	-1	1	-1	Average		Average	
Effections			-1-:11-	0		0	
Top 1%	Top 5%	Top 10%	$\frac{5 \times 115}{7 \times 25\%}$	Abovo	Avorago	Bolow	Don't Know
100 170	100 578	100 1078	10p 25 /0	Average	Avelage	Average	Don't Know
				Average		Average	
Effective	oral commu	nication skil	ls				
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
				Average		Average	
Ability to	work collal	boratively w	ith others				
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
-				Average	Ŭ	Average	

#### REFERENCE FORM FOR FSU-TEACH STEM SCHOLARSHIP Fax 850-645-8902

Name of Student	
Name of Evaluator	
How do you know this student?	

How long have you known this student? \_\_\_\_\_

*Please rate the student on the following items by marking the appropriate box. Return to student in sealed envelope that the student provides.* 

Evidence	of commitm	nent to teach					
Strong		Moderate		Weak			Don't Know
Overall P	romise as a '	Teacher					
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
1	1	1	1	Average	0	Average	
Conscien	tiousness in	performing	duties and a	completing :	assignments		
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
1	1	1	1	Average		Average	
Depth of	knowledge	in content ar	'ea		<b>I</b>		
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
- ° F - / -	- • <b>F</b> • / •		r	Average	8-	Average	
Enthusia	m for toach	ina	L	0		0	
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
10p 1/0	10p 0 /0	10p 10/0	10p <u>-</u> 070	Average	literage	Average	2 011 1 1 1 1 0 1 1
Ability to	connact wit	th students		0		0	
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
100 170	100 070	100 1070	100 20 /0	Average	ivelage	Average	
A 1.:1: ( (		1:					
Addity to	Top $5\%$	Top 10%	Top 25%	Abovo	Avoraço	Bolow	Don't Know
100 170	100 570	100 1070	10p 25 /0	Average	Average	Average	
				riverage		riverage	
Displays	potential to:	r leadership		4.1		D 1	
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
				Average		Average	
Effective	written com	munication	skills				
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
				Average		Average	
Effective	oral commu	nication skil	ls				
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
	_		_	Average		Average	
Ability to	work collal	borativelv w	ith others				
Top 1%	Top 5%	Top 10%	Top 25%	Above	Average	Below	Don't Know
•				Average		Average	

### FSU-Teach Announces:

Preparing and Supporting Equitable Teaching in Mathematics and Science Classrooms: The FSU-Teach Noyce Phase II Program



What's this? Money for FSU-Teach students? Sweet! So what are those post-grad requirements?

#### **The Program:**

The Noyce Scholarship Program was designed to attract a diverse representation of students into mathematics or science teaching and to support these students as they prepare for and begin teaching secondary science or mathematics. Scholarship recipients either commit to a period of teaching in a high-needs school, or to repay the full dollar amount of the loan.

Whoa! Worried about what high-needs means? Don't be; it just means that on average the students at that school are not achieving at the levels they should be and the school needs my help!

#### **The Scholarship:**

Juniors and Seniors can receive \$10,000 for each scholarship/academic year.



For more information and an application go to: <u>http://fsu-teach.fsu.edu/Robert-Noyce-Programs</u> or contact Robin Smith at Phone: 850-645-8927 Email: smith@bio.fsu.edu

#### NSF Robert Noyce Scholarship Program

#### What is a forgivable loan?

The Noyce Scholarship Program is considered to be a forgivable loan because you can repay the loan by agreeing to teach in a high need school for two years for each year of support you receive. Recipients of scholarships must commit to completion of two years of service as a mathematics or science teacher for each year the scholarship is received. Service must be completed within 6 years after graduation from the program for which the scholarship was awarded and must be performed in a high-need local educational agency.

## If I receive a scholarship, do I get to select my school or does the Noyce Program pick a school for me?

You get to select the schools to which you would like to apply for a job, and which offer of employment you want to accept. The Noyce only requires that the school meets the definition of being a high needs school.

#### What is the definition of high needs again?

The term "high need local educational agency" means a local educational agency that serves an elementary or secondary school located in an area in which there is:

- A. a high percentage (>50%) of individuals from families with incomes below the poverty line;
- B. a high percentage (>33%) of secondary school teachers not teaching in the content area in which the teachers were trained to teach; or
- C. a high (15% over 3 years) teacher turnover rate.

#### What if I decide that I do not want to teach in a high need school or teach at all?

If you teach in a school that is not high need, or if you do not go in to teaching at all, then the scholarship becomes an interest-free loan. The entire amount of the loan will have to be repaid in full within 6 years of graduation from college. It is expected that failure to satisfy the academic requirements of the program or to complete the service requirement will result in forfeiture of the scholarship or stipend award, which will revert to a loan with repayments prorated accordingly to reflect partial service completed. The repayment plan will be arranged with the Noyce Scholarship Program directors and compliance will be monitored. Collection procedures will be initiated if repayment is not completed.

#### What if I don't complete the whole 2 years of teaching?

If you fail to complete the teaching obligation, the forgivable loan will revert to a loan with repayments pro-rated accordingly to reflect partial service completed. The repayment plan will be arranged with the Noyce Scholarship Program directors and compliance will be monitored. Collection procedures will be initiated if repayment is not completed.

# Are there any other obligations besides teaching in a high need setting for 2 years per year of award?

Each recipient of the scholarship or stipend accepts the terms of the scholarship or stipend and agrees to provide the institution with annual certification of employment and up-to-date contact information and to participate in surveys provided by the institution of higher education and program evaluators as part of project-level and program evaluation efforts.

#### What if it becomes impossible for me to teach, such as an illness?

FSU-Teach will make allowances for extreme hardship or other circumstances for which it is not in the best interests of the school district or not feasible for the scholarship/stipend recipient to fulfill the service obligation. FSU-Teach may establish procedures for waiving or suspending repayment of scholarships or stipends in cases of extreme hardship or other circumstances that would preclude the fulfillment of the service obligation.

#### Can my FSU-Teach instructors provide my references?

Your master teachers may not serve as references, as well as other current or former instructors at FSU or at other colleges or high school and employers may provide references.

#### Do I have to use the reference form? What if my reference prefers to write a letter?

No, you do not have to use the form. It is for your references' convenience, but if they prefer to write a letter, they should address it to the Noyce Selection Committee, Florida State University,1021 Atomic Way, 209 MCH, Tallahassee, FL 32306-4482.

#### What if I don't finish the FSU-Teach program when I graduate?

If you do not graduate with the FSU-Teach double major and become certified to teach science or mathematics at the secondary level, the scholarship would revert to a loan with a repayment plan will be arranged with the Noyce Scholarship Program directors. Compliance will be monitored and collection procedures will be initiated if repayment is not completed.

#### What if I want to go to graduate school first?

You should have time to complete a graduate degree before completing your teaching obligation. The teaching must be completed within 6 years after graduation from the program for which the scholarship was awarded and must be performed in a high-need local educational agency.

#### FSU-Teach Provisional Admission Application

FSU-Teach Program Office 209 Carothers Bldg., Mail Code: 4482

				Date				
Name				D.O.B.		/	/	
Campus ID_				Phone		)		
Address								
	Street	Apt/Suite	City		State		ZIP	
FSU email				Term	FA	SP	SU	
<u>For which tr</u>	rack are you a	applying? (check or	nly one):					
Biol	ogy, 6–12	-	Mathe	ematics,	6-12			
Che	mical Science,	6-12 _	Geosc	ciences,	6-12			
Phys	sical Science, (	6-12						

\*\* Attention JUNIOR TRANSFER students: Admission to FSU and an AA degree do NOT guarantee your admission to the FSU-Teach program.

\*\* ALL students are considered "Not Provisionally Admitted" until this application has been processed and approved, REGARDLESS of the number of major courses you have taken.

#### FSU-Teach general criteria for provisional admission:

- \_\_\_\_1. Successful completion of SMT 1043 (Step 1) and SMT 1053 (Step 2).
- \_\_\_\_\_2. Enrollment in SMT 3100, Knowing and Learning.
- \_\_\_\_\_3. Successful completion of the first 30 hours of coursework.
- \_\_\_\_\_4. Evidence of successful clearance of fingerprinting/background check for public schools.
- 5. Adequate progress toward a math or science primary major as evaluated by an SSMT advisor.

For students entering as **Juniors or Seniors** (52-60 hours):

- \_\_\_\_1. Enrollment in SMT 1043 (Step 1).
- \_\_\_\_\_2. Completion of a minimum of 52 hours including all prerequisite coursework in primary major.

- \_\_\_\_\_3. Evidence of successful clearance of fingerprinting/background check for public schools.
- \_\_\_\_\_4. Adequate progress toward a math or science primary major.
- \_\_\_\_\_5. Certification from Basic Division (to Arts & Sciences).

#### **Checklist for Liberal Studies and university requirements:**

I. <sup>1</sup> math (pure)		(pure or stats)	
II. English comp III. <sup>2</sup> history IV. humanities his/hum/ss V. <sup>3</sup> natural science add'l science	  	comp II social science literature his/hum/ss matching lab	
Area requirements: <sup>4</sup>	x y comp lit summer	Gordon <sup>5</sup> 1) 2) oral comp degree hours	3)4)
Academic Services	use only:		
CURRENT major cod	e/DIV/		
NEW major code/DI	V/	Coded by	
CERTIFICATION sou	ght/grade range		/
ADVISOR sign/date		/	

<sup>1</sup> Math liberal studies requirements are included in the Mathematics/FSU-Teach track.

<sup>2</sup> The Perspectives on Science and Math course will fulfill a history requirement.

<sup>3</sup> Natural Science liberal studies requirements are included in the science content tracks. Research

Methods will fulfill science requirement for the Mathematics/FSU-Teach track.

<sup>4</sup> Research Methods will fulfill the computer literacy requirement. The Perspectives course will fulfill one Gordon Rule requirement. Project-Based Instruction will fulfill the oral competency requirement.

<sup>5</sup> No longer referred to as 'Gordon Rule' after Fall 2013.

#### **Dispositions Evaluation**

The Educator Preparation Unit developed a Unit wide dispositions survey based on The Code of Ethics and The Principals of Professional Conduct of The Education Profession in Florida (http://www.fldoe.org/edstandards/pdfs/ethics.pdf) published by Florida Department of Education.

The scoring for each item is based on a four point scale:

- 1 = Inadequate;
- 2 = Needs Improvement;
- 3 = Prepared;

4 = Distinguished.

A rating of 3 (Prepared), or higher is required on every element in every semester. Any candidate who receives a 1 or 2 on any element must complete a remediation plan as guided by the program faculty. If the remediation plan is not completed successfully, the candidate is dismissed from the program.

All programs evaluate candidate dispositions based on the following areas:

#### **Attitudes**

- **Character** (refers to having integrity, being responsible, being honest, modeling professional behaviors, being committed to doing the best job, being dependable) EP\* 2 & 3
- **Caring** (refers to empathetic, thoughtful, compassionate, understanding toward students & others) EP 2 & 3
- **Personal and Social Competence** (refers to being independent, possessing study and technology skills, recognizing appropriate situations in which to share personal information, and the ability to demonstrate mature social skills.)
- **Approachable** (refers to being easy and willing to talk to, non- threatening or intimidating, trusting) EP2&3
- **Patient** (refers to being understanding with students & others, taking the time to actively listen to concerns or problems) EP 2 & 3
- Sense of Humor (refers to being appropriately funny, being able to laugh with others/students, being able to laugh at one's self, discerning when humor is appropriate) EP 1
- **Belief That All Students Can Learn** (seeing the good in others/students and the process of education, having a positive outlook on education) EP 1

#### **Professional Attributes**

- **Commitment to Teaching** (refers to wanting to be a teacher, liking the job and working with students, having a passion for education/ teaching, seeing teaching as more than just a job) EP 2
- **Open-mindedness/Acceptance of Others** (refers to respecting and tolerating diversity, being non-judgmental, being sensitive or empathetic to diversity) EP 1
- **Role Model** (refers to upholding personal standards and appropriate behavior, earning the admiration of others, being the kind of individual that others aspire to be like) EP 2 & 3

- Work Ethic (refers to being a hard worker, having dedication, getting the job done, willing to go the extra mile, submits course assignments in a timely manner) EP 2 & 3
- **Cooperative Nature** (refers to the ability to work with others, to collaborate, to work with colleagues, to share ideas, to seek input) EP2 & 3
- Use of Teaching Methodology/Progressive Teaching (refers to willingness to try different methods, desire to try new ideas, effort to teach in a more student-centered approach) EP 1 & 2 EP2 & 3
- Awareness of Organizational Hierarchy (refers to knowing and utilizing the appropriate way to express a concern or problem, maintaining confidentiality) EP 3 EP2 & 3
- Acceptance of Feedback (refers to willingness to listen in a non defensive manner, desire to improve, acceptance and willingness to take and apply suggestions, openness to suggestions) EP 2 EP2 & 3
- **Communication** (refers to having verbal and non-verbal skills, including; writing, communicating directions, speaking, and listening) EP 2
- **Organization** (refers to planning, being orderly, providing structure to what is done, knowing what, where, why in the class/teaching, arrives to class on time and prepared) EP 1 & 2
- **Flexibility** (refers to calmly handling unexpected changes, adapting to situations, modifying instruction based on student responses) EP 1 & 2

\* Note: EP numbers refer to items in The Code of Ethics and The Principals of the Professional Conduct in The Education Profession in Florida. See page 23.

#### 6A-10.080 Code of Ethics of the Education Profession in Florida.

- 1. The educator values the worth and dignity of every person, the pursuit of truth, devotion to excellence, acquisition of knowledge, and the nurture of democratic citizenship. Essential to the achievement of these standards are the freedom to learn and to teach and the guarantee of equal opportunity for all.
- 2. The educator's primary professional concern will always be for the student and for the development of the student's potential. The educator will therefore strive for professional growth and will seek to exercise the best professional judgment and integrity.
- 3. Aware of the importance of maintaining the respect and confidence of one's colleagues, of students, of parents, and of other members of the community, the educator strives to achieve and sustain the highest degree of ethical conduct.

Rulemaking Authority 1001.02, 1012.51, 1012.53 FS. Law Implemented 1012.32, 1012.34, 1012.51, 1012.53, 1012.795, 1012.796 FS. History-New 3-24-65, Amended 8-9-69, Repromulgated 12-5-74, Amended 8-12-81, 7-6-82, Formerly 6B-1.01, 6B-1.001.

#### 6A-10.081 Principles of Professional Conduct for the Education Profession in Florida.

- 1. The following disciplinary rule shall constitute the Principles of Professional Conduct for the Education Profession in Florida.
- 2. Violation of any of these principles shall subject the individual to revocation or suspension of the individual educator's certificate, or the other penalties as provided by law.
- 3. Obligation to the student requires that the individual:
  - a. Shall make reasonable effort to protect the student from conditions harmful to learning and/or to the student's mental and/or physical health and/or safety.
  - b. Shall not unreasonably restrain a student from independent action in pursuit of learning.
  - c. Shall not unreasonably deny a student access to diverse points of view.
  - d. Shall not intentionally suppress or distort subject matter relevant to a student's academic program.
  - e. Shall not intentionally expose a student to unnecessary embarrassment or disparagement.
  - f. Shall not intentionally violate or deny a student's legal rights.
  - g. Shall not harass or discriminate against any student on the basis of race, color, religion, sex, age, national or ethnic origin, political beliefs, marital status, handicapping condition, sexual orientation, or social and family background and shall make reasonable effort to assure that each student is protected from harassment or discrimination.
  - h. Shall not exploit a relationship with a student for personal gain or advantage.

- i. Shall keep in confidence personally identifiable information obtained in the course of professional service, unless disclosure serves professional purposes or is required by law.
- 4. Obligation to the public requires that the individual:
  - a. Shall take reasonable precautions to distinguish between personal views and those of any educational institution or organization with which the individual is affiliated.
  - b. Shall not intentionally distort or misrepresent facts concerning an educational matter in direct or indirect public expression.
  - c. Shall not use institutional privileges for personal gain or advantage.
  - d. Shall accept no gratuity, gift, or favor that might influence professional judgment.
  - e. Shall offer no gratuity, gift, or favor to obtain special advantages.
- 5. Obligation to the profession of education requires that the individual:
  - a. Shall maintain honesty in all professional dealings.
    - b. Shall not on the basis of race, color, religion, sex, age, national or ethnic origin, political beliefs, marital status, handicapping condition if otherwise qualified, or social and family background deny to a colleague professional benefits or advantages or participation in any professional organization.
    - c. Shall not interfere with a colleague's exercise of political or civil rights and responsibilities.
    - d. Shall not engage in harassment or discriminatory conduct which unreasonably interferes with an individual's performance of professional or work responsibilities or with the orderly processes of education or which creates a hostile, intimidating, abusive, offensive, or oppressive environment; and, further, shall make reasonable effort to assure that each individual is protected from such harassment or discrimination.
    - e. Shall not make malicious or intentionally false statements about a colleague.
    - f. Shall not use coercive means or promise special treatment to influence professional judgments of colleagues.
    - g. Shall not misrepresent one's own professional qualifications.
    - h. Shall not submit fraudulent information on any document in connection with professional activities.
    - i. Shall not make any fraudulent statement or fail to disclose a material fact in one's own or another's application for a professional position.
    - j. Shall not withhold information regarding a position from an applicant or misrepresent an assignment or conditions of employment.
    - k. Shall provide upon the request of the certificated individual a written statement of specific reason for recommendations that lead to the denial of increments, significant changes in employment, or termination of employment.
    - 1. Shall not assist entry into or continuance in the profession of any person known to be unqualified in accordance with these Principles of Professional Conduct for the Education Profession in Florida and other applicable Florida Statutes and State Board of Education Rules.
    - m. Shall self-report within forty-eight (48) hours to appropriate authorities (as determined by district) any arrests/charges involving the abuse of a child or the sale and/or possession of a controlled substance. Such notice shall not be

considered an admission of guilt nor shall such notice be admissible for any purpose in any proceeding, civil or criminal, administrative or judicial, investigatory or adjudicatory. In addition, shall self-report any conviction, finding of guilt, withholding of adjudication, commitment to a pretrial diversion program, or entering of a plea of guilty or Nolo Contendre for any criminal offense other than a minor traffic violation within forty-eight (48) hours after the final judgment. When handling sealed and expunged records disclosed under this rule, school districts shall comply with the confidentiality provisions of Sections 943.0585(4)(c) and 943.059(4)(c), Florida Statutes.

- n. Shall report to appropriate authorities any known allegation of a violation of the Florida School Code or State Board of Education Rules as defined in Section 1012.795(1), Florida Statutes.
- o. Shall seek no reprisal against any individual who has reported any allegation of a violation of the Florida School Code or State Board of Education Rules as defined in Section1012.795(1), Florida Statutes.
- p. Shall comply with the conditions of an order of the Education Practices Commission.
- q. Shall, as the supervising administrator, cooperate with the Education Practices Commission in monitoring the probation of a subordinate.

Rulemaking Authority 1001.02, 1012.51, 1012.53 FS. Law Implemented 1012.32, 1012.34, 1012.51, 1012.53, 1012.795, 1012.796 FS. History-New 7-6-82, Amended 12-20-83, Formerly 6B-1.06, Amended 8-10-92, 12-29-98, Formerly 6B-1.006.

## **Florida Teacher Certification Examination Series**

The FTCE is a three-part examination required by Florida law for college students planning to become teachers to demonstrate mastery of basic skills, professional knowledge, and content area of specialization.

Information about the Florida Teacher Certification Exam (FTCE) can be found at <u>http://www.fldoe.org/accountability/assessments/postsecondary-assessment/ftce/</u>. For Registration information: <u>http://www.fl.nesinc.com/</u>. Test prep guides are also available for check out in the FSU-Teach office, 209 MCH or can be downloaded for free at <u>http://www.fl.nesinc.com/FL\_TIGS.asp</u>.

The following fees for first-time examination were approved by the State Board of Education:

\$130.00
\$150.00
\$200.00

# It is important that you prepare for these exams and pass them on the first attempt. The fee to retake a specific exam is \$20.00 more than the first time.

All testing is computer-based testing (CBT) and administered at Pearson VUE professional testing. The testing site in Tallahassee is:

#### **Tallahassee Pearson VUE Test Center**

Capital Circle Commerce Center 508 Capital Circle SE, Suite D–1 Tallahassee, FL 32301

FSU-Teach recommends the following schedule for taking the three parts of the FTCE. This schedule allows enough time to retake the exam before applying for Student Teaching.

General Knowledge	Take by the end of SMT 3100 Knowing and Learning*
Professional Education	Take right AFTER completing RED 4335
Subject Area	Take one full semester BEFORE SMT 4664 Project-Based
-	Instruction

\*Or provide evidence of registration for the General Knowledge exam.

# All three exams MUST be taken before applying to the Educator Preparation program and *passed* before applying for student teaching.

#### Adding Second Major in Secondary Science or Math Teaching

In order to add the second major, you will need to 1) complete at least 18 hours of your liberal studies course work, 2) take the General Knowledge portion of the Florida Teacher Certification Exam (FTCE), and 3) apply to the Educator Preparation Program, the umbrella organization for teacher preparation programs like FSU-Teach. See page 26 of this handbook for information about the FTCE. You will also need to have your FSU employee ID, a unique, nine-digit number that was issued to you when you applied to Florida State University. (If you don't know your EMPLID, go to (<u>https://apps.oti.fsu.edu/FSUID/public/activateByEmail.jsp</u>) and enter your @my.fsu.edu student email address.)

Once you have your EMPLID, you may now apply online to Educator Preparation by going to <u>http://bit.ly/coe-edprep-app-v2</u> and complete the online application to. The deadline for Fall entry is April 15 and the deadline for Spring entry is November 15.

Other requirements that you may hear about that do not apply to FSU-Teach are:

- Completion of FSU Liberal Studies curriculum (For FSU-Teach students it is only 18 hours of liberal studies) or have earned an AA degree.
- Completion of state mandated education prerequisites (EDF 1005, EDF 2085, and EME 2040) (These courses are not required for FSU-Teach students.)
- Completion of at least 52 credit hours of college coursework (FSU-Teach students may add a second major when they have completed 18 hours of liberal studies.)

#### **APPLICATION DEADLINES**

Your application and all supporting documents (including official GK scores) must be submitted by the application deadline. **No late applications will be accepted**. The College reserves the right to deny any application that is incomplete or submitted after the deadline. If you have any questions, please contact the <u>Office of Academic Services and Intern Support (OASIS)</u> at (850) 644-3760 to speak with an academic advisor.

Program	Fall	Spring	Summer
Early Childhood Education	Feb 15	-	-
Elementary Education	Feb 15	Oct 1	-
Elementary Education (Panama City)	July 29	Nov 29	March 29
English Education	July 1	-	-
Exceptional Student Education	Feb 15	-	-
Social Science Education	July 1	Nov 1	-
Visual Disabilities Education	July 1	-	-
FSU-Teach	April 15	Nov 15	-
Music Education	July 1	Nov 1	-

#### **Student Teaching Application Forms Directions for FSU-Teach Students**

#### READ ALL INSTRUCTIONS BEFORE COMPLETING YOUR APPLICATION.

FORMS AVAILABLE AT: <u>FSU College of Education Student Teaching Application Forms</u> (<u>http://coe.fsu.edu/Current-Students/Student-Academic-Services-OASIS/For-</u> <u>Undergraduates/Student-Teaching-Application-Forms</u>)

Click on the "General Application" link under Applications and download and open the form with Adobe Acrobat and save it to your hard drive. The application is a form, so you can type directly into the application before printing.

The Student Teaching Application is a professional document. You must prepare this application with care. It is a reflection of you and your FSU program and will be reviewed by principals and teachers in various schools. **No handwritten applications will be accepted.** 

The faculty and staff of the Office of Academic Services and Intern Support (OASIS), 2301 Stone Building (STB) are available to help you prepare your Student Teaching Application.

Please note, **placements are subject to availability and district and school acceptance of interns**. Therefore, placements are not guaranteed.

- 1. You must be admitted to Educator Preparation BEFORE your student teaching application will be considered. See page 27 for instructions on applying to the Educator Preparation Program or contact Office of Academic Services and Intern Support (2301 Stone Building).
- 2. Application forms are available online (use link above). You may want to access the application, print it, review it and make sure you have all the information you need before you type the application. Type the entire application online (first, download the file, rename it, and save it on your hard drive).
- 3. You may indicate on the application your first and second choice of requested Student Teaching locations. Only those counties listed for your program may be requested.
- 4. After your application is completely typed, print it and make copies: **one** for FSU-Teach, **one** for you (or save electronically), and **three** to turn in to OASIS.
- 5. All copies of the application must be signed by the applicant and the advisor.
- 6. Submit three copies of the typed application to the OASIS (2301 Stone Building) *in person* no later than the posted deadline.
- 7. Submit one copy of your unofficial transcript with your student teaching application.
- 8. It is strongly recommended that you submit with your application a current resume.
- 9. You are required to obtain two copies of the Student Teaching Handbook (not this one, the official one on the OASIS web site) and to attend Student Teaching Orientation sessions prior to beginning your internship.

#### JP Morgan Chase Bank/National Math & Science Initiative FSU-Teach Induction Program

The FSU-Teach Induction program plan is based on the elements of the UTeach Induction program that have met with success. Program Mission: The FSU-Teach Induction program is committed to the successful transition by its graduates into teaching mathematics or science at the secondary level. Objectives: 1) provide a multi-level support system to transition students, 2) enhance retention, 3) provide professional development, and 4) encourage the pursuit of advanced degrees.

Materials and other support for FSU-Teach induction will include:

- 1. A kit of teaching supplies that will allow the inductee to start the year using the teaching practices emphasized in the program.
- 2. One classroom visit per semester (for graduates within a day's drive): These visits will be from a master teacher or program faculty member for mentoring and collaborative professional development.
- 3. Have access to lesson plan resources (e.g., GEMS and other FSU-Teach planning resources) electronically (scanned and emailed) when requested, as well as planning advice electronically and via phone.
- 4. Receive advice and strategies to assist with classroom management issues such as student engagement, classroom routines, consistency, etc. through one-one one or group virtual meetings via Skype or Google+ Hangout.
- 5. Receive advice and mentoring to help investigate, plan, and pursue opportunities for advanced degrees.
- 6. Be invited to meet virtually either monthly or as needed in person or via Skype, Google+ Hangout chat, or some other online medium to learn new strategies, research findings, state or national trends or regulations, and to share experiences.
- 7. Be able to peer network to share ideas and experiences on an ad hoc basis on Facebook (FSU-Teach Alumni), and listserv: <u>https://lists.fsu.edu/mailman/listinfo/fsuteachgrads</u>.
- 8. Professional organization membership: Dues will be paid for inductee membership in the appropriate professional organization (either National Council of Teachers of Mathematics or National Science Teachers Association). This provides the opportunity for networking, teaching materials, professional organizational support, etc. for inductees.
- 9. Curriculum or lesson manual for their subject area: This tool is an essential lesson planning tool for inductees in their early classroom years.
- 10. Travel reimbursed up to \$250 for a professional conference (e.g., the regional association of science teachers or mathematics teachers conference): This provides professional development and networking opportunities for inductees.

# Appendices

#### **BIOLOGY / FSU-TEACH**

Colleges: Degree: Limited Access:	Arts and Sciences B.S.	Education
	No	
Contacts:	Biology	<u>FSU-Teach</u> Dr. Robin R. Smith
	1067 King Bldg, FSU Tallahassee, FL 32306-4295 (850) 644-3099	209 Carothers Hall, FSU Tallahassee, FL 32306-4482 (850) 645-8927 rrsmith@fsu.edu
Web Page:	http://fsu-teach.fsu.edu/ http://www.bio.fsu.edu/under	grad/advising (includes advisor contact information)

#### **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians and education faculty at Florida State University. Biology students in the FSU-Teach program will develop deep biology knowledge and the knowledge, skill, and experience needed to be an effective science teacher. The program will pay for tuition for the first two Education/Teaching courses. Work study positions with scientists, mathematicians and local schools are available. For more information, see our Web site, <a href="http://fsu-teach.fsu.edu/">http://fsu-teach.fsu.edu/</a>. This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case, Biological Science. Later, students apply for admission into a secondary major within the College of Education called Secondary Science or Mathematics Teaching (SSMT). Upon graduation, students are awarded the B.S. degree with majors in Biology/FSU-Teach and SSMT.

#### Prerequisite Coursework: 0 beyond other requirements.

All of the following courses also apply toward Liberal Studies, major and/or collateral requirements. The following are required in preparation for the upper-division major. Contact the department for information on approved substitutes.

BSC X010, X010L (3, 1) Biological Science I, Lab

BSC X011, X011L (3, 1) Biological Science II, Lab

CHM X045, X045L (3, 1) General Chemistry I, Lab

CHM X046, X046L (3, 1) General Chemistry II, Lab

CHM X210, X210L (3, 1) Organic Chemistry I, Lab and CHM X211, X211L (3,1) Org. Chem. II, Lab

or PHY 2053C (4) College Physics A with Lab and PHY 2054C (4) College Physics B with Lab or CHM X210, X210L (3,1) and PHY 2053C(4) (preferred)

(Students should contact the department regarding selecting courses to meet this requirement.) MAC X311 (4) Calculus with Analytic Geometry I

MAC X312 (4) Calculus with Analytic Geometry II or approved statistics (STA 2071 at FSU--Preferred)

\*SMT X043 (1) Step 1: Inquiry Approaches to Teaching

#### \*SMT X053 (1) Step 2: Inquiry-Based Lesson Design

\* Transfer students will be able to take SMT X043 and SMT X053 while enrolled at FSU. <u>Note.</u> State-wide common prerequisites are always under review. For the most current information and for approved alternative courses, visit the "Common Prerequisites Manual." This is available from the "Student Services" section of <u>http://www.flvc.org</u>.

#### **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Science requires proficiency in a foreign language through the intermediate (2220 or equivalent) level or sign language through the advanced (2614 or equivalent) level.

#### Progress in this major and formal admission to FSU-Teach and Teacher Education.

FSU native and transfer students will progress to upper-division (junior) status in the College of Arts and Sciences in the same manner as other Biological Science majors: an AA degree or 52 earned credits (including at least half of the general education requirement, including English composition and mathematics), at least a 2.5 GPA and completion of appropriate milestones. To be recognized as "formally admitted" into this major, students must meet the following requirements: 1) certification to upper division (or transfer admission into Mathematics as a junior); 2) completion of 18 hours of Liberal Studies or an AA; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; 5) completion of all of the common prerequisite courses for the major; and 6) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to Educator Preparation online at <a href="http://explorefsucoe.com/admissions">http://explorefsucoe.com/admissions</a>.

#### **D/F Policy in Biological Science**

<u>A student who *has not yet completed* the prerequisite courses</u> required for upper-division status (CHM 1045 & lab, CHM 1046 lab, BSC 2010 & lab, BSC 2011 & lab) and earned more than one unsatisfactory grade (U, F, D-, D, D+) in courses required for the major in biological science (biological science, chemistry, physics, mathematics, and statistics) and their prerequisites at Florida State University or elsewhere, whether or not repeated, will not be permitted to graduate from Florida State University with a degree in biological science;
 <u>A student who *has completed* the prerequisite courses</u> required for upper-division status (CHM 1045 & lab, CHM 1046 & lab, BSC 2010 & lab, BSC 2011 & lab) and earned more than three unsatisfactory grades (U, D-, D, D+) in courses required for the major in biological science sciences (biological science, chemistry, physics, mathematics, and statistics) and their prerequisites at Florida State University or elsewhere, whether or not repeated, will not be permitted to graduate from Florida State University with a degree in biological science than three unsatisfactory grades (U, D-, D, D+) in courses required for the major in biological sciences (biological science, chemistry, physics, mathematics, and statistics) and their prerequisites at Florida State University or elsewhere, whether or not repeated, will not be permitted to graduate from Florida State University with a degree in biological science.

#### Mapping

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academic-guide.fsu.edu/</u>.

#### Major Program of Studies at FSU: 78 hours.

#### Required Biology and Collateral courses for the Biology Major: 52 hours

This major requires the following for graduation: 1) Completion of a minimum of 28 hours of biological science courses, with grades of C- or higher. At least 20 of these hours must be taken at FSU. 2) Completion of a minimum of 3 biological science lab or field courses with grades of "C-"or higher. 3) Completion of collateral courses in chemistry, math, and physics with a grade of C- or higher. 4) A minimum combined 2.5 GPA (no forgiveness) in all courses required for the major, including collaterals, taken at FSU or elsewhere. Required Lower Division Biological Sciences Courses (8 hours) BSC 2010 (3) Biological Science I BSC 2010L (1) Biological Science I Lab BSC 2011 (3) Biological Science II BSC 2011L (1) Biological Science II Lab Other Required Biological Sciences Courses (15 hours) PCB 3063 (3) Genetics PCB 4674 (3) Evolution BSC 3XXX (3) Eukaryotic Diversity \* ISC 3523C (3) Research Methods PCB 3134 (3) Cell Structure and Function Area Requirements (at least 6 hours). Two courses representing two different areas: Area I: Cell and Molecular Biology MCB 4403, 4403L (3, 2) Prokaryotic Biology PCB 4253 (3) Animal Development PCB 4024 (3) Molecular Biology Area II: Physiology PCB 3743 (3) Vertebrate Physiology PCB 4843 (3) Fundamentals of Neuroscience Area III: Ecology and Environmental Sciences BSC 3052 (3) Conservation Biology PCB 3043 (3) Ecology ZOO 4513 (4) Animal Behavior Collateral Courses: 23 hours These courses may be used to meet Liberal Studies and minor requirements or taken in addition to them. Chemistry and Calculus/Statistics coursework should be completed by the end of the sophomore year. CHM 1045, 1045L (3,1) General Chemistry I with Lab CHM 1046, 1046L (3,1) General Chemistry II with Lab CHM 2210 (3) Organic Chemistry I PHY 2053C (4) College Physics A with lab (or approved substitute) MAC 2311 (4) Calculus I STA 2171 (4) Statistics for Biology

### **Required courses for the Education major:** 29 hours (26 hours beyond the Biology requirement)

SMT 1043 (1) Step 1: Inquiry Approaches to Teaching SMT 1053 (1) Step 2: Inquiry-Based Lesson Design
SMT 3100 (3) Knowing and Learning
SMT 4301 (3) Classroom Interactions
\* ISC 3523C (3) Research Methods
\*\*HIS 3505 (3) Perspectives on Science and Mathematics
SMT 4664 (3) Project Based Instruction
RED 4335 (3) Content Area Reading for Secondary School Teachers
TSL 4324 (3) ESOL Instruction in the Content Area
SMT 4945 (6) Apprentice Teaching
\* ISC 3523C applies to both the Biology requirement and the Education requirement.
\*\*HIS 3505 fulfills a Liberal Studies requirement in History.

**Computer Skills Competency:** 0 hours beyond other requirements. BSC 2010L (1) or ISC 3523C (3).

## Oral Communication Competency: 0-3 hours

Students must demonstrate the ability to orally transmit ideas and information clearly. This requirement may be met through appropriate high school speech training or with an approved college-level course. SMT 4664 will meet this requirement.

## **Minimum Program Requirements Summary**

Total Hrs. Required 120 Liberal Studies 36\* Prerequisite Coursework 0 beyond other requirements\* Major Coursework 78 Foreign Language 0-12 (depending on placement) Computer Skills 0 beyond prerequisites Oral Competency 0-3 Electives to bring total hours to 120 \*The 22 hours of prerequisite coursework may also be used to satisfy general education and major requirements.

#### **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 30 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.3. The final 30 hours must be completed in residence at this University.

# **Employment Information**

Salary Information: National Association of Colleges and Employers, Occupational Outlook Handbook

<u>Representative Job Titles Related to this Major</u>: Middle school or high school teacher of biology. Students may also pursue graduate school and career options related to the traditional Biology major <u>Representative Employers</u>: Public and private schools; research facilities; medical facilities; government organizations; private industry.

Updated: Summer 2015

# FSUTeach BIOLOGY ACADEMIC MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration.

The Biology FSU-Teach major works best if you can start in the highest math for which you have completed the prerequisites. \*\*If you start Biology FSU-Teach in MAC1105, you should plan on taking math and chemistry over the summer to get back on course to graduate in four years. If you begin FSU with earned credit for College Algebra, you should take MAC1140 and CHM1045 with lab during Term 1.

In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements

(Please note: FSU-Teach majors are not required to take EDF1005, EDF2085, or EME2040)

Sample Schedule		Milestones
Term 1	Hrs.	TERM 1
ENC1101	3	Complete ENC1101 ( $\geq$ C )
CHM1045 and CHM1045 Lab	4	
LS Core Mathematics	3	
LS Core Social Science	3	
SMT1043	1	
Total hours	14	
TERM 2	Hrs.	TERM 2
ENC2135	3	Complete ENC2135 ( $\geq$ C )
MAC1140/MAC1114**	5	Complete MAC1105 ( $\geq$ C )
CHM1046 and CHM1046 Lab	4	
LS Core Humanities/Cultural Practice	3	
SMT1053	1	

Mapping Coordinator: Shellie Camp E-mail: <a href="mailto:scamp@fsu.edu">scamp@fsu.edu</a>

Total hours	15	
TERM 3	Hrs.	TERM 3
BSC2010 and BSC 2010 Lab	4	Complete CHM1045 and CHM1045 Lab
MAC2311	4	Complete BSC2010 and BSC 2010 Lab
SMT3100	3	Complete 2nd LS Mathematics course ( $\geq C$ )
CHM2210	3	
Total hours	15	
TERM 4	Hrs.	TERM 4
BSC2011 and BSC2011 Lab	5	Complete BSC2011 and BSC2011 Lab
CHM2211 (or PHY2053C—preferred)	3(4)	Complete CHM1046 and CHM1046 Lab
SMT4301	3	
STA2171	3	
LS Ethics	3	
Total hours	17-18	
TERM 5	Hrs.	TERM 5
Foreign Language course	4	SMT3100
PCB3063	3	
PCB3134	3	
ISC3523C	3	
Total hours	13	
		TERM 6
TERM 6	Hrs.	Complete either PCB3063 or BOT3015 or
HIS3505	3	BSC3402L
Foreign Language course	4	Completed Foreign Language I
TSL4324	3	RED4335
Biology Area Course	3	Professional Ed. & Subject Area FTCE
BSC XXX	3	Apply for formal admission to School of
Total hours	16	required)
·		General Knowledge FTCE
SUMMED	Ung	
I S Humanities/Cultural Practice	3	
LS Social Science	3	
Oral Communication Competency	3	
Total hours	9	
TEDM 7	Ura	TEDM 7
DCB4674	<b>пгร.</b> 2	LERIVI / Complete a Dra Graduation Chaok
Biology Area course	2	
SMT4664	3	SU5725U
DED4225	3	DIVI 14004
KLD4333	3	

Foreign Language course	4	
Total hours	15	
TERM 8	Hrs.	TERM 8
SMT4945 and SMT4930	6	SMT4945
Total hours	6	Apply for graduation in 1st two weeks

## **Employment Information**

<u>Representative Job Titles Related to this Major:</u> Middle School/High School Advanced Placement Biology Teacher

Representative Employers: Middle Schools and High Schools

## International Opportunities

International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

This Map is not a contract, either expressed or implied, between the University and the student, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. The University specifically reserves the right to change, delete or add to any Map at any time within the student's period of study at the University.

## **CHEMICAL SCIENCE / FSU-TEACH**

Colleges:	Arts and Sciences	Education
Degree:	B.S.	
Limited Access:	No	
Contacts:	Chemical Science	FSU-Teach
	Dr. Ken Goldsby	Dr. Robin Smith
	goldsby@chem.fsu.edu	209 Carothers Hall, FSU
	Joshua Cummings	Tallahassee, FL 32306-448
	344DLC, (850) 644-1897	(850) 645-8927
	jcummings@chem.fsu.edu	rrsmith@fsu.edu
	Tallahassee, FL 32306-4390	
Web Page:	http://fsu-teach.fsu.edu/	

## **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians and education faculty at Florida State University. Chemical Science students in the FSU-Teach program will develop a broad and conceptual understanding of chemistry and biochemistry, as well as the knowledge, skill, and experience needed to be an effective chemistry teacher. The program will pay for tuition for the first two Education/Teaching courses. Work study positions with scientists, mathematicians and local schools are available. For more information, see our Web site <a href="http://fsu-teach.fsu.edu/">http://fsu-teach.fsu.edu/</a>. This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case, Chemical Science. Later, students apply for admission into a secondary major within the College of Education called Secondary Science or Mathematics Teaching (SSMT). Upon graduation, students are awarded the B.S. degree with majors in Chemical Science/FSU-Teach and SSMT.

#### Prerequisite Coursework: 0 beyond other requirements.

The following are required in preparation for the upper division major. Contact the department for information on acceptable substitutes. All may also apply toward Liberal Studies, major and/or collateral requirements.

CHM X045, X045L (3,1) General Chemistry I and Lab

CHM X046, X046L (3,1) General Chemistry II and Lab

CHM X210, X210L (3, 1) Organic Chemistry I and Lab

CHM X211, X211L (3, 1) Org. Chem. II and Lab (CHM 2211L is 3 credits at FSU)

MAC X311 (4) Calculus with Analytic Geometry I

\* SMT X043 (1) Step 1: Inquiry Approaches to Teaching

\* SMT X053 (1) Step 2: Inquiry-Based Lesson Design

\* Transfer students will be able to take SMT X043 and SMT X053 while enrolled at FSU.

Note : State-wide common prerequisites are always under review. For the most current

information and for acceptable alternative courses, visit the "Common Prerequisites Manual." This is available from the "Student Services" section of <u>http://www.flvc.org</u>.

#### **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Sciences requires proficiency in a foreign language through the intermediate (2200 or equivalent) level or sign language through the advanced (2614 or equivalent) level.

#### Progress in this major and formal admission to FSU-Teach and Teacher Education.

FSU native and transfer students will progress to upper-division (junior) status in the College of Arts and Sciences in the same manner as other Chemical Science majors: an AA degree or 52 earned credits (including at least half of the general education requirement, including English composition and mathematics), at least a 2.5 GPA, and completion of appropriate milestones. To be recognized as "formally admitted" into this major, students must meet the following requirements: 1) certification to upper division (or transfer admission into Mathematics as a junior); 2) completion of 18 hours of Liberal Studies or an AA; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; 5) completion of all of the common prerequisite courses for the Chemical Science major; and 6) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to Education Preparation online at http://explorefsucoe.com/admissions .

#### Departmental policy on grades and progress in the major.

No required course in which a student has earned a grade below C- may be applied toward any of the degrees in chemistry. Students must also make a C- or better in the first semester of a year sequence course (or obtain the instructor's permission) to continue the sequence.

A student who has received more than two unsatisfactory grades (U, F, D-, D, D+) in the following courses, taken at Florida State University or elsewhere, including repeated unsatisfactory grades in the same course, will not be permitted to graduate with a degree offered by the Department of Chemistry and Biochemistry: CHM 1045, CHM 1045L, CHM 1046, CHM 1046L, CHM 2210, MAC 1105, MAC 1114, MAC 1140, MAC 2311.

A student who has received more than five unsatisfactory grades (U, F, D-, D, D+) in all science or mathematics courses (and their prerequisites) required for any major offered by the Department of Chemistry and Biochemistry, taken at FSU or elsewhere, including repeated unsatisfactory grades in the same required, will not be permitted to graduate with a degree in that major.

#### Mapping

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academic-guide.fsu.edu/</u>.

#### Major Program of Studies at FSU: 78 hours.

**Required Courses for the Chemical Science Major:** at least 49 hours <u>Required Chemistry Courses (37 hours minimum)</u> CHM 1045, 1045L (3, 1) or CHM 1050, 1050L (3,1) General Chemistry I, Lab CHM 1046, 1046L (3, 1) or CHM 1051, 1051L (3,2) General Chemistry II, Lab CHM 2210 (3) Organic Chemistry I CHM 2211, CHM 2211L (3, 3) Organic Chemistry II, Lab CHM 3120, 3120L (3, 1) Analytical Chemistry I, Lab CHM 3400 (4) Survey of Physical Chemistry or both CHM 4410 (3) and CHM 4411 (3) Physical Chem I, II CHM 4610 (3) Inorganic Chemistry BCH 3023C (3) Survey of Biochemistry or BCH 4053 (3) Biochemistry I One of the following CHM 4130 (3) Advanced Analytical Chemistry CHM 4080 (3) Environmental Chemistry I CHM 4905 (3) Directed Individual Study CHM 4906 (1-6) Honors Research, for a total of at least 3 credits Required Collateral Courses (12 to 14 hours) MAC 2311 (4) Calculus I PHY 2053C (4) College Physics A with Lab or PHY 2048C (5) General Physics I with Lab PHY 2054C (4) College Physics B with Lab or PHY 2049C (5) General Physics II with Lab

## Required courses for the Education major: 29 hours

SMT 1043 (1) Step 1: Inquiry Approaches to Teaching
SMT 1053 (1) Step 2: Inquiry-Based Lesson Design
\*HIS 3505 (3) Perspectives on Science and Mathematics
ISC 3523C (3) Research Methods
RED 4335 (3) Content Area Reading for Secondary School Teachers
SMT 3100 (3) Knowing and Learning
SMT 4301 (3) Classroom Interactions
SMT 4664 (3) Project Based Instruction
SMT 4945 (6) Apprentice Teaching
TSL 4324 (3) ESOL Instruction in the Content Area
\*HIS3505 fulfills a Liberal Studies requirement in History.

**Computer Skills Competency:** 0 hours beyond other requirements. CHM 3120L or ISC 3523C satisfies this requirement.

#### Oral Communication Competency: 0-3 hours

Students must demonstrate the ability to orally transmit ideas and information clearly. This requirement may be met through appropriate high school speech training or with an approved college-level course. SMT 4664 will satisfy this requirement.

#### **Minimum Program Requirements Summary**

Total Hrs. Required 120 Liberal Studies 36\* Prerequisite Coursework 0 beyond other requirements\* Major Coursework 78 Foreign Language 0-12 (depending on placement) Computer Skills 0 beyond prerequisites Oral Competency 0-3 Electives to bring total hours to 120 \*Prerequisite coursework may also be used to satisfy general education and major requirements.

# **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 30 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.

3. The final 30 hours must be completed in residence at this University.

4. All 3000 and 4000 level chemistry and biochemistry courses must be taken at FSU.

5. Students with five or more grades below C- in required courses or their prerequisites, including transfer courses, will be dropped from the program.

# **Employment Information**

Salary Information: National Association of Colleges and Employers, Occupational Outlook Handbook

<u>Representative Job Titles Related to this Major</u>: Middle school or high school teacher of chemistry. Students may also pursue graduate school and career options related to the traditional Chemical Science major.

<u>Representative Employers</u>: Public and private schools; research facilities; medical facilities; private industry.

Updated: Summer 2015

# FSUTeach CHEMICAL SCIENCE ACADEMIC MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration.

The Chemical Science FSU-Teach major is designed for students who wish to teach Chemistry at the middle and/or secondary education levels. Students are strongly encouraged to have credit for College Algebra (MAC1105) prior to enrolling as freshman in the Chemical Science FSU-Teach major. This degree should not be used by someone planning to work as a chemist directly or planning to do graduate work in chemistry.

In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: <u>http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements</u>

(Please note: FSU-Teach majors are not required to take EDF1005, EDF2085, or EME2040)

Sample Schedule		Milestones
TERM 1	Hrs.	TERM 1
ENC1101	3	Complete ENC1101 ( $\geq$ C )
CHM1045 and CHM1045 Lab	4	Complete MAC1105 ( $\geq$ C )
MAC1140/MAC1114	5	
SMT1043	1	
Total hours	13	
TERM 2	Hrs.	TERM 2
ENC2135	3	Complete ENC2135 ( $\geq$ C )
CHM1046 and CHM1046 Lab	4	Complete MAC1140 ( $\geq$ C )
MAC2311	4	Complete CHM1045 and CHM1045 Lab
Foreign Language I	4	
SMT1053	1	

Mapping Coordinator: Shellie Camp E-mail: <a href="mailto:scamp@fsu.edu">scamp@fsu.edu</a>

Total hours		16	
TERM 3	H	Irs.	TERM 3
PHY2053C or PHY2048C		5	Complete CHM1046 and CHM1046 Lab
CHM2210		3	·
SMT3100		3	
Foreign Language II		4	
Total hours		15	
TERM 4		Hrs.	TERM 4
LS Core Humanities/Cultural Prac	ctice	3	Complete CHM2210
LS Core Social Science		3	
PHY2049C or PHY2054C		5	
Oral Communication Competency	y	3	
Total hours		14	
TERM 5		Hrs.	TERM 5
CHM3120 and CHM3120L		4	SMT3100
BCH3023C (or BCH4053)		3	Complete CHM2211
LS Social Science		3	
ISC3523C		3	
Total hours		13	
TERM 6		Hrs.	TERM 6
CHM3400		4	Completed Foreign Language I
CHM elective (one of CHM4080,	4130,	2	RED4335
4905, or 4906)		5	Professional Ed. & Subject Area FTCE
Teaching for Equity		3	Apply for formal admission to School of
Perspectives on Science & Mathematical Mathematical Science & Mathematical Science & Mathematical Science & Science	matics	3	Teacher Education (minimum overall gpa 2.5
LS Ethics		3	required)
Total hours		16	General Knowledge FTCE
SUMMER		Hrs.	
LS Humanities/Cultural Practice		3	
CHM Elective		3	
Total hours		6	
TERM 7		Hrs.	TERM 7
CHM4610		3	Complete a pre-graduation check
CHM Elective		3	ISC3523C
SMT4664		3	Professional Ed. & Subject Area FTCE
Content Area Reading		3	
Total hours		12	
TERM 8	Hrs.		TERM 8
SMT4945	6		SMT4945
Total hours	6		Apply for Graduation in 1st two weeks

#### **Employment Information**

<u>Representative Job Titles Related to this Major:</u> Middle School/High School/Advanced Placement Chemistry teacher

#### Representative Employers: Middle Schools and High Schools

#### International Opportunities

International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

This Map is not a contract, either expressed or implied, between the University and the student, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. The University specifically reserves the right to change, delete or add to any Map at any time within the student's period of study at the University.

## **ENVIRONMENTAL SCIENCE (BS)/FSU-Teach**

College:	Arts and Sciences	Education
Degree:	B.S.	
Limited Access:	No	
Contacts:	Tim McGann (advising)	
	Dr. Jeff Chanton (program information)	
	Dr. Bill Parker (program information)	Dr. Robin R. Smith
Address:	Dept. of Earth, Ocean and Atmospheric Science	209 Carothers Hall, FSU
	Tallahassee, FL 32306-4320	Tallahassee, FL 32306- 4482
	McGann: 424 Love	(850) 645-8927
	Chanton: 305 OSB	rrsmith@fsu.edu
	Parker: 207 CAR	
Phone:	McGann: (850) 644-8580	
	Chanton: (850) 644-7493	
	Parker: (850) 644-1568	
E-mail:	tmcgann@fsu.edu	
	jchanton@fsu.edu	
	wparker@fsu.edu	

#### **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians and education faculty at Florida State University. Environmental Science students in the FSU-Teach program will develop environmental science knowledge and the knowledge, skill, and experience needed to be an effective science teacher. Science coursework will include coursework in meteorology, geology, oceanography, hydrology, and astronomy. The program will pay for tuition for the first two Education/Teaching courses. For more information, see our Web site, http://fsu-teach.fsu.edu/.

This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case Environmental Science. Later, students apply for admission into a secondary major within the College of Education called (SSMT) Secondary Science or Mathematics Teaching. Upon graduation, students are awarded the B.S. degree with majors in Environmental Science and Secondary Science or Mathematics Teaching. Environmental Science is the interdisciplinary study of environmental systems from a scientific perspective. Drawing principally from the areas of oceanography, geology, meteorology, biology and chemistry, the Environmental Science program will prepare students in the broader area of geosciences and is an attractive option for students seeking a broader interdisciplinary major with the rigor of mathematics and the physical sciences at its core.

# Prerequisite Coursework: 27 hours

The following are common program prerequisites: MACx311 (4) Calculus I BSC xOIO, xOIOL (3, I) Biological Science I, Lab CHM x045, x045L (3, 1) General Chemistry 1, Lab PHY x048C (5) General Physics A with Lab BSc x011, xOI IL (3, I) Biological Science *Il*, Lab or CHM x046,x046L (3, I) General Chemistry II, Lab GLY xOIOC (4) Physical Geology with Lab SMT 1043: Inquiry Approaches to Teaching (Step 1) - I credit-hour \*SMT 1053: Inquiry Based Lesson Design (Step 2)- 1 credit-hour \* Transfer students will be able to take SMT x043, ISC x523C and SMT x053 while enrolled at FSU. Note: State-wide common prerequisites are always under review. For the most current

Note: State-wide common prerequisites are always under review. For the most current information and for acceptable alternative courses, visit the "Common Prerquisites Manual." This is available from the "College Students" section of http://FACTS.org/ .

# **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Science requires proficiency in foreign language through the intermediate (2220 or

equivalent) level or sign language through the advanced (2614 or equivalent) level.

# Admission/Continuation Requirements to Major Program of Studies:

Students should complete the prerequisite coursework for entrance to the major program of study. Students must also have completed a minimum of 52 hours of credit and at least half the required hours in Liberal Studies, including required English composition and Math, or an A.A degree, at least a 2.50 GPA and completion of appropriate milestones. No required course in which a student has earned a grade below C- may be applied toward the degree in Environmental Science. A student who has received more than five unsatisfactory grades (U, F, D-, D, D+) in science, statistics, or mathematics courses (and their prerequisites) taken at Florida State University or elsewhere, including repeated unsatisfactory grades in the same course, will not be permitted to graduate with a degree in this major. To be recognized as "formally admitted" into this major, students must meet the following requirements: 1). Certification to upper division (or transfer admission into Environmental Science as a junior); 2) completion of 18 hours of Liberal Studies or an A.A. degree; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; 5) completion of all of the common prerequisite courses for the Chemical Science major; and 6) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to Education Preparation online at http://explorefsucoe.com/admissions.

# Mapping:

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academicguide.fsu.edu</u>.

# Major Program of Studies at FSU: 78-83

# Required Environmental Science and Collateral courses for the major: 61-63

Environmental Science Core Coursework 21-22 hours

MET 2700 (3) General Meteorology

OCE 4008 (3) Principles of Oceanography /

OCE 4017 (3) Current Issues in Environmental Science or GLY 3039 (3) Energy, Resources and Environment

GLY 4751c (3) Intro. to Remote Sensing <u>or</u>(*if GLY4751 is not available*) may substitute GIS 4043 and GIS 4043L

(3, I) Geographic Information Processing & Systems, Lab

GLY 2100 (3) Historical Geology

AST 1002 (3) Astronomy

\*ISC 3523c (3) Research Methods\* counts for both Environmental Science requirements and Education requirements.

Collateral Courses: 21-22

MAC x311 (4) Calculus I

BSC x010, BSC x010L(3, 1) Biological Science I, Lab

CHM x045, CHM x045L {3, 1) General Chemistry I, Lab

PHY x048c (5) General Physics A with Lab

BSC x011, BSC x011L (3, 1) Biological Science II, Lab or CHM x046,x046L (3, I) General Chemistry II, Lab

# **Required Environmental Science Elective Courses: 6 hours**

Select 6 hours. Substitutions for these elective courses require departmental permission but are frequently offered. **Geoscience Elective Courses** GL Y 3200C (3) Mineralogy and Crystallography GLY 3610 (3) Paleontology GL Y 4511 (3) Sedimentation and Stratigraphy GLY 4820 (3) Principles of Hydrology MET 31 03C (3) Climate Change Science or ISC 2003 (3) Global Change or MET 210 I (3) Physical Climatology MET 3220C (3) Meteorological Computations MET 3300 (3) Intro. to Atmospheric Dynamics MET 4 159r (1-3) Selected Topics in Meteorology EOC 4631 (3) Marine Pollution OCB 4631 (3) Estuarine and Coastal Ecology OCC 4060 (3) Environmental Science Modeling OCE 4930r (3) Oceanographic Studies (topics vary)- consent of instructor required5 OCE 4XXX (3) Environmental Science II. Habitable Planet (new number applied for) OCP 4005 (3) Intro. to Physical Oceanography

# Required courses for the Education major: 29-32 hours (26-29 hours beyond the

Environmental Science requirements) SMT 1043 (1) Inquiry Approaches to Teaching SMT 1053 (I) Inquiry Based Lesson Design SMT 3100(3) Knowing and Learning in Science and Mathematics SMT 4301: (3) Classroom Interactions
\*HIS 3505: (3) Perspectives on Science and Mathematics (counts for liberal studies)
\*\*ISC 3523C (3) Research Methods\*
SMT 4664: (3) Project Based Instruction (counts for oral competency)
RED 4335: (3) Teaching Reading in the Content Area
TSL 4324: (3) ESOL in the Content Area
SMT 4945: (5) Apprentice Teaching (student teaching internship) 6 credits
SMT 4930 (1-4): Seminar - variable credit
\*HIS 3505 fulfills a Liberal Studies requirement in History
\*\*ISC 3523C Research Methods counts for both Environmental Science requirements and Education requirements.

Computer Skills Competency: 0 hours beyond other requirements. BSC x010 Lab(1).

Oral Communication Competency: 0 hours beyond other requirements.

Students must demonstrate the ability to orally transmit ideas and information clearly. This requirement may be met through appropriate high school speech training or with an approved college-level approved course. SMT 4664 will meet this requirement.

# Minimum Program Requirements Summary:

Total Hrs. Required - 120 Liberal Studies - 36 (*including* 6 hours of math, 7 hours of science and 3 hours of HJS 3505, all of which are included in the coursework for the majors, 20 hours beyond Requirements for the majors) \* Prerequisites - All prerequisite coursework is included in major/collateral totals BS Major Coursework - 66 BS Collateral prerequisites - 21 \* Minor Coursework - 0 beyond other requirements Foreign Language - 12 (depending on placement) Elective hours to bring total hours to 120 Computer Competency Skills - 0 beyond major (included in science and education coursework) Oral Communication Competency - 0 beyond major (included in education coursework) \*Note: Some coursework required for this major (prerequisite/collateral/major) may also be applied to Liberal Studies or minor requirements.

# **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 3 0 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.

3. The final 30 hours must be completed in residence at this University.

# **Employment Information:**

Salary Information: National Association of Colleges and Employers, Occupational Outlook Handbook

**Representative Job Titles Related to this Major**: High school or middle school science teacher, environmental technician, geoscientist, environmental scientist, hydrologist, general physical scientist, and oceanographer. Some positions may require additional education or training.

Representative Employers: Federal, state, and local governments; NGOs; private employers.

Updated: Summer 2015

# FSUTeach ENVIRONMENTAL SCIENCE (BS) ACADEMIC MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration.

In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements (Please note: FSU-Teach majors are not required to take EDF1005, EDF2085, or EME2040)

Sample Schedule		Milestones
Term 1	Hrs.	TERM 1
ENC1101	3	Complete ENC1101 ( $\geq$ C )
MAC1105	3	Complete MAC1105 ( $\geq$ C )
LS History	3	
LS Core Social Science	3	
SMT1043	1	
Total hours	13	
TERM 2	Hrs.	TERM 2
ENC2135	3	Complete ENC2135 ( $\geq$ C )
MAC1114 and MAC1140	5	Complete MAC1114 and MAC1140 ( $\geq$ C )
CHM1045 and CHM1045 Lab	4	Complete CHM1045/1045Lab
AST1002	3	
SMT1053	1	
Total hours	16	
TERM 3	Hrs.	TERM 3
BSC2010 and BSC2010 Lab	4	Complete MAC2311
MAC 2311	4	Complete BSC2010/2010L

Mapping Coordinator: Shellie Camp E-mail: <a href="mailto:scamp@fsu.edu">scamp@fsu.edu</a>

LS Social Science		3		
LS Core Humanities/Cultural Practic	ce	3		
SMT 3100		3		
Total hours		17		
TERM 4		Hrs.	TERM 4	
MET2700		3	Complete MET2700	
PHY2048C		5	Complete PHY2048C	
GLY2100		3	Complete GLY2100	
LS Humanities/Cultural Practice		3		
SMT4301		3		
Total hours		17		
TERM 5		Hrs.	TERM 5	
BSC2011 and BSC2011 Lab or		1 5	Complete BSC 2011/2011L or CHM	
CHM1046 and CHM1046 Lab		4-5	1046/1046L	
OCE4008		3	Complete SMT3100	
ISC3523C		3	Complete Environmental Science elective	
TSL 4324		3		
Environmental Science Elective		3		
Total hours		16-		
		17		
			TERM 6	
TERM 6		Hrs.	Complete OCE4008	
GLY2010C		4	Complete RED4335	
Foreign Language		4	Complete Professional Ed & Subject Area	
RED4335		3	FTCE	
HIS3505		3	Complete GLY2010C	
Environmental Science Electives		3	Complete second Environmental Science	
Total hours		17	elective	
			Complete General Knowledge FTCE	
TERM 7		Hrs.	TERM 7	
OCE4017 or GLY3039	OCE4017 or GLY3039			
Foreign Language		3	Complete OCE4017 or GLY3039	
Foreign Language		3 4	Complete OCE4017 or GLY3039 Complete SMT4664	
Foreign Language SMT4664		3 4 3	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C	
Foreign Language SMT4664 GLY4751C		3 4 3 3	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check	
Foreign Language SMT4664 GLY4751C LS Ethics		3 4 3 3 3	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check	
Foreign Language SMT4664 GLY4751C LS Ethics Total hours		3 4 3 3 3 16	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check	
Foreign Language SMT4664 GLY4751C LS Ethics Total hours TERM 8	Hrs	3 4 3 3 3 16	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check TERM 8	
Foreign Language SMT4664 GLY4751C LS Ethics Total hours TERM 8 SMT4945	Hrs 5	3 4 3 3 3 16	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check <b>TERM 8</b> Complete GLY4751C	
Foreign Language SMT4664 GLY4751C LS Ethics Total hours TERM 8 SMT4945 SMT4930	Hrs 5 1-4	3 4 3 3 16 •	Complete OCE4017 or GLY3039 Complete SMT4664 Complete ISC3523C Complete a Pre-Graduation Check <b>TERM 8</b> Complete GLY4751C Complete SMT 4945	

Total hours	12-15
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#### **Employment Information**

Representative Job Titles Related to this Major:

Environmental technician, geoscientist, environmental scientist, environmental administrator, hydrologist, general physical scientist, and oceanographer. Some positions may require additional education or training.

Representative Employers: Information available on Academic Program Guide

International Opportunities: International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

This Map is not a contract, either expressed or implied, between the University and the student, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. The University specifically reserves the right to change, delete or add to any Map at any time within the student's period of study at the University.

## **GEOSCIENCES, APPLIED / FSU-TEACH**

College:	Arts and Sciences	Education
Degree:	B.S.	
Limited Access:	No	
Contacts:	Tim Mcgann(Advising)	
	Dr. Jeff Chanton (program information)	
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	Chanton: 305 OSB	rrsmith@fsu.edu
	Parker: 207 CAR	
Phone:	Mcgann: (850) 644-8580	
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E-mail:	tmcgann@fsu.edu	
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#### **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians and education faculty at Florida State University. Applied Geosciences students in the FSU-Teach program will develop deep earth science knowledge and the knowledge, skill, and experience needed to be an effective science teacher. Earth science coursework will include coursework in meteorology, geology, oceanography, hydrology, and astronomy. The program will pay for tuition for the first two Education/Teaching courses. Work study positions with scientists, mathematicians and local schools are available. For more information, see our Web site, http://fsu-teach.fsu.edu/.

This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case Applied Geosciences. Later, students apply for admission into a secondary major within the College of Education. Upon graduation, students are awarded the B.S. degree with majors in Applied Geosciences and Secondary Science or Mathematics Teaching (SSMT).

Prerequisite Coursework: 0 beyond other requirements.

Students must complete the following prerequisites required for admission in preparation for the upper division major. All of the following may also apply toward major and/or Liberal Studies requirements.

MAC X311 (4) Calculus with Analytic Geometry I MAC X312 (4) Calculus with Analytic Geometry II PHY X048C (4-5) General Physics A (5 hours at FSU) PHY X049C (4-5) General Physics B (5 hours at FSU)
CHM X045, X045L (3,1) General Chemistry I, Lab
CHM X046, X046L (3,1) General Chemistry II, Lab
\* SMT X043 (1) Step 1: Inquiry Approaches to Teaching
\* SMT X053 (1) Step 2: Inquiry-Based Lesson Design
\* Transfer students will be able to take SMT X043 and SMT X053 while enrolled at FSU.

<u>Note</u>: State-wide common prerequisites are always under review. For the most current information and for acceptable alternative courses, visit the "Common Prerequisites Manual." This is available from the "Student Services" section of <u>http://www.flvc.org</u>.

## **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Science requires proficiency in a foreign language through the intermediate (2220 or equivalent) level or sign language through the advanced (2614 or equivalent) level.

#### Progress in this major and formal admission to FSU-Teach and Teacher Education.

FSU native and transfer students will progress to upper-division (junior) status in the College of Arts and Sciences in the same manner as other Applied Geosciences majors: an AA degree or 52 earned credits (including at least half of the general education requirement to include the English composition and mathematics), at least a 2.5 GPA, and completion of appropriate milestones. To be recognized as "formally admitted" into this major, students must meet the following requirements: 1) certification to upper division (or transfer admission into Applied Geosciences as a junior); 2) completion of 18 hours of Liberal Studies or an AA; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; 5) completion of all of the common prerequisite courses for the Mathematics major; and 6) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to 'Educator Preparation' online at <u>http://explorefsucoe.com/admissions</u>.

#### Departmental Policy on Grades and Continuation in the Major

Students must earn a minimum GPA of 2.0 in all required courses numbered 2000 or higher. A student who has received more than five unsatisfactory grades (U, F, D–, D, D+) in courses required for the major (chemistry, physics, mathematics, geology, meteorology, and oceanography) at Florida State University or elsewhere, whether repeated or not, will not be permitted to graduate with a degree in Geosciences.

#### Mapping

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academic-guide.fsu.edu/</u>.

#### Major Program of Studies at FSU: 93 hours.

**Required courses for the Applied Geosciences Major:** 64 hours <u>Geosciences Coursework</u> (38 hours) AST 1002 (3) Planets, Stars and Galaxies GLY 2100 (3) Historical Geology One lab selected from AST 1002L (1) Intro. Astronomy Lab or GLY 2100L (1) Historical Geology Lab GLY 2010C (4) Physical Geology GLY 4820 (3) Principles of Hydrology GEO 2200C (3) Physical Geography MET 1010L (1) Introduction to Atmosphere Lab MET 2502C (2) Weather Analysis and Forecasting MET 2700 (3) General Meteorology MET 3300 (3) Introduction to Atmospheric Dynamics MET 3103C (3) Climate Change Science OCE 4008 (3) Principles of Oceanography OCE 4017 (3) Current Issues in Environmental Studies SCE 4835C (3) Teaching Earth and Space Science Collateral Coursework (26 hours) CHM 1045, 1045L (3,1) General Chemistry I and Lab CHM 1046, 1046L (3,1) General Chemistry II and Lab PHY 2048C (5) General Physics A (with lab) PHY 2049C (5) General Physics B (with lab) MAC 2311 (4) Calculus with Analytical Geometry I MAC 2312 (4) Calculus with Analytical Geometry II **Required courses for the Education major:** 29 hours SMT 1043 (1) Step 1: Inquiry Approaches to Teaching

- SMT 1053 (1) Step 2: Inquiry-Based Lesson Design
- SMT 3100 (3) Knowing and Learning
- SMT 4310 (3) Classroom Interactions
- SMT 4664 (3) Project Based Instruction
- SMT 4945 (6) Apprentice Teaching
- \*HIS 3505 (3) Perspectives on Science and Mathematics
- ISC 3523C (3) Research Methods
- RED 4335 (3) Content Area Reading for Secondary School Teachers
- TSL 4324 (3) ESOL Instruction in the Content Area
- \*HIS 3505 fulfills a Liberal Studies requirement in History.

# Computer Skills Competency: 0 beyond major credits. ISC 3523C.

#### Oral Communication Competency: 0-3 hours

Students must demonstrate the ability to orally transmit ideas and information clearly. This requirement may be met through appropriate high school speech training or with an approved college-level course. SMT 4664 will satisfy this requirement.

# **Minimum Program Requirements Summary**

Total Hrs. Required 120 Liberal Studies 36\* Prerequisite Coursework 0 beyond other requirements\* Major Coursework 93 hours Foreign Language 0-12 (depending on placement) Computer Skills 0 credits beyond other requirements Oral Competency 0-3 Electives to bring total hours to 120 \*Prerequisite coursework may also be used to satisfy general education and major requirements.

# **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 30 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.

3. The final 30 hours must be completed in residence at this University.

4. Students who plan to earn the B. A. degree must complete both a foreign language through the intermediate (2200 or equivalent) level and nine additional hours in the fields of history and humanities.

# **Employment Information**

Salary Information: National Association of Colleges and Employers, Occupational Outlook Handbook

<u>Representative Job Titles Related to this Major</u>: Middle school or high school teacher. In addition, students may pursue careers appropriate for those with a strong background in science and math.

<u>Representative Employers</u>: Public and private schools, research facilities, government agencies; private industry.

Updated: Summer 2015

# FSUTeach APPLIED GEOSCIENCES ACADEMIC MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, Gordon Rule, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration.

The FSU Teach/Applied Geosciences major is designed for students who wish to teach Earth and Space Science at the middle and/or secondary education levels. Students are strongly encouraged to have credit for College Algebra (MAC1105) prior to enrolling as freshman in the FSU Teach/Applied Geosciences major. This degree should not be used by someone planning to work in the geosciences fields directly or planning to do graduate work in the geosciences.

In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: <u>http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements</u>

(Please note: FSU Teach majors are not required to take EDF1005, EDF2085, or EME2040)

Sample Schedule		Milestones
Term 1	Hrs.	TERM 1
ENC1101 or higher English	3	Complete ENC1101 ( $\geq$ C )
MAC2311	4	Complete 1st LS Mathematics ( $\geq$ C )
AST1002	3	Complete AST1002
LS Soc Sci/Hum/His	3	
SMT1043	1	
Total hours	14	
TERM 2	Hrs.	TERM 2
ENC1102 or other second English	3	Complete ENC2135 ( $\geq$ C )
MAC2312	4	Complete 2nd LS Mathematics ( $\geq$ C )
CHM1045 or CHM1050 w/lab	4	
LS Soc Sci/Hum/His	3	

Mapping Coordinator: Shellie Camp E-mail: <a href="mailto:scamp@fsu.edu">scamp@fsu.edu</a>

SMT1053		1	
Total hours		15	
TERM 3	Hrs.		TERM 3
MET2700	2	3	Complete CHM1045 and CHM1045L
MET1010L		1	Complete MAC2311
PHY2048C	4	5	,
Liberal Studies	2	3	
SMT3100		3	
Total hours	1	5	
TERM 4		Hrs.	TERM 4
PHY2049C		5	Complete CHM1046 w/lab or CHM1051 w/lab
MET2502C		2	
SMT4301		3	
CHM1046 or CHM1051 w/lab		4	
Total hours		14	
TERM 5	I	Irs.	TERM 5
Foreign Language		4	SMT3100
OCE4008		3	Complete MET2700
GLY2010C		4	Complete PHY2048C or PHY2053C
ISC3523C		3	Complete MAC2312
LS Soc Sci/Hum/His		3	
Total hours		15	
TERM 6		Hrs.	TERM 6
GLY2100		4	Begin Foreign Language
SCE4835C		3	RED4335
GLY2100L or AST1002L		1	Professional Ed. & Subject Area FTCE
MET3300		3	General Knowledge FTCE
TSL4324		3	Apply for formal admission to School of
HIS3505		3	Teacher Education (minimum overall gpa 2.5
Total hours		17	required)
SUMMER	H	rs.	
Liberal Studies	4	5	
GEO2200C	2	3	
Total hours	8	8	
TERM 7		Hrs.	TERM 7
OCE4017		3	Complete a pre-graduation check
GLY4820		3	ISC3523C
MET3103C (Climate Change Scienc	e)	3	SMT4664
SMT4664		3	
RED4335		3	

Total hours	15	
TERM 8	Hrs.	TERM 8
SMT4945 and SMT4930	6	SMT4945
Total hours	6	Apply for Graduation in 1st two weeks

### **Employment Information**

<u>Representative Job Titles Related to this Major:</u> Middle School/High School/Advanced Placement Earth and Space Science teacher.

<u>Representative Employers:</u> Middle Schools and High Schools, Environmental Agencies and Organizations.

#### International Opportunities

International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

This Map is not a contract, either expressed or implied, between the University and the student, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. The University specifically reserves the right to change, delete or add to any Map at any time within the student's period of study at the University

## **MATHEMATICS / FSU-TEACH**

Colleges:	Arts and Sciences	Education
Degree:	B.S.	
Limited Access:	No	
Contacts:	Mathematics	FSU-Teach
	Dr. Steve Bellenot	Dr. Robin R. Smith
	208 Love Bldg, FSU	209 Carothers Hall, FSU
	1017 Academic Way	Tallahassee, FL 32306-4482
	Tallahassee, FL 32306-4510	
Phone:	(850) 644-2202	(850) 645-8927
E-Mail:	advisor@math.fsu.edu	rsmith@fsu.edu
Web Page:	http://www.math.fsu.edu/	http://fsu-teach.fsu.edu/

#### **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians and education faculty at Florida State University. Mathematic students in the FSU-Teach program will develop deep mathematics knowledge and the knowledge, skill, and experience needed to be an effective math teacher. The program will pay for tuition for the first two Education/Teaching courses. Work study positions with scientists, mathematicians and local schools are available. For more information, see our Web site, <a href="http://fsu-teach.fsu.edu/">http://fsu-teach.fsu.edu/</a>. This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case Mathematics. Later, students apply for admission into a secondary major within the College of Education called Secondary Science or Mathematics Teaching (SSMT). Upon graduation, students are awarded the B.S. degree with majors in Mathematics and SSMT.

#### Prerequisite Coursework: 0 hours beyond other requirements.

All of the following credits may also be used to meet either general education or major requirements.

\*COP XXXX (3) A scientific programming course designed for computer science majors MAC X311 (4) Calculus with Analytic Geometry I

MAC X312 (4) Calculus with Analytic Geometry II

MAC X313 (4) Calculus with Analytic Geometry III (5 credits @ FSU)

MAP X302 (4) Ordinary Differential Equations (3 credits @ FSU)

\*XXX XXXX (4-5) One laboratory based science courses designed for science majors, prefix BSC, CHM, PHY, or GLY

(PHY X048C or X048 & X048L suggested as it is required for the major)

SMT X043 (1) Step 1: Inquiry Approaches to Teaching

SMT X053 (1) Step 2: Inquiry-Based Lesson Design

\*See major requirements before selecting courses to meet these prerequisites.

<u>Note</u>: State-wide common prerequisites are always under review. For the most current information and for acceptable alternative courses, visit the "Common Prerequisites Manual." This is available from the "Student Services" section of <u>http://www.flvc.org</u>.

### **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Science requires proficiency in a foreign language through the intermediate (2220 or equivalent) level or sign language through the advanced (2614 or equivalent) level.

#### Progress in this major and formal admission to FSU-Teach and Teacher Education.

FSU native and transfer students will progress to upper-division (junior) status in the College of Arts and Sciences in the same manner as other mathematics majors: an AA degree; or 52 earned credits (including at least half of the general education requirement, to include English composition and mathematics), at least a 2.5 GPA and completion of appropriate milestones. To be recognized as "formally admitted" into this major, students must meet the following requirements: 1) certification to upper division (or transfer admission into Mathematics as a junior); 2) completion of 18 hours of Liberal Studies or an AA; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; 5) completion of all of the common prerequisite courses for the Mathematics major; and 6) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to Educator Preparation online at http://exlplorefsucoe.com/admissions .

#### **Continuation requirements.**

A grade of C– or better is required in all courses to be counted toward this degree. A student who has accumulated more than one grade below a C– (including grades of U) in the calculus sequence MAC2311, MAC2312, MAC2313 at Florida State University or elsewhere, whether repeated or not, will not be permitted to continue as a major in the department. A student who has accumulated more than five grades below C- (including grades of U) in any mathematics or collateral course required for the degree taken for college credit at Florida State University or elsewhere, whether repeated or not, will not be permitted to continue as a major in the department. The collateral courses include COP3014 or ISC3313, PHY2048C, STA4321 and includes the collateral coursework with prefixes BSC, HIS, MAT, RED, SMT or TSL.

#### Mapping

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academic-guide.fsu.edu/</u>.

#### Major Program of Studies at FSU: 81 to 82 hours.

#### Required courses for the Mathematics Major: 44-45 hours

<u>Core requirements</u> (28 hours) MAC 2311 (4) Calculus with Analytical Geometry I MAC 2312 (4) Calculus with Analytical Geometry II MAC 2313 (5) Calculus with Analytical Geometry III MAP 2302 (3) Ordinary Differential Equations MAS 3105 (4) Applied Linear Algebra I STA 4321 (3) Introduction to Mathematical Statistics PHY 2088C (5) General Physics A with Lab One of the following (3 hours) COP 3014 (3) Programming I ISC 3313 (3) Introduction to Scientific Computing Choose at least one course from each group (12-13 hours) Algebra MAS 3301 (3) Introduction to Modern Algebra MAS 4302 (3) Introduction to Abstract Algebra MAS 4203 (3) Theory of Numbers Analysis MAA 4402 (3) Complex Variables MAA 4224 (3) Introduction to Analysis or MAA 4226 (3) Advanced Calculus I Geometry MTG 4212 (3) College Geometry Modeling MAP 4103 (3) Mathematical Modeling (S/U grade only) MAP 4176 (4) Actuarial Models MAP 4180 (3) Game Theory and Applications MAP 4481 (3) Mathematical Modeling in Biology At least two electives from the following (6 hours) At least one elective must be at the 3000-level or higher MAA 4227 (3) Advanced Calculus II MAD 2104 (3) Discrete Mathematics I MAD 3105 (3) Discrete Mathematics II MAP 4153 (3) Vector Calculus with Intr. to Tensors MAP 4170 (3) Introduction to Actuarial Science MAP 4202 (3) Optimization MAP 4216 (3) Calculus of Variations MAP 4341 (3) Elementary Partial Differential Equations I MAS 4106 (3) Applied Linear Algebra II MGF 3301 (3) Introduction to Advanced Mathematics MHF 4302 (3) Mathematical Logic MTG 4302 (3) Elementary Topology I Or an additional course from the Algebra, Analysis, or Modeling groups.

# **Required courses for the Education major:** 32 hours

SMT 1043 (1) Step 1: Inquiry Approaches to Teaching SMT 1053 (1) Step 2: Inquiry-Based Lesson Design SMT 3100 (3) Knowing and Learning SMT 4664 (3) Project Based Instruction SMT 4945 (6) Apprentice Teaching SMT 4301 (3) Classroom Interactions \*HIS 3505 (3) Perspectives on Science and Mathematics \*\*ISC 3523C (3) Research Methods MAT 3503 (3) Functions and Modeling RED 4335 (3) Content Area Reading for Secondary School Teachers \*HIS 3505 fulfills a Liberal Studies requirement for History \*\*ISC 3523C fulfills a Liberal Studies in science for mathematics students.

**Computer Skills Competency:** 0 hours beyond other requirements. COP 3014 (3) Programming I or ISC 3313 (3) Introduction to Scientific Computing.

# Oral Communication Competency: 0-3 hours

Students must demonstrate the ability to orally transmit ideas and information clearly. This requirement may be met through appropriate high school speech training or with an approved college-level course. SMT 4664 will satisfy this requirement.

# **Minimum Program Requirements Summary**

Total Hrs. Required 120 Liberal Studies 36\* Prerequisite Coursework 0 beyond other requirements\* Major Coursework 81-82 Foreign Language 0-12 (depending on placement) Computer Skills 0 beyond prerequisites/majo4 Oral Competency 0-3 Electives to bring total hours to 120 \*The 22 hours of prerequisite coursework may also be used to satisfy general education and major requirements.

# **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 30 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.

3. The final 30 hours must be completed in residence at this University.

4. Students who plan to earn the B. A. degree must complete both a foreign language through the intermediate (2200 or equivalent) level and nine additional hours in the fields of history and humanities.

# **Employment Information**

Salary Information: <u>National Association of Colleges and Employers</u>, <u>Occupational Outlook</u> <u>Handbook</u>

**Representative Job Titles Related to this Major**: Middle school or high school teacher of mathematics, mathematician, research analyst.

**Representative Employers**: Public and private schools, research and engineering firms, government agency.

Updated: Summer 2015

# FSUTeach MATHEMATICS ACADEMIC MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration.

The Mathematics FSU-Teach major is designed for students who wish to teach Mathematics at the middle and/or secondary education levels. Students are strongly encouraged to have credit for College Algebra (MAC1105) prior to enrolling as freshman in the Mathematics FSU-Teach major. This degree should not be used by someone planning to do graduate work in mathematics. In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: <a href="http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements">http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements</a>

(Please note: FSU-Teach majors are not required to take EDF1005, EDF2085, or EME2040)

Sample Schedule		Milestones
Term 1	Hrs.	TERM 1
ENC1101	3	Complete ENC1101 ( $\geq$ C )
MAC2311 or higher mathematics	4	Complete 1st LS Mathematics ( $\geq$ C )
LS Core Social Science	3	
COP3014	3	
SMT1043	1	
Total hours	15	
TERM 2	Hrs.	TERM 2
ENC2135	3	Complete ENC2135 ( $\geq$ C )
MAC2312	4	Complete 2nd LS Mathematics ( $\geq C$ )
PHY2048C	5	Meet with department Advisor
LS Core Humanities/Cultural Practice	3	
SMT1053	1	

Mapping Coordinator: Shellie Camp E-mail: <a href="mailto:scamp@fsu.edu">scamp@fsu.edu</a>

Total hours	16	
TERM 3	Hrs.	TERM 3
MAC2313	5	Complete MAC2311
Foreign Language I	4	
SMT3100	3	
MAT3503	3	
Total hours	15	
TERM 4	Hrs.	TERM 4
MAP2302	3	none
Foreign Language II	4	
Classroom Interactions	3	
MAS3105	3	
LS History	3	
Total hours	16	
TERM 5	Hrs.	TERM 5
Foreign Language III	4	Complete SMT3100
STA4321	3	Complete MAT3503
Math Area Elective	3	Complete MAC2313
ISC3523C	3	Complete COP3014 or ISC3313
LS Humanities/Cultural Practice	2	Begin Foreign Language requirement
Total hours	15	
		TERM 6
TFRM 6	Hrs	Complete MAS3105
Math Area Elective	3	Complete RED4335
Math Elective	3	Complete MAC2313
LS Core Natural Science with Lab	4	Foreign Language I
HIS3505	3	General Knowledge FTCE
TSI 4324	3	Professional Ed. & Subject Area FTCE
Total hours	16	Apply for formal admission to School of
	10	Teacher Education (minimum overall gpa 2.5
SUMMER	Hrs.	
LS Ethics	3	
LS Natural Science		
Math Area Elective	3	
[Total hours	9	
TERM 7	Hrs.	TERM 7
Math Area Elective	3	Complete SMT4664
SMT4664 (oral)	3	Complete ISC3523c
RED4335	3	

LS Social Science	3	
Elective	3	
Total hours	15	
TERM 8	Hrs.	TERM 8
SMT4945 and SMT4930	6	SMT4945
Total haven	6	Apply for Creduction in 1st two weaks

## **Employment Information**

<u>Representative Job Titles Related to this Major:</u> Middle School/High School Advanced Placement Mathematics Teacher

Representative Employers: Middle Schools and High Schools

## International Opportunities

International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

This Map is not a contract, either expressed or implied, between the University and the student, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. The University specifically reserves the right to change, delete or add to any Map t any time within the student's period of study at the University.

# PHYSICAL SCIENCE / FSU-TEACH

Colleges:	Arts and Sciences	Education
Degree:	B.S.	
Limited Access:	No	
Contacts:	Physics	FSU-Teach
	Melissa Wolff	Dr. Robin R. Smith
	307 Keen Bldg, FSU	209 Carothers Hall, FSU
	Tallahassee, FL 32306-4350	Tallahassee, FL 32306-4482
	(850) 644-3245	(850) 645-8927
	ugrad@physics.fsu.edu	rrsmith@fsu.edu
Web Page:	http://fsu-teach.fsu.edu/	

# **Description of Major**

FSU-Teach is an innovative approach to teacher education that involves collaboration between scientists, mathematicians, and education faculty at Florida State University. Physical Science students in the FSU-Teach program will develop both knowledge of physics and the knowledge, skill, and experience needed to be an effective science teacher. The program will pay for tuition for the first two Education/Teaching courses. Work study positions with scientists, mathematicians, and local schools are available. For more information, see our Web site, <a href="http://fsu-teach.fsu.edu/">http://fsu-teach.fsu.edu/</a>.

This is a double-major only program. FSU-Teach majors are first admitted into their primary, discipline-specific major and must meet the state-wide common program prerequisites for that major, in this case Physical Science/FSU-Teach. Later, students apply for admission into a secondary major within the College of Education called Secondary Science or Mathematics Teaching (SSMT). Upon graduation, students are awarded the B.S. degree with majors in Physical Science/FSU-Teach and SSMT.

The FSU Physics Department also offers majors in "Physical Science," "Physics," and "Physics and Astrophysics."

#### Prerequisite Coursework: 0 beyond other requirements.

Students must complete the following prerequisites required for admission in preparation for the upper division major. All of the following may also apply toward major and/or Liberal Studies requirements.

MAC X311 (4) Calculus with Analytic Geometry I

MAC X312 (4) Calculus with Analytic Geometry II

MAC X313 (4) Calculus with Analytic Geometry III

CHM X045, X045L (3,1) General Chemistry I, Lab (or equivalent)

CHM X046, X046L (3,1) General Chemistry II, Lab

PHY X048C (5) General Physics A

PHY X049C (5) General Physics B

SMT X043 (1) Step 1: Inquiry Approaches to Teaching

SMT X053 (1) Step 2: Inquiry-Based Lesson Design

Note 1: Transfer students will be able to take SMT X043 and SMT X053 when enrolled at FSU.

Note 2: State-wide common prerequisites are always under review. For the most current

information and for acceptable alternative courses, visit the "Common Prerequisites Manual." This is available from the "Student Services" section of <u>http://www.flvc.org</u>.

## **Requirements for graduation in the College of Arts and Sciences include:**

The College of Arts and Science requires proficiency in a foreign language through the intermediate (2220 or equivalent) level or sign language through the advanced (2614 or equivalent) level.

### Progress in this major and formal admission to FSU-Teach and Teacher Education.

To be recognized as "formally admitted" into this major, students must meet the following requirements: 1) certification to upper division (or transfer admission into Physical Science/FSU-Teach as a junior); 2) completion of 18 hours of Liberal Studies or an AA; 3) satisfactory completion of "Step 1" and "Step 2" courses; 4) a cumulative GPA of at least a 2.5; and 5) a passing score on all four parts of the FTCE General Knowledge Test. Once these are complete, the student must apply to Educator Preparation online at <u>http://explorefsucoe.com/admissions</u>.

# Departmental Policy on Grades and Continuation in the Major

A student who has received more than five unsatisfactory grades (U, F, D–, D, D+) in courses required for a major offered by the Department of Physics at Florida State University or elsewhere, whether or not repeated, will not be permitted to graduate with a degree in this major.

## Mapping

Mapping is FSU's academic advising and monitoring system. Academic progress is monitored each Fall and Spring semester to ensure that students are on course to earn their degree in a timely fashion. Transfer students must meet mapping guidelines to be accepted into their majors. You may view the map for this major at <u>www.academic-guide.fsu.edu/</u>.

# Major Program of Studies at FSU: 79-82 hours

# Required courses for the Physical Science/FSU-Teach Major: 50 hours

1. All of the following Physics courses (19 hours) PHY 2048C (5) General Physics A PHY 2049C (5) General Physics B PHY 3091 (2) Communication in Physics (satisfies oral communication requirement) PHY 3101 (3) Intermediate Modern Physics PHY 3012 (2) Learning Assistantship in Physics PHY 3802L (2) Intermediate Laboratory 2. Four of the following five courses (12 hours) AST 4211 (3) Introduction to Astrophysics PHY 3045 (3) Physics Problem Solving PHY 3424 (3) Optics PHZ 3400 (3) Phenomena in Condensed Matter Physics PHZ 4390 (3) Particle and Nuclear Physics 3. At least one computer skills competency course selected from the following (3 hours) COP 3014 (3) Programming I ISC 3313 (3) Introduction to Scientific Computing
PHZ 4151C (3) Computational Physics Laboratory

Collateral Coursework: 16 hours

Majors must satisfy complete the courses listed below. As collateral courses, these may be used to satisfy Liberal Studies or minor requirements. If not, they must be taken in addition to other requirements.

MAC 2311 (4) Calculus with Analytic Geometry I

MAC 2312 (4) Calculus with Analytic Geometry II

CHM 1045, 1045L (3,1) General Chemistry I, Lab <u>or</u> CHM 1050, 1050L Honors General Chemistry I, Lab

CHM 1046, 1046L (3,1) General Chemistry II, Lab <u>or</u> CHM 1051, 1051L Honors General Chemistry II, Lab

#### Required courses for the Science Teaching major: 29-32 hours

SMT 1043 (1) Step 1: Inquiry Approaches to Teaching
SMT 1053 (1) Step 2: Inquiry-Based Lesson Design
SMT 3100 (3) Knowing and Learning
SMT 4301 (3) Classroom Interactions
SMT 4664 (3) Project Based Instruction
SMT 4830 (1-4) Apprentice Teaching Seminar
SMT 4945 (5) Apprentice Teaching
\*HIS 3505 (3) Perspectives on Science and Mathematics
ISC 3523C (3) Research Methods
RED 4335 (3) Content Area Reading for Secondary School Teachers
TSL 4324 (3) ESOL Instruction in the Content Area

\*HIS 3505 fulfills a Liberal Studies requirement for History.

**Computer Skills Competency:** 0 hours beyond other requirements. PHZ 4151C (3), COP 3014 (3), or ISC 3313 (3).

**Oral Communication Competency:** 0 hours beyond major. PHY 3091 or SMT 4664 will satisfy this requirement.

#### **Minimum Program Requirements Summary**

Total Hrs. Required 120 Liberal Studies 36\* Prerequisite Coursework 0 beyond other requirements\* Major Coursework 79-82 Foreign Language 0-12 (depending on placement) Computer Skills 0 beyond major Oral Competency 0 beyond major Electives to bring total hours to 120 \*Prerequisite coursework may also be used to satisfy general education and major requirements.

#### **Remarks:**

1. A minimum of 45 hours at the 3000 level or above, 30 of which must be taken at this University.

2. Half of the major course semester hours must be completed in residence at this University.

3. The final 30 hours must be completed in residence at this University.

4. Students who plan to earn the B. A. degree must complete both a foreign language through the intermediate (2200 or equivalent) level and nine additional hours in the fields of history and humanities.

#### **Employment Information**

Salary Information: National Association of Colleges and Employers, Occupational Outlook Handbook

<u>Representative Job Titles Related to this Major</u>: Middle school or high school teacher of physics. In addition, students may pursue careers appropriate for students with a major in Physical Science.

Representative Employers: Public and private schools, research facilities, private industry.

Updated: Summer 2015

#### PHYSICAL SCIENCE/FSUTeach MAP (Effective Summer 2015 and after)

This map is a term-by-term sample course schedule. The milestones listed to the right of each term are designed to keep you on course to graduate in four years. The Sample Schedule serves as a general guideline to help you build a full schedule each term. The Liberal Studies and Elective courses must be selected to satisfy all area, literature, lab, and multicultural requirements unless your program meets these requirements with major courses. Milestones are courses and special requirements necessary for timely progress to complete a major. Missing milestones will result in one of two types of map registration stops. The first level (*Degree Map Off-track*) is placed following grade posting if the student has missed a milestone (course and/or GPA) for the first time in the major. If a student is in non-compliance with milestones for two (2) consecutive semesters (excluding summers), *a Major Change Required* stop is placed on the student's registration. The Physical Science/FSU-Teach major is designed for students who wish to teach Physics or other physical sciences at the middle and/or secondary education levels.

In order to be admitted for the second major in Education, students must have an overall 2.5 gpa, and satisfy the teacher education admission requirements noted here: http://www.coe.fsu.edu/Admissions-Scholarships/Undergraduate-Admissions/Teacher-Education-Admissions-Requirements

(Please note: FSUT-each majors are not required to take EDF1005, EDF2085, or EME2040) Mapping Coordinator: Shellie Camp E-mail: <u>scamp@fsu.edu</u>

Sample Schedule		Milestones	
TERM 1	Hı	s.	TERM 1
ENC1101		3	Complete ENC1101 ( $\geq$ C )
MAC1114		2	Complete 1st LS Mathematics ( $\geq$ C )
MAC1140		3	
SMT1043		1	
LS Core Social Science		3	
LS History		3	
Total Hours		15	
TERM 2		Hrs.	TERM 2
ENC2135		3	Complete ENC2135 ( $\geq$ C )
MAC2311		4	Complete 2nd LS Mathematics ( $\geq$ C )
LS Core Humanities/Cultural Pract	tice	3	
SMT1053		1	
Foreign Language I		4	
Total Hours		15	
Summer	Hrs.		
PHY2048C	5		
MAC2312	4		

Total Hours	9		
TERM 3	Hı	rs.	TERM 3
PHY2049C		5	Complete PHY2048C
SMT3100		3	Complete MAC2313
Foreign Language II		4	
LS Humanities/Cultural Practice		3	
Total Hours	1	15	
TERM 4	Hr	s.	TERM 4
PHY3101	3		Complete MAC2312
CHM1045 w/Lab	4		Complete PHY2049C
SMT4301	3		
Foreign Language III	4		
Total Hours	14	ł	
TERM 5	Hr	·s.	TERM 5
PHY3091	2		Complete SMT3100
PHY3424 or PHY3045	3		Complete PHY3101
ISC3523C	3		
PHY3012	2	,	
LS Social Science	3		
Total hours	13	3	
TEDM 6	Ung		TERM 6
		•	Complete CHM1045 w/Lab
CHM1046 w/Lab			Complete RED4335
	4		Apply for formal admission to School of
TSI 4324			Teacher Education (minimum overall gpa 2.5
PH73400	3		required)
Total hours	16		General Knowledge FTCE
	10		Professional Ed. & Subject Area FTCE
TERM 7	H	lrs.	TERM 7
AST4211 or PHY 3045		3	Complete a pre-graduation check
SMT4664		3	Complete SMT4664
RED4335		3	Complete ISC3523C
PHZ4151C or ISC3313 or COP3014		3	Complete CHM1046 w/Lab
LS Ethics		3	
Total hours		15	
TERM 8	H	[rs.	TERM 8
SMT4945		5	SMT4945
SMT4930	1	-4	SMT4930
Oral Communication Competency		3	Apply for Graduation in 1st two weeks

#### **Employment Information**

<u>Representative Job Titles Related to this Major:</u> Physics Teacher at the Middle and/or Secondary education level

Representative Employers: Middle Schools and High Schools

#### International Opportunities

International study is available for all students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the MAP; therefore, it is important to consult with the academic advisor for this major before participating in an International Programs opportunity. Interested students should also contact the Office of International Programs.

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# **FSU-Teach Course of Study**

#### **Step 1: Inquiry Approaches to Teaching**

Step 1 invites students to explore teaching as a career at no cost. In Step 1, students teach science or math lessons in elementary classrooms to obtain firsthand experience with planning and implementing inquiry-based curriculum. Master teachers teach Step 1, so students have direct access to people who love teaching and who believe that teaching is a rewarding career choice. A low-socioeconomic-status elementary classroom provides the future teachers with a first taste of teaching in a supportive, diverse environment.

An introduction to the theory and practice necessary to design and deliver excellent inquirybased science and mathematics instruction provides the scaffold for the early field experience. The FSU-Teach instructor or master teacher and the elementary school mentor teacher emphasize both inquiry and classroom management techniques.

Students Will Be Able To:	Evidence (Student Products)
Utilize content knowledge to plan	A paragraph in each lesson plan that provides
and teach three upper elementary	background information on the concepts presented
grade lessons	Content accuracy throughout a lesson plan
	Observations by the mentor teacher and the master
	teacher
Utilize exemplary sources of	Participation in model lessons presented in class
inquiry-based science and	Sources of lessons cited in each lesson plan
mathematics lessons	
Write performance objectives and	Performance objectives and corresponding
assessments of those objectives	assessments included in each lesson plan
for each lesson	
Design and teach three inquiry-	Three inquiry-based lesson plans
based lesson plans using the 5E	Written feedback by the mentor teacher for three
model	inquiry-based lessons
	Written feedback by a master teacher for at least
	one inquiry-based lesson
Determine personality and	Completion and analysis of survey instruments
learning styles using survey	Participation in class discussions on the
instruments such as the Keirsey	implications of personality and learning styles for
Temperament Sorter and	teaching and learning
Gardner's Multiple Intelligences	
and discuss the implications for	
teaching and learning	

#### **Course Objectives: Step 1**

Use probing questions to elicit	Participation in class discussions on questioning
feedback to determine students'	strategies
acquisition of knowledge	Extensive examples of possible questions and
	expected responses listed in each lesson plan
	Written feedback for every lesson from the mentor
	teacher
Implement safe classroom	Safety issues addressed in each lesson plan
practices	Observations by the mentor teacher and master
	teacher
Assess commitment to pursue	Participation in a class discussion on intentions to
teaching as a career path	pursue teaching as a career path

#### Step 2: Inquiry-Based Lesson Design

In Step 2 students who want to explore teaching careers become familiar with the middle school environment by observing and discussing middle school culture and by teaching several lessons to a middle school class. They build on and practice lesson design skills developed in Step 1 and also become familiar with excellent science or mathematics curricula for the middle school setting. A significant number of FSU-Teach students enjoy their teaching experiences in middle schools to the extent that they decide to pursue teaching in the middle grades. As a result of the Step 2 experiences, students generally are able to make a decision about whether they want to pursue a pathway to teacher certification through the FSU-Teach program.

The Step 2 course emphasizes writing good 5E lesson plans, with a focus on the importance of using appropriate questioning strategies throughout the lesson. Students develop pre- and post-assessments for performance objectives. For their final product, students analyze and modify one of the lessons they taught, taking into account the results of the assessments, their reflection on how successful the lesson was, and feedback from their mentor teachers and the course instructor who observed the lesson.

Students Will Be Able To:	Evidence (Student Products)
Use content knowledge to plan and teach three middle school lessons	One paragraph in each lesson plan that provides background information on the concepts presented Content accuracy throughout the lesson plan Observations by the mentor teachers and the master teacher
Use exemplary sources of inquiry-based science and mathematics lessons	Participation in model lessons presented in class Sources of lessons cited in each lesson plan
Experience teaching adolescents to understand their unique attributes and implement teaching strategies that are effective in the middle school environment	One paragraph in each lesson plan that indicates why the instructional strategies are effective for adolescents Participation in a class session that addresses attributes of adolescents Observations by the mentor teachers and master teacher who observe lessons
Design and teach three inquiry-based lesson plans using safe practices and the 5E model	Three inquiry-based lesson plans with the 5E template that includes safety recommendations Written feedback by the mentor teacher for three inquiry-based lessons taught in a middle school Written feedback by the master teacher for at least one inquiry-based lesson taught in a middle school
Design and teach a lesson that incorporates the use of technology	Participation in technology activities during class A minimum of one lesson plan that incorporates the use of technology Written feedback from the mentor teacher

#### **Course Objectives: Step 2**

	indicating that a minimum of one lesson
	incorporated the use of technology
Use probing questions to elicit	Participation in class discussions on questioning
feedback on students'	strategies
acquisition of knowledge	Extensive examples of possible questions and
	expected responses listed in each lesson plan
	Written feedback for every lesson from the mentor
	teacher, indicating the effective use of questioning
	strategies
Use pre- and post-assessments	Analysis of the use of pre- and post-assessments to
to evaluate student learning, to	evaluate student learning
provide instructive feedback	Pre- and post-assessments with written comments
to middle school students, and	for instructive feedback for lesson plans.
as a basis for revising a lesson	Use of pre- and post-assessments to revise one
plan	lesson plan
Provide instructive feedback	Written feedback provided to peers who present
to peers	their lessons during class
Reflect on teaching	Student essays produced after observation and
experiences to revise lesson	teaching experiences
plans	One revised lesson plan submitted as a final project
	Essay providing rationale for revisions to the lesson
	plan
Evaluate commitment to	Survey indicating intention to pursue teaching as a
pursue teaching as a career	career path
path	

#### **Knowing and Learning in Mathematics and Science**

A traditional certification program typically includes, early on, a general-purpose educational psychology course. While similarly placed in the FSU-Teach program, the Knowing and Learning course was developed as a significant alternative to such an all-inclusive, all-things-toall-people course. Rather than pursue very general claims about knowing and learning across disciplines and ages and rather than being based on only one formal perspective (educational psychology), FSU-Teach's Knowing and Learning course is intended to focus on knowing and learning in secondary mathematics and science as understood from a multidisciplinary perspective. The course stands on the premise that formal research on knowing and learning in mathematics and science has emerged, in itself, as a robust line of inquiry and design. This line of inquiry has tended to be situated relative to classroom practice and draw on significant insights from many fields of inquiry, including psychology, anthropology, critical literacy, sociology, biology, linguistics, neuroscience, philosophy, developmental theory, artificial intelligence, and the domains of mathematics, science, and computer science proper. Some now call this integration of domains a "learning science" perspective.

This course is not simply a general survey of theories of mathematical knowing and learning. Instead, the primary goal of Knowing and Learning is to provide students with the opportunity to identify theories and employ these theories to guide their own practice. FSU-Teach is committed to the idea that practice and theory build on each other. Any teaching practice is guided by some theory of how people learn. If students are not aware of this, they are likely to adopt teaching practices without considering the full implications of theory behind them. FSU-Teach wants its students to be thoughtful and reflective practitioners.

<b>Students Will Be Able To:</b>	<b>Evidence (Student Products)</b>
Articulate various standards for	Meaningful contributions to class discussions
knowing science and mathematics and	Comments posted about analysis of readings
articulate the implications of these	Analysis of clinical interviews
standards for assessment, especially	Written examinations
standardized assessment	
Describe how knowing and learning	Meaningful contributions to class discussions
are structured and how what people	Comments posted about analysis of readings
know changes and develops	Analysis of clinical interviews
	Written examinations
Describe various paradigms for	Meaningful contributions to class discussions
evaluating science and mathematics	Comments posted about analysis of readings
understanding	Written examinations
Describe the links between knowing	Meaningful contributions to class discussions
and developing in learning theory and	Comments posted about analysis of readings
the content and evolution of scientific	Analysis of clinical interviews
ideas	Written examinations
Complete three mini clinical	Report including transcription and analysis of
Describe various paradigms for evaluating science and mathematics understanding Describe the links between knowing and developing in learning theory and the content and evolution of scientific ideas Complete three mini clinical	Meaningful contributions to class discussions Comments posted about analysis of readings Written examinations Meaningful contributions to class discussions Comments posted about analysis of readings Analysis of clinical interviews Written examinations Report including transcription and analysis of

#### **Course Objectives: Knowing and Learning**

interviews with an expert/novice	clinical interviews
pairing on a topic	Rubric given to students before clinical interview to
	clarify what will be assessed
Express informed opinions on current	Meaningful contributions to class discussions
issues and tensions in education,	Comments posted about analysis of readings
especially as they relate to	Analysis of clinical interviews
mathematics and science instruction	Written examinations

#### **Functions and Modeling**

Functions and Modeling is a requirement for math majors in the UTeach program. In this exploration of secondary mathematics concepts, prospective mathematics teachers are expected to do the following:

- Deepen and broaden function-related mathematical content knowledge from algebra through calculus
- Make connections between college mathematics and secondary school mathematics
- Build preliminary knowledge of professional and state mathematics curriculum standards
- Use reflective and collaborative learning and develop a stronger sense of professionalism and leadership
- Become efficient seekers and presenters of mathematics content knowledge and history
- Explore and learn appropriate use of technology in the mathematics classroom

A point is made to cover content that is traditionally glossed over by secondary teachers but is essential to preparing students for university mathematics courses. This slighted content includes parametric and polar objectives, linear and matrix algebra, regression aspects of statistics, and growth and decay exponential models.

Students Will Be Able To:	<b>Evidence (Student Products)</b>
Deepen and broaden function-related	Classroom activities
mathematical content knowledge	Assessments
	Discussions
Generate relevant data and use	Classroom activities
regression, matrix, function pattern, and	Classroom labs
systems methods to model the data	
Present mathematics ideas and topics in	Classroom presentations of findings
a knowledgeable and effective manner	Discussions
Explore and learn appropriate use of	Classroom activities
technology in the mathematics	Classroom labs
classroom	Assessments
	Discussions
Identify connections between the	Classroom activities
various levels of secondary mathematics	Discussions
curriculum and between secondary and	
university level curriculum	

#### **Course Objectives: Functions and Modeling**

#### **Classroom Interactions**

The Classroom Interactions course continues the process of preparing students to teach mathematics and science in upper elementary and secondary settings. The specific objectives of this course are to:

- Demonstrate to students how learning theories (from the Knowing and Learning course) manifest themselves in instructional settings (usually classrooms), allow students to design and implement instructional activities from their own understanding of knowing and learning mathematics and science, and evaluate the outcomes of those activities based on evidence from student artifacts
- Provide students with frameworks for thinking about equity issues in the classroom and larger school settings and their effects on learning and provide students with strategies for teaching diverse students equitably

Classroom Interactions begins with the assumption that students have conducted and analyzed a number of clinical interviews in science and mathematics as part of Knowing and Learning. Students must understand that the process of concept acquisition must encompass learners' prior formal and informal knowledge, the importance of task construction in eliciting student thinking, and the critical role of reflection and language in the construction of knowledge. Whereas in Knowing and Learning, students study the meaning behind understanding a particular content area from an individual perspective, in Classroom Interactions, the perspective shifts to studying how classroom events might promote or discourage learning mathematics and science and student equity.

In Classroom Interactions, students typically participate in several learning activities and consider how the activities reveal and change their own understanding before implementing similar activities in high school classrooms. These activities allow students to evaluate their own learning and understanding of a subject. Bringing together students from different disciplines (for example, science, math, and computer science) allows them to see their subjects from the perspective of a novice and to consider how different perspectives might affect the same curriculum. Participating in learning activities also allows students to consider equity issues. For example, is it fair for only the fastest students to contribute to an activity? How would learning be different if all students were not only allowed but required to participate? Is it fair that some students are learning in a language that is not their first? The class considers the implications of deficit thinking (for example, blaming the student) in classroom outcomes.

The culminating activities of the course are the opportunities for students to teach in a high school and to learn whether they enjoy and are good at it. A major component of the Classroom Interactions course is the opportunity for students to reflect on and evaluate their own work as teachers.

Students Will Be Able To:	<b>Evidence (Student Products)</b>
Compare models of teaching and use	Written justification of lesson plans
various models of teaching, including	Participation in discussions evaluating
direct instruction, inquiry, and	teaching
cooperative groups, as appropriate, to	Use of various models (both in class and
design three high school lessons	during field teaching)
	Observations by mentor teacher and class
	instructor
Plan (with a partner or partners)	Lesson plans, including essays justifying
multiple-day lesson plans on assigned	the plans and responses to reviewer
subjects in high school math and	comments
science	Peer and instructor evaluations of practice
	teaching in the Classroom Interactions
	Class Completion of enprepriate sections of the
	preliminary portfolio
Teach (with a partner or partners)	Videotapes of teaching
multiple-day lessons in high school	Observer (i.e., classroom teacher
math or science classes	Classroom Interactions instructor
	Classroom Interactions teaching assistants
	and master teachers) comments on
	teaching
Analyze their own and others' teaching	Written analyses of teaching with video
in terms of how the instruction	samples and other student artifacts
develops the content understanding of	Presentation and discussion of video
the students involved	samples and other student artifacts in the
	Classroom Interactions class
	Development of a knowledge map for
	assigned lessons in high school math and
	science classrooms
	Completion of appropriate sections of the
	preliminary portfolio
Analyze their own and others' ability	Written analyses of teaching with video
to address equity issues in their	samples and other student artifacts with
teaching (e.g., effects of instruction on	regard to equity issues
all students, including those learning in	Presentation and discussion of video
a second language, those with	samples and artifacts of teaching
autures)	Completion of appropriate sections of the
Decome familier with policies and	Participation in discussion and Internet
classroom stratagies regarding students	postings regarding policies concorning
of all kinds in particular the Tayas	students who have diverse needs
Essential Knowledge and Skills and	

### **Course Objectives: Classroom Interactions**

national science and math standards	
Read selected articles documenting theory and research regarding classroom interactions and broader educational policies and their effects on content understanding and equity for all students	Participation in discussions of readings Posting of commentaries on the Internet Written analyses of readings
Become familiar with relevant types of teaching technology and analyze how technology can affect classroom interactions	Artifacts produced by the use of such technology in the Classroom Interactions classroom Participation in discussions of the effectiveness of technology Written analyses of the uses of technology Completion of appropriate sections of the preliminary portfolio

#### **Project-Based Instruction**

Project-Based Instruction (PBI) is the capstone course in the sequence of required education courses and is required before UTeach students take Apprentice Teaching. PBI is the course in which the major themes of the UTeach program—integrated content of mathematics and science learning, infusion of technology in representation, analysis, modeling, assessment and contextualization of the content, field-based experiences, and equity—converge into an exciting and intellectually challenging culminating experience. When students complete PBI, they are fully prepared for Apprentice Teaching.

Whereas in Classroom Interactions, students gain experience designing a sequence of several lessons that they teach to a high school class, in PBI, students design full units of connected lessons—a skill that is required in Apprentice Teaching. PBI also provides students with the experience of managing lessons and students outside a classroom, in a field setting.

Despite its name, PBI emphasizes choosing from a variety of appropriate teaching styles, depending on the type of material and the learning objectives, with project-based instruction being just one possible alternative. In addition, PBI requires students to incorporate various technologies into the units they plan.

Students Will Be Able To:	<b>Evidence (Student Products)</b>
Discuss the importance of project-based	A project-based unit that includes a
instruction in terms of students' cognitive	rationale and objectives
development, equity, and motivation	A grant proposal to implement a project-
	based unit that includes a rationale and
	potential impact
Reflect on applications of educational	Online discussions
theory as it relates to classroom practice in	A grant proposal to implement an inquiry-
the area of inquiry-based instruction	based unit that includes a rationale and
	potential impact
Distinguish among project-based and other	Online discussions
instructional approaches and decide which	A project-based unit that includes
approach best fits instructional goals based	benchmark lessons and an appropriate
on the benefits and limitations of each	lesson sequence based on the best fit of
	different instructional approaches
Evaluate the usefulness of technology	An annotated list of relevant resources and
(e.g., concept mapping software, video	technological tools for a project-based unit
editing software, the Internet, simulations)	Classroom presentation utilizing
in achieving learning objectives and select	technology tools
appropriate resources for student use,	
based on the relationship of salient	
features of the technology to learning	
objectives	
Compare and contrast observations of	Online discussions of class readings and

#### **Course Objectives: Project-Based Instruction**

"real" project-based classrooms with those	field observations of project-based classes
presented in readings and with theoretical	
models	
Critically analyze a lesson that they have	Mini-lesson study that includes lesson
taught and revise and re-teach it	plans, videotapes of the two lessons,
	reflections on what was planned, how the
	lesson went each time it was taught, and
	the rationale for the changes
Demonstrate skill in setting up and	Assessment of videotape showing the
managing wet lab and field project-based	student setting up and managing wet lab
environments	and field project-based environments
Work collaboratively to design a four- to	A project-based unit consisting of a
six-week project-based unit for secondary	calendar, a rationale, objectives, a
math and/or science courses	theoretical basis for the project, a concept
	map, benchmark lessons, investigations,
	alternative assessment strategies, related
	resources, and technological tools
For science students, read and discuss the	Participation in class discussion on safety
Texas Safety Standards Manual (e.g.,	and liability issues
material safety data sheets, OSHA	A project-based unit that includes safety
regulations, how to dispose of chemicals safely)	precautions

#### **Perspectives on Science and Mathematics**

Many math and science students are surprised to learn that math and science *have* a history at all; so far as they know, math and science have simply been handed down in textbooks. To discover that science has been accomplished by different kinds of people, for different kinds of reasons, in different kinds of places, can be truly mind-boggling, and, for many students, illuminating. Science is not just a matter of finding out the predetermined right answer! While some students are irked or even frightened by this discovery, others find it liberating. Perspectives has several interlocking purposes:

- It is intended to help future math and science teachers learn how to think about math and science "from the outside"—to ask questions about what scientists and mathematicians do and why, about where science and technology came from and how they got to be so important in the world today, and about what kinds of questions scientists and mathematicians have tried to answer and why.
- It is designed to teach students skills of the liberal arts, including sophisticated research and information analysis, fluent writing, and substantive argument.
- It requires students to put to work all the perspectives and skills they have learned in science and math pedagogy.

Four common elements show up in Perspectives: thinking about science and math "from the outside," improving students' writing skills, improving students' research skills, and incorporating history and/or philosophy of science and math into pedagogy.

Students Will Be Able To:	Evidence (Student Products)
Develop an overview of the	Two quizzes on historical material
development of modern science and	Weekly writing assignment responding to an
mathematics from the seventeenth	issue or question raised
through the twentieth centuries	Two historical papers requiring research and analysis
	Participation in class and weekly section
	discussions
Examine the underpinnings of modern	Two quizzes on historical material
science and mathematics by analyzing	Participation in class and weekly section
the contributions of key individuals,	discussions
including Newton and Darwin	Weekly writing assignment responding to an
	issue or question raised
	Two research papers on aspects of the
	development of science and math
Express ideas and opinions clearly and	Weekly writing assignment responding to an
effectively using a formal writing style	issue or question raised
	1,700-word research paper
	3,500-word research paper

#### **Course Objectives: Perspectives**

Develop skills in searching for,	One research-skills quiz
retrieving, and evaluating the	Annotated bibliographies for two historical
provenance and reliability of source	papers
materials, including specific resources	Research skills workshop with university
available to teachers	librarian
Integrate approaches and material	One 5E lesson plan designed for middle or
learned in the course with independent	high school students that addresses standards
research and science or math content to	and integrates approaches and material
design middle and high school science	learned in the course with independent
and math lessons	research and science or math content
	5E lesson taught to peers
	Feedback on 5E lessons provided by peers

#### **Research Methods**

Most scientists agree that learning about science has two aspects: learning material that has already been established (for example, the structure of DNA, how to find forces on blocks being pushed up a ramp, the definition of an acid) and learning how scientists gained this knowledge (for example, how new discoveries gain authority and are adopted by the scientific community, how to evaluate scientific claims when they conflict, how to design and carry out investigations to answer new questions). Most high school and college science courses are mainly devoted to presenting the first type of knowledge. Education in the second aspect of science has traditionally been left mainly to graduate school. UTeach believes it should become part of high school and college curricula as well because this second aspect of science is the most important in the long run for most citizens to know. Research Methods simultaneously provides students specific techniques needed to address scientific questions and an example of how to provide this sort of training for students through individualized instruction.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in conventional science classes. These tools include use of experiments to answer scientific questions, design of experiments to reduce systematic and random errors, use of statistics to interpret experimental results and deal with sampling errors, mathematical modeling of scientific phenomena, and oral presentation of scientific work.

Research Methods is primarily a laboratory course, and most of the topics covered are developed in connection with four independent inquiries UTeach students design and carry out. It is also a substantial writing component class, and the written inquiries students produce are evaluated as examples of scientific writing.

Students Will Be Able To:	Evidence (Student Products)
Use experiments to answer scientific questions	Four papers on four separate independent inquiries, designed and carried out by the student: (1) brief home inquiry, (2) laboratory inquiry using high school equipment, (3) survey involving human subjects, and (4) extended laboratory inquiry
Design experiments to reduce	Papers on inquiries 2, 3, and 4
systematic and random errors	Proposals for inquiries 2 and 4
Use statistics to interpret experimental	Two homework assignments
results and deal with sampling errors	Two brief in-class papers
	Class performance
	Write-ups for inquiries 2, 3, and 4
Use probes and computers to gather	Instructor observations during inquiry 2 or 4 or
and analyze data	both

#### **Course Objectives: Research Methods**

Ethically treat human subjects	Certificate demonstrating completion of human
	subjects training
	Satisfactory completion of inquiry 3, which
	involves human subjects
Apply safe laboratory procedures	Instructor observations during inquiries 2 and 4
Find and read articles in the current	Two homework assignments
scientific literature	Performance assessment during debate
Model scientific phenomena	Two homework assignments
mathematically (Expectations depend	Personalized modeling assignments as part of
upon mathematical skills of student	inquiries 2 and 4
and are greatest for math majors.)	
Apply scientific arguments in matters	Debates carried out in class in teams at end of
of social importance	semester
Write scientific papers	Four written inquiries, with inquiries 2 and 4
	involving at least two drafts
Review scientific papers	Student evaluations of each other, in pairs
Oral presentation of scientific work	In-class oral reports on inquiries 2 and 4
	Debate presentation

#### **Apprentice Teaching**

An underlying philosophy of the FSU-Teach program is that with extensive, individualized, and ongoing coaching, preservice teachers' skills will improve at an accelerated rate. The FSU-Teach Apprentice Teaching program is an important part of this coaching. In addition to the mentoring provided by the classroom teacher to which the apprentice teachers are assigned, trained observers with considerable teaching experience observe and provide extensive feedback a minimum of 10 times during the semester. All observations of an apprentice teacher throughout the semester focus on parts the Florida Educator Accomplished Practices

Because apprentice teachers have taught at various levels in previous FSU-TeachTeach courses, they assume teaching responsibilities quickly in Apprentice Teaching, which is their final teaching semester, and maintain their role as teacher for the equivalent of two six-week grading periods. Furthermore, each required weekly seminar on campus focuses on two of the state standards for new teachers. Apprentice teachers concentrate on teaching lessons each week in which they demonstrate competency of the particular state standards.

The purpose of Apprentice Teaching is to offer FSU-Teach students a culminating experience that provides them with the tools needed for their first teaching jobs. In Apprentice Teaching, students are immersed in the expectations, processes, and rewards of teaching. When making placements, UTeach staff consider each apprentice teacher's characteristics and abilities as well as the cooperating teacher's teaching and mentoring styles. The hope is that the complementary strengths of the UTeach apprentice teacher and cooperating teacher will generate a synergism that benefits both people professionally.

Apprentice Teaching reinforces and augments teaching strategies that students have developed through their coursework and field experiences. The program also attempts to fill in any gaps in students' professional development. In particular, Apprentice Teaching focuses on classroom management and time management strategies, parent/teacher communication strategies, school culture and school dynamics that make up an effective middle school and high school system, legal and logistical issues in teaching, the final portfolio, and state certification examinations.

FSU-Teach apprentice teachers explore professional development opportunities beyond the classroom, including attending conferences, subscribing to education journals, joining professional organizations, and conducting presentations in educational settings. The goal of Apprentice Teaching is to provide the experiences, information, and coaching that will enable these students to be successful teachers who are leaders in their schools and communities.

Students Will Be Able To:	Evidence (Student Products)
Design instruction appropriate for all	Weekly lesson plans and daily agendas
students that reflects an	Sample assessments and student artifacts
understanding of relevant content	Videotapes of teaching
and is based on continuous and	Completion of appropriate sections of the final

#### **Course Objectives: Apprentice Teaching**

appropriate assessments	portfolio
	Observer written feedback on teaching from the
	cooperating teacher, the university facilitator, and
	university instructors
	Appropriate evaluations
Create a classroom environment of	Written classroom rules and procedures
respect and rapport that fosters a	Videotapes of teaching
positive climate for learning, equity,	Completion of appropriate sections of the final
and excellence	portfolio
	Observer written feedback on teaching from the
	cooperating teacher, the university facilitator, and
	university instructors
	Appropriate evaluations
Promote student learning by	Weekly lesson plans and daily agendas
providing responsive instruction that	Student work containing apprentice teacher written
makes use of effective	feedback
communication techniques,	Videotapes of teaching
instructional strategies that actively	Completion of appropriate sections of the final
engage students in the learning	portfolio
process, and timely high-quality	Observer written feedback on teaching from the
feedback	cooperating teacher, the university facilitator, and
	university instructors
	Appropriate evaluations
Fulfill professional roles and	Participation in campus professional development
responsibilities and adhere to legal	days
and ethical requirements of the	Reflection submission on the Code of Ethics and
profession.	Standards Practices for Texas Educators
	Submission of artifacts associated with
	parent/teacher contacts
	Completion of appropriate sections of the final
	portfolio

## Step 2

## FSU-Teach Reformed-Based Math and Science Teaching Evaluation

Adapted from the Reformed Teaching Observation Protocol (Piburn et al., 2000) and the

UT Observation Protocol (Marder, 2009).

#### 4. LESSON DESIGN AND IMPLEMENTATION

4.2	Student exploration preceded formal presentation.	0	1	2
		Not at all	To some extent	Yes

*Description:* Reformed teaching allows students to build complex abstract knowledge from simpler, more concrete experience. This suggests that any formal presentation of content should be preceded by student exploration. This does not imply the converse...that all exploration should be followed by a formal presentation. **Comments:** 

4.3 The students shared what they have learned with their peers and 0 1 2 had an opportunity to answer their classmates' questions. Not at all To some extent Yes Description: The intent of this item is to reflect the communicative richness of a lesson that encouraged students to contribute to the discourse and to do so in more than a single mode (making presentations, brainstorming, critiquing, listening, making videos, group work, etc.). Comments:

#### 4.8 The assessments were aligned with the instructional objectives. 0 1 2

Not at all To some extent

Yes

**Description:** An effective teacher may utilize a variety of assessments of student progress, including formal assessments like quizzes, tests, or papers, as well as informal assessments, such as any evaluation based on discussions and observations. This indicator targets the focus of the assessments. The observer should analyze the various assessments used by the teacher and examine how well they were aligned with the instructional objectives of the lesson, what proportion of the objectives were actually assessed, in what depth, and with what emphases. **Comments:** 

#### 5. THE CONTENT

5.1	The teacher had a solid grasp of the subject matter.	0	1	2
		Not at all	To some extent	Yes

*Description:* This indicates that a teacher could sense the potential significance of ideas as they occurred in the lesson, even when articulated vaguely by students. A solid grasp would be indicated by an eagerness to pursue student's thoughts even if seemingly unrelated at the moment. The grade-level at which the lesson was directed should be taken into consideration when evaluating this item **Comments:** 

#### 5.2 The lesson focused on fundamental and important content.

#### 0 1 2

Not at all To some extent Yes were some significant scientific or mathematical ideas

**Description:** The emphasis on "fundamental" content indicates that there were some significant scientific or mathematical ideas at the heart of the lesson. For example, a lesson on the multiplication algorithm can be anchored in the distributive property. A lesson on energy could focus on the distinction between heat and temperature. **Comments:** 

#### 6. CLASSROOM INTERACTIONS

6.7 The classroom environment established by the teacher reflected 0 1 2 attention to issues of access, equity, and diversity for students. Not at all To some extent Yes *Description:* This indicator assesses the degree to which the classroom environment is unbiased as it relates to race, ethnicity, religion, gender, sexual orientation, ability, etc. Evidence of this indicator can be obtained by reviewing the wording of classroom handouts, by analyzing opportunities for participation given to diverse students, by looking at the types of instructional strategies used or by reflecting on the teacher's handling of unacceptable comments made by students. Additional evidence of this indicator can be gained by analyzing the degree to which the teacher takes the diversity of his or her students into account when planning and teaching lessons, as well as any comments the teacher makes regarding the diversity of his or her classroom and students. Comments:

#### 7. CLASSROOM MANAGEMENT AND ROUTINES

7.1 The teacher has an effective way of getting all students attention	0	1	2
and listening when necessary.	Not at all	To some extent	Yes
Description: This indicator assesses how well a teacher is able to redirect students' attention	n during a les	son. Teachers th	at are
able to quite a noisy classroom quickly (under 3 seconds) and can hold students attention even	en when they	are hands-on ma	aterials
available would score highly on this item.			
Comments:			

# 7.2The teacher circulated the room in order to keep students on<br/>task, to listen, and challenge students with questions.012Not at allTo some extentYes

**Description:** This indicator assesses often a teacher circulates a room and his or her purpose for moving around the room. Teachers should be continually moving from group to group as students are working. Therefore teachers that spend a great deal of time at the front of the room, at their desk, or only with one or two groups of students would score low on this item. **Comments:** 

#### Score: /16

## Knowing & Learning

## FSU-Teach Reformed-Based Math and Science Teaching Evaluation

Adapted from the Reformed Teaching Observation Protocol (Piburn et al., 2000) and the UT Observation Protocol (Marder, 2009).

#### 1. BACKGROUND INFORMATION

Teacher:	Annound	nced? 🛛 Yes 🗖 No
District:	School:	l:
Subject:	Grade:	:
Observer:	Date:	
Start time:	End time	ne:

#### PROFESSIONALISM: Check all of the following that apply..

1.1	Organized and prepared to teach.	
1.2	Punctual and prompt.	
1.3	Dresses appropriately and professionally.	
1.4	Returns borrowed equipment on time.	
1.5	Leaves the room in good condition.	
1.6	Seeks feedback from Mentor Teacher.	
1.7	Addresses students BY NAME.	
1.8	Speaks audibly (volume, pace, enunciation).	

#### 2. GOALS OF THE LESSON

Indicate **no more than five primary goals** of this lesson or activity based on the classroom observation and the post-observation interview with the teacher.

TYPE OF GOAL	INTENDED	OBSERVED
2.1 Identifying prior student knowledge		
2.2 Addressing alternative conceptions		
2.3 Introducing new concepts		
2.4 Developing conceptual understanding		
2.5 Reviewing mathematics/science concepts or preparing for a specific test		
2.6 Developing problem-solving skills		
2.7 Learning mathematics/science processes, algorithms, or procedures, including lab		
procedures (or the requirements for a project)		
2.8 Learning vocabulary or specific facts		
2.9 Developing ability to discuss and apply core ideas in mathematics/science		
2.10 Developing interest in carrying out further independent study of core ideas in mathematics/science		
2.11 Teaching students about historical perspectives, philosophical issues, or the social significance of mathematics/science		
2.12 Assessing student understanding		

#### 3. INSTRUCTIONAL MATERIALS

What types of instructional materials did the teacher prepare before and use during the lesson?

Type of material		Used by the teacher?		Teacher generated?		
		Yes	No	Yes	No	NA
3.1	Lesson plan					
3.2	Handouts					
3.3	Assessments					
3.4	Visuals, manipulatives, or other "hands on" materials					
3.5	Technology					
3.6	Textbook or other reading					

<ul> <li>4. LESSON DESIGN AND IMPLEMENTATION</li> <li>4.1 The lesson incorporated and challenged students' prior knowledge and alternative conceptions about the concept.</li> <li>Description: A cornerstone of reformed teaching is taking into consideration the prior knowled The term "respected" is pivotal in this item. It suggests an attitude of curiosity on the teacher's student ideas, and an understanding that much of what a student brings to the mathematics or shaped and conditioned by their everyday experiences.</li> <li>Comments:</li> </ul>	0 Not at all lge that stud part, an acti science cla	1 To some extent ents bring with the ve solicitation of ssroom is strongly	2 Yes em.
<b>4.2 Student exploration preceded formal presentation.</b> <i>Description:</i> Reformed teaching allows students to build complex abstract knowledge from sir This suggests that any formal presentation of content should be preceded by student exploration conversethat all exploration should be followed by a formal presentation. Comments:	<b>0</b> Not at all npler, more on. This doe	1 To some extent concrete experien is not imply the	2 Yes ice.
<ul> <li>4.3 The students shared what they have learned with their peers and had an opportunity to answer their classmates' questions.</li> <li>Description: The intent of this item is to reflect the communicative richness of a lesson that er the discourse and to do so in more than a single mode (making presentations, brainstorming, or group work, etc.).</li> <li>Comments:</li> </ul>	0 Not at all acouraged st critiquing, lis	1 To some extent sudents to contribu tening, making vid	2 Yes ute to leos,
<ul> <li>4.7 Students were actively engaged in thought promoting activities.</li> <li><i>Description:</i> This item implies that students were not only actively doing things, but that they what they were doing.</li> <li>Comments:</li> </ul>	0 Not at all were also ac	<b>1</b> To some extent tively thinking abo	2 Yes but
<b>4.8 The teacher monitored student thinking throughout the lesson.</b> <i>Description:</i> This indicator captures how well the teacher structured the lesson to include opportunities content, both formally and informally. This can as simple as the teacher walking around and look at the vertice the teacher carefully using questions, both written and oral, to gauge student understanding. <b>Comments:</b>	0 Not at all to monitor stu vork of individ	1 To some extent ident understanding lual students or grou	2 Yes of the ups, or

4.9 The assessments were aligned with the instructional objectives.	0 Not at all	1 To some extent	2 Yes
<b>Description:</b> An effective teacher may utilize a variety of assessments of student progress, including f papers, as well as informal assessments, such as any evaluation based on discussions and observatio assessments. The observer should analyze the various assessments used by the teacher and exaministructional objectives of the lesson, what proportion of the objectives were actually assessed, in what <b>Comments:</b>	ormal assessing ns. This indica ine how well depth, and wit	nents like quizzes, ator targets the foci they were aligned th what emphases.	tests, or us of the with the
5. THE CONTENT			
5.1 The teacher had a solid grasp of the subject matter.	0	1	2
<i>Description:</i> This indicates that a teacher could sense the potential significance of ideas as to when articulated vaguely by students. A solid grasp would be indicated by an eagerness to poseemingly unrelated at the moment. The grade-level at which the lesson was directed should evaluating this item Comments:	hey occurred ursue studer be taken int	d in the lesson, ev it's thoughts ever o consideration w	/en ⊢if /hen
5.2 The lesson focused on fundamental and important content.	0	1	2
<b>Description:</b> The emphasis on "fundamental" content indicates that there were some signific at the heart of the lesson. For example, a lesson on the multiplication algorithm can be anchor lesson on energy could focus on the distinction between heat and temperature. <b>Comments:</b>	Not at all ant scientific red in the di	To some extent or mathematical stributive property	Yes ideas /. A
5.5 The lesson promoted strongly coherent conceptual	0	1	2
understanding of the math or science content. Description: The word "coherent" is used to emphasize the strong inter-relatedness of mather Concepts do not stand on their own two feet. They are increasingly more meaningful as they constitutive of other concepts. Comments:	Not at all ematical and become inte	To some extent /or scientific think grally related to a	Yes ing. ind

#### 6. CLASSROOM INTERACTIONS

6.1 The teacher's questioning strategies fostered the development of 0 1 2 the students' conceptual understanding of the content.

**Description:** This item assesses the quality of the teacher's questioning tactics and their effectiveness in developing students' understanding of various mathematics or science concepts. Aspects of these strategies include the teacher appropriately using "wait time" to maximize student contributions, placing an emphasis on higher-order questions, and identifying prior conceptions and misconceptions though questioning. **Comments:** 

# 6.2 There was a high proportion of student talk and a significant amount of it occurred between and among students.

#### 0 1 2 Not at all To some extent Yes

**Description:** A lesson where a teacher does most of the talking is not reformed. This item reflects the need to increase both the amount of student talk and of talk among students. A "high proportion" means that at any point in time it was as likely that a student would be talking as that the teacher would be. A "significant amount" suggests that critical portions of the lesson were developed through discourse among students. Students should also be collegial when working in groups. Evidence of collegial working relationships among students often includes collaborative discussions about topics relevant to the lesson, and successful student facilitation of distributing roles and responsibilities within their group. **Comments:** 

#### 6.7 The classroom environment established by the teacher reflected 0 1 2 attention to issues of access, equity, and diversity for students. Not at all To some extent Yes

**Description:** This indicator assesses the degree to which the classroom environment is unbiased as it relates to race, ethnicity, religion, gender, sexual orientation, ability, etc. Evidence of this indicator can be obtained by reviewing the wording of classroom handouts, by analyzing opportunities for participation given to diverse students, by looking at the types of instructional strategies used or by reflecting on the teacher's handling of unacceptable comments made by students. Additional evidence of this indicator can be gained by analyzing the degree to which the teacher takes the diversity of his or her students into account when planning and teaching lessons, as well as any comments the teacher makes regarding the diversity of his or her classroom and students. **Comments:** 

#### 7. CLASSROOM MANAGEMENT AND ROUTINES

7.1 The teacher has an effective way of getting all students attention	0	1	2
and listening when necessary.	Not at all	To some extent	Yes
Description: This indicator assesses how well a teacher is able to redirect students' attenti	ion during a les	sson. Teachers th	iat are
able to quite a noisy classroom quickly (under 3 seconds) and can hold students attention e	even when the	y are hands-on ma	aterials
available would score highly on this item.			
Comments:			

# 7.2 The teacher circulated the room in order to keep students on task, to listen, and challenge students with questions. 0 1 2 Not at all To some extent Yes Description: This indicator assesses often a teacher circulates a room and his or her purpose for moving around the room. Yes

Teachers should be continually moving from group to group as students are working. Therefore teachers that spend a great deal of time at the front of the room, at their desk, or only with one or two groups of students would score low on this item. **Comments:** 

7.3	Students listen to the teacher when he or she is talking and the	0	1	2
	teacher does not try to "talk over" the students.	Not at all	To some extent	Yes
Desc talk b talk w Com	<i>ription:</i> Students need to listen to a teacher when he or she is talking. Teachers should ased on what the students are doing. Teachers that consistently raise their voice or yell hen students are not really listening should core low on this item. <b>nents:</b>	l also know in order to	when to talk and v be heard or attemj	<i>i</i> hen to ot to
7.4	The majority of class time was spent devoted to academic tasks.	0	1	2

Not at all To some extent Yes **Description:** This indicator measures the amount of time students in the class are engaged in or working on a specific task or activity. On-task behavior can include students participating in the lesson by asking questions, being engaged in discussion, providing answers, turning in assigned class work in a timely manner, and assisting other students. The observers should note any examples of off-task behavior, such as students being engaged in off-topic conversations, writing notes/text messages, putting their head on the table, or doing work for another class.

Comments:

Score: /32

# FSU-Teach Math and Science Teaching Evaluation (FMSTE)

Classroom Interactions Adapted from the *Reformed Teaching Observation Protocol* (Piburn et al., 2000), the *UTeach Observation Protocol* (Marder, 2009), and Inside the Classroom Observation and Analytic Protocol (Horizon Research, 2000).

#### 1. BACKGROUND INFORMATION

#### Teachers: School: District: Subject: Grade: Date: Observer: End time: Start time:

#### **PROFESSIONALISM:** Check all of the following that apply.

1.1	Organized and prepared to teach.	
1.2	Punctual and prompt.	
1.3	Dresses appropriately and professionally.	
1.4	Returns borrowed equipment on time.	
1.5	Leaves the room in good condition.	
1.6	Seeks feedback from Mentor Teacher.	
1.7	Addresses students BY NAME.	
1.8	Speaks audibly (volume, pace, enunciation).	

#### INSTRUCTIONAL MATERIALS

What types of instructional materials did the teacher use before and during the lesson? This is a measure of teacher preparedness.

Type of Material		Used by the Teacher?	
		Yes	No
3.1	Lesson Plan		
3.2	Handouts		
3.3	Assessments		
3.4	Visuals, manipulatives, or other "hands on" materials		
3.5	Technology		
3.6	Textbook or other reading		

#### LESSON TOPIC

#### LESSON DESIGN AND IMPLEMENTATION

4.1 The lesson incorporated students' prior knowledge and challenged their alternative conceptions.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

4.2 Student exploration preceded formal presentation.	Score
Not at all.	0
To some extent (i.e., the exploration was too short or not really meaningful).	1
Yes.	2
Comments:	

4.3 The students shared what they have learned with their peers and had an opportunity to answer their	Score
classmates' questions.	
There was no sharing of information with peers.	0
The communication was of a single mode (i.e., presentations, brainstorming, critiquing, sharing answers to questions).	1
The lesson promoted rich dialogue between students that fosters the social construction of knowledge.	2
Comments:	

4.4 Students were encouraged to generate alternative solution strategies, alternative modes of investigation,	Score
or different ways to interpret evidence.	
There were no examples of students being encouraged to generate ideas, questions, conjectures, or propositions, and	0
these behaviors did not occur.	
There were several examples of students generating ideas and questions during the lesson and the teacher was	1
making some moves to encourage these contributions.	
Students generated ideas and questions during the lesson, with the teacher regularly making moves to encourage	2
students to contribute. The students also occasionally offered conjectures or propositions and were engaged in the	
content.	
Comments:	

4.6 Students used a variety of representations (models, graphs, manipulatives, drawings, etc.) to help make sense of the content or to communicate their ideas about the content.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

4.7 The teacher involved all students (hesitant learners, ELL students, etc.) in the lesson.	Score
Not at all.	0
To some extent.	1
Consistently (as appropriate). [Observer: A score of 2 cannot be assigned unless the teacher has noted ELL, ESOL, and ESE student needs in their teaching binder.]	2
Comments:	

\_\_\_\_\_

\_\_\_\_\_

4.8 The teacher monitored student thinking throughout the lesson.	Score
The teacher did not monitor students at all during the lesson.	0
The teacher monitored students by walking around and looking at student work. The teacher might also stop to point	1
out problems with work or to answer questions.	
The teacher monitored students by walking around, looking at student work, and asking students to explain their	2
thinking or what they are doing (i.e., asking probing questions) or to challenge alternative conceptions.	
Comments:	

4.9 The enactment of the lesson explicitly focused on mathematical practices or scientific and engineering	Score
practices.	
No.	0
To some extent.	1
Yes.	2
Comments:	

4.10 The teacher adjusted instruction based on student needs during the lesson.	Score
Not at all.	0
To some extent.	1
Yes (as appropriate).	2
Comments:	

#### LESSON DESIGN AND IMPLEMENTATION SUBSCORE

#### THE CONTENT

5.1 The teacher had a solid grasp of the subject matter.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

5.2 The objectives/content of the lesson was appropriate for the particular group of students.	Score
The lesson is not based on next generation science standards, common core standards or state standards.	0
The lesson content is based on National and /or state standards. However, the teacher has not sufficiently adjusted	1
instruction to accommodate the student's current level of understanding.	
The lesson content is based on National and /or state standards and takes into account the student's current level of	2
understanding.	
Comments:	

5.3 The teacher stressed the development of a conceptual understanding of the content rather than the	Score
memorization of facts or the use of a specific procedure.	
No (students are encouraged to memorize facts or to follow a procedure)	0
To some extent.	1
Yes (students understand the reasons for the procedures or why something happens).	2
Comments:	

/20

5.4 The teacher provided an opportunity for students to be reflective about their understanding of the content or how they participated in a mathematical or scientific practice.	Score
Students never discussed their ideas about the content.	0
There was discussion about what students understood from the lesson and/or how they learned it or students identified anything unclear to them.	1
There was reflection on and evaluation of students' own progress toward understanding.	2
Comments:	

5.6 The importance of the mathematical and scientific content, including how it fits into the "big picture" of	Score
the discipline, was made explicit.	
The lesson/unit content is activity focused or focuses on discrete topics or procedures and skills without regard for	0
connections or conceptual understanding.	
The lesson/unit suggests some attendance to the importance of the content and how the topics are related.	1
The lesson/unit content explicitly addresses why this content is important and how it connects to the overarching	2
principles of the discipline.	
Comments:	

#### THE CONTENT SUBSCORE

/10

#### CLASSROOM INTERACTIONS

6.1 The teacher's questioning strategies fostered the development of the students' conceptual understanding	Score
of the content.	
The teacher only asked factual questions in order to have interaction with students and keep the lesson moving, and	0
these questions were not successful at developing student conceptual understanding.	
The teacher included factual questions along with using more advanced questioning strategies. The majority of	1
questions were factual, but there was some evidence that the teacher's questioning strategies are developing	
students' conceptual understanding.	
The teacher emphasized higher-order questions and/or used questions to assess students' misconceptions. The	2
teacher typically used an appropriate amount of wait time and their questioning often developed student conceptual	
understanding. A minor issue or missed opportunity as a result of the teacher's questioning may have occurred.	
Comments:	

6.2 There was a high proportion of student talk and a significant amount of it occurred between students.	Score
Student talk was primarily off topic or not constructive or the teacher did most of the talking during the lesson.	0
Students did a lot of talking but it was often off topic or not constructive.	1
The lesson fostered rich dialogue between students (or discussion among students) that characterizes qualities of knowledge construction.	2
Comments:	
6.6 The metaphor "teacher as listener" was very characteristic of this classroom.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

6.7 The classroom environment established by the teacher reflected attention to issues of access, equity, and	Score
diversity for students.	
A major issue relating to equity or diversity and that significantly negatively impacts the classroom environment and	0
student(s) opportunity to learn was observed.	
There were no major issues or moves made by the teacher relating to equity, diversity, and access that either	1
positively or negatively impacted the classroom environment. [Note: This item may earn a score of 2 if the positive	
moves made by the teacher were balanced out by other negative moves or missed opportunities.]	
The teacher took no actions relating to equity and diversity that negatively impacted the classroom environment; the	2
teacher's actions relating to equity and diversity overall had a positive impact on student learning, access, and	
engagement.	
Comments:	

#### CLASSROOM INTERACTIONS SUBSCORE

/8

#### CLASSROOM MANAGEMENT AND CLASSROOM ROUTINES

7.1 The teacher's classroom management style or the management strategies used by the teacher enhanced	Score
the quality of the lesson.	
The classroom was poorly managed; the lack of classroom management significantly disrupted the lesson, making it	0
difficult for students to learn.	
The classroom was managed adequately; there were some disruptions that the teacher did or did not deal with	1
appropriately, but overall learning was not negatively impacted by management issues.	
The classroom was well-managed; the teacher's management actions enhanced the classroom environment and	2
positively impacted students' opportunity to learn. There may have been minor or very occasional disruptive behavior	
that the teacher did not handle appropriately.	
Comments:	
7.2 The teacher circulated the room in order to keep students on task, to listen, and to challenge students with questions.	Score
---	-------
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

7.3 Students listen to the teacher when he or she is talking and the teacher does not try to "talk over" the students.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

7.4 The majority of class time was spent devoted to academic tasks.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

CLASSROOM MANAGEMENT SUBSCORE

TOTAL SCORE

/46

/8

Comments:

FSU-Teach Math and Science Teaching Evaluation (FMSTE) Adapted from the *Reformed Teaching Observation Protocol* (Piburn et al., 2000), the *UTeach Observation Protocol* (Marder, 2009), and Inside the Classroom Observation and Analytic Protocol (Horizon Research, 2000).

#### 1. BACKGROUND INFORMATION

Teacher:	Was the observation announced?
District:	School:
Subject:	Grade:
Observer:	Date:
Start time:	End time:

## 2. GOALS OF THE LESSON

Indicate no more than five primary goals of this lesson or activity based on the classroom observation and the post-observation interview with the teacher.

	Type of Goal	Intended	Observed
2.1	Identifying prior student knowledge		
2.2	Addressing alternative conceptions		
2.3	Introducing new concepts		
2.4	Developing conceptual understanding		
2.5	Reviewing mathematics/science concepts or preparing for a specific test		
2.6	Developing problem-solving skills		
2.7	Learning mathematics/science processes, algorithms, or procedures, including lab		
20	Loarning vocabulary or specific facts		
2.0	Learning vocabulary of specific racis		
2.9	Developing ability to discuss and apply core independent study of core ideas in		
2.10	mathematics/science		
2.11	Teaching students about historical perspectives, philosophical issues, or the social		
	significance of mathematics/science	_	_
2.12	Assessing student understanding		

#### 3. INSTRUCTIONAL MATERIALS

What types of instructional materials did the teacher use before and during the lesson? This is a measure of teacher preparedness.

	Type of Material	Used by the Teacher?		Teacher Generated?		
		Yes	No	Yes	No	NA
3.1	Lesson Plan					
3.2	Handouts					
3.3	Assessments					
3.4	Visuals, manipulatives, or other "hands on" materials					
3.5	Technology					
3.6	Textbook or other reading					

## LESSON TOPIC

# 4. LESSON DESIGN AND IMPLEMENTATION

4.1 The lesson incorporated students' prior knowledge and challenged their alternative conceptions.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

4.2 Student exploration preceded formal presentation.	Score
Not at all.	0
To some extent (i.e., the exploration was too short or not really meaningful).	1
Yes.	2
Comments:	

4.3 The students shared what they have learned with their peers and had an opportunity to answer their	
classmates' questions.	
There was no sharing of information with peers.	0
The communication was of a single mode (i.e., presentations, brainstorming, critiquing, sharing answers to questions).	1
The lesson promoted rich dialogue between students that fosters the social construction of knowledge.	2
Comments:	

4.4 Students were encouraged to generate alternative solution strategies, alternative modes of investigation, or different ways to interpret evidence.	Score
There were no examples of students being encouraged to generate ideas, questions, conjectures, or propositions, and these behaviors did not occur.	0
There were several examples of students generating ideas and questions during the lesson and the teacher was making some moves to encourage these contributions.	1
Students generated ideas and questions during the lesson, with the teacher regularly making moves to encourage students to contribute. The students also occasionally offered conjectures or propositions and were engaged in the content.	2
Comments:	

4.5 The students were given an opportunity to apply <u>a fundamental concept or practice</u> in a new situation or to use it to solve a problem.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

4.6 Students used a variety of representations (models, graphs, manipulatives, drawings, etc.) to help make sense of the content or to communicate their ideas about the content.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

4.7 The teacher involved all students (hesitant learners, ELL students, etc.) in the lesson.	Score
Not at all.	0
To some extent.	1
Consistently (as appropriate). [Observer: A score of 2 cannot be assigned unless the teacher has noted ELL, ESOL,	2
and ESE student needs in their teaching binder.]	
Comments:	

4.8 The teacher monitored student thinking throughout the lesson.	Score
The teacher did not monitor students at all during the lesson.	0
The teacher monitored students by walking around and looking at student work. The teacher might also stop to point out problems with work or to answer questions.	1
The teacher monitored students by walking around, looking at student work, and asking students to explain their thinking or what they are doing (i.e., asking probing questions) or to challenge alternative conceptions.	2
Comments:	

4.9 The enactment of the lesson explicitly focused on mathematical practices or scientific and engineering practices.	Score
No.	0
To some extent.	1
Yes.	2
Comments:	

4.10 The teacher adjusted instruction based on student needs during the lesson.	Score
Not at all.	0
To some extent.	1
Yes (as appropriate).	2
Comments:	

4.11 The lesson incorporated an assessment that made all students' thinking visible and was	
aligned with instructional objectives.	
Not at all	0
To some extent	1
Yes (as appropriate)	2

#### LESSON DESIGN AND IMPLEMENTATION SUBSCORE

## 5. THE CONTENT

5.1 The teacher had a solid grasp of the subject matter.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

5.2 The objectives/content of the lesson was appropriate for the particular group of students.	Score
The lesson is not based on next generation science standards, common core standards or state standards.	0
The lesson content is based on National and /or state standards. However, the teacher has not sufficiently adjusted	1
instruction to accommodate the student's current level of understanding.	
The lesson content is based on National and /or state standards and takes into account the student's current level of	2
understanding.	
Comments:	

Score
0
1
2

5.4 The teacher provided an opportunity for students to be reflective about their understanding of the content or how they participated in a mathematical or scientific practice.	Score
Students never or discussed their ideas about the content.	0
There was discussion about what students understood from the lesson and/or how they learned it or students identified anything unclear to them.	1
There was reflection on and evaluation of students' own progress toward understanding.	2
Comments:	

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5.5. Connections with the history and nature of mathematics or science, how mathematics or science affects	Score
people or societies, and/or a real world phenomenon were explored or valued.	
There was no discussion about the content topic's role in history, current events, or real world application during the	0
lesson, or if there was a discussion, it was inappropriate or incorrect; if the teacher made a general, brief comment	
about a possible connection to history or current events it was not expanded upon.	
The teacher explicitly called attention to how the content is specifically connected to history, the real world, or current	1
events but does not fully expand upon this idea with students; if the exploration uses real world connections, these	
connections are not discussed.	
The teacher explicitly called attention to how the content is connected to history, real world application, or current	2
events and engages students in a discussion about the connection.	
Comments:	

5.6 The importance of the mathematical and scientific content, including how it fits into the "big picture" of the discipline, was made explicit.	Score
The lesson/unit content is activity focused or focuses on discrete topics or procedures and skills without regard for connections or conceptual understanding.	0
The lesson/unit suggests some attendance to the importance of the content and how the topics are related.	1
The lesson/unit content explicitly addresses why this content is important and how it connects to the overarching principles of the discipline.	2
Comments:	

### THE CONTENT SUBSCORE

/12

## 6. CLASSROOM INTERACTIONS

6.1 The teacher's questioning strategies fostered the development of the students' conceptual understanding	Score
of the content.	
The teacher only asked factual questions in order to have interaction with students and keep the lesson moving, and	0
these questions were not successful at developing student conceptual understanding.	
The teacher included factual questions along with using more advanced questioning strategies. The majority of	1
questions were factual, but there was some evidence that the teacher's questioning strategies are developing	
students' conceptual understanding.	
The teacher emphasized higher-order questions and/or used questions to assess students' misconceptions. The	2
teacher typically used an appropriate amount of wait time and their questioning often developed student conceptual	
understanding. A minor issue or missed opportunity as a result of the teacher's questioning may have occurred.	
Comments:	

6.2 There was a high proportion of student talk and a significant amount of it occurred between students.	Score
Student talk was primarily off topic or not constructive or the teacher did most of the talking during the lesson.	0
Students did a lot of talking but it was often off topic or not constructive.	1
The lesson fostered rich dialogue between students (or discussion among students) that characterizes qualities of knowledge construction.	2
Comments:	

6.3 Students challenged each other's ideas but there was also a climate of respect.	Score
Student talk or group work occurred during the lesson, but the group work was highly unproductive. Lack of	0
productivity includes behavior where the majority of the groups are socializing, off-task, arguing, or ignoring each	
other, as well as regular instances of students copying other group members' work and/or certain group members	
doing all of the work.	
Student talk or group work occurred during the lesson and the groups are adequately productive. There were	1
examples of off-task conversation and group members not contributing.	
Student talk or group work occurred during the lesson and most (but not necessarily all) of the groups worked together	2
productively (throughout this portion of the lesson. The groups discussed ideas and asked each other questions before	
seeking out the teacher. Participation of all group members was encouraged.	
Comments:	

6.4 Active intellectual engagement by the students was encouraged and valued by the teacher.		
There was no evidence that students were intellectually engaged in the lesson. Although students may have followed along, it was clear they were not thinking through the content and were passively receiving information.	0	
There were some examples of intellectual engagement during the lesson and some students showed evidence that	1	
they were thinking critically about the content. The teacher made occasional moves to encourage intellectual rigor and intellectual engagement rather than only surface-level engagement.		
The majority of students showed evidence that they were intellectually engaged in the content and the teacher made regular moves to encourage intellectual engagement; minor missed opportunities may have occurred.	2	
Comments:		
6.5 The teacher acted as a resource person, working to support and enhance student investigations or problem-solving activities.	Score	
The teacher only asked and answered procedural questions related to completing a task.	0	
The teacher combined procedural and factual questions and answers with more advanced questioning strategies. The majority of questions were factual and the teacher gave procedural instructions; there was some evidence that the teacher's strategies aided in developing students' conceptual understanding.	1	
The teacher emphasized higher-order questions and/or used questions to assist students in solving problems or completing investigations. The teacher's questioning often developed student conceptual understanding; however, the teacher's questioning may have a minor issue or caused a missed opportunity.	2	
Comments:		

6.6 The metaphor "teacher as listener" was very characteristic of this classroom.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

6.7 The classroom environment established by the teacher reflected attention to issues of access, equity, and	Score
diversity for students.	
A major issue relating to equity or diversity and that significantly negatively impacts the classroom environment and	0
student(s) opportunity to learn was observed.	
There were no major issues or moves made by the teacher relating to equity, diversity, and access that either	1
positively or negatively impacted the classroom environment. [Note: This item may earn a score of 2 if the positive	
moves made by the teacher were balanced out by other negative moves or missed opportunities.]	
The teacher took no actions relating to equity and diversity that negatively impacted the classroom environment; the	2
teacher's actions relating to equity and diversity overall had a positive impact on student learning, access, and	
engagement.	
Comments:	

#### CLASSROOM INTERACTIONS SUBSCORE

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## 7. CLASSROOM MANAGEMENT AND CLASSROOM ROUTINES

7.1 The teacher's classroom management style or the management strategies used by the teacher enhanced	
the quality of the lesson.	
The classroom was poorly managed; the lack of classroom management significantly disrupted the lesson, making it	0
difficult for students to learn.	
The classroom was managed adequately; there were some disruptions that the teacher did or did not deal with	1
appropriately, but overall learning was not negatively impacted by management issues.	
The classroom was well-managed; the teacher's management actions enhanced the classroom environment and positively impacted students' opportunity to learn. There may have been minor or very occasional disruptive behavior	2
that the teacher did not handle appropriately.	
Comments:	

7.2 The teacher circulated the room in order to keep students on task, to listen, and to challenge students	Score
with questions.	
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

7.3 Students listen to the teacher when he or she is talking and the teacher does not try to "talk over" the		
students.		
Not at all.	0	
To some extent.	1	
Yes.	2	
Comments:		

7.4 The majority of class time was spent devoted to academic tasks.	Score
Not at all.	0
To some extent.	1
Yes.	2
Comments:	

CLASSROOM MANAGEMENT SUBSCORE

TOTAL SCORE

Apprentice teaching binder:	Accessible?	🗌 Yes	🗆 No
	Up-to-date?	🗆 Yes	🗆 No

Comments:

/8

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