

Transforming Earth System Science Education

Earth System Science Enrichment for
Pre-service and In-Service Teachers

ESST-1

2009 In-service Teacher Application Materials



TESSE



Transforming Earth System Science Education Information and Application Materials for In-service Teachers

General Information

The Transforming Earth System Science Education (TESSE) program is funded by the directorate for Geosciences at the National Science Foundation. Specific goals for TESSE are to:

- ❖ Implement a professional development program for current and future teachers that combines content and pedagogy with authentic research experiences;
- ❖ Provide opportunities for university faculty and graduate students to partner with middle and high school teachers in order to develop inquiry-based curriculum models that promote an integrated approach to modern concepts in Earth System Science;
- ❖ Support university faculty seeking to integrate teachers and their students into existing research groups;
- ❖ Produce a sustainable model for preparing teachers that incorporates integrated, inquiry-based coursework and research experiences.

Overview

TESSE has different components for pre-service and in-service teachers, based on each one's specific needs. For in-service teachers, the program consists of:

- 1) a summer course in Earth Systems Science (ESS), which emphasizes the linkages between Earth's major processes, combined with inquiry-based approaches to teaching Earth System Science as a functioning system. There are two courses offered concurrently during the summer. (see course descriptions).
- 2) an academic year program in which TESSE Graduate Fellows will provide support both in your classroom and in helping you expand or develop ESS curricula. The Graduate Fellows are all active in an Earth science research area, and also participate in the ESST-1 summer course.

Benefits of Participation

TESSE is designed to meet the varied needs of a diverse group of current and future teachers at the middle and high school levels. Benefits to in-service teachers participating in the TESSE program include:

- ❖ \$1200 stipend for completion of both components (ESST-1 & Academic Year Activities);
- ❖ Authentic field experiences as the means of modeling a variety of inquiry-based approaches to teaching;
- ❖ Opportunity to collaborate with a graduate student in Earth science research for an entire school year;
- ❖ Opportunity to work on curriculum components that are specific to the needs of your students;
- ❖ Strategies and best practices for implementing Earth System Sciences in the middle and high school classroom.

Location, Dates, and Times

ESST-1 will take place from July 19 - July 31, 2009

The TESSE 2009 summer course will be held at the UNH campus in Durham, NH and will take place daily on consecutive days (including Saturday). The first Sunday (July 19) begins at 3:00 PM and there are no activities on Sunday, July 26. Each day, courses will meet from 9am – 5pm and there will be several mandatory evening sessions. This is a full-time commitment. During the summer course (only), free room and board (in a single-occupancy UNH dormitory) is available for individuals wishing to stay on campus in order to minimize time and expenses related to commuting, and to take full advantage of university resources (laboratories, libraries, computer clusters, etc).



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Course Description

ESCI 795/895 Earth Systems Science for Teachers .

ESST-1: (4 cr.) This course is designed for both pre- and in-service teachers who want to enhance their content knowledge and implement best teaching practices in Earth System Sciences. ESST-1 is intended for those with either limited or outdated coursework in the Earth Sciences, or those who wish to focus on the integration of Earth System Science content knowledge into one's curriculum. The course will approach the planet Earth as a system and focus on the linkages and interactions between components of the Earth System. Approaches to teaching these topics in the middle and high school classroom will be discussed, including ways to incorporate various levels of inquiry-based instruction. Assignments in this course will be geared towards meeting the specific curricular needs of individual participants.

This course will be taught by a team of Earth System Science experts (Faculty and graduate students) and professional science educators.

Participant Expectations

❖ **ESST-1 Summer Institute:** Daily attendance and full participation in the 9am-5pm course, including several mandatory evening programs and a Saturday field trip. Nothing scheduled on Sunday the 26th.

❖ **Academic Year Program:** Year-long collaboration with TESSE Graduate Fellow both in and out of the classroom, and participation in two day-long workshops—one in January and one in May.

Program Application

To apply for the TESSE program complete and send all required application materials to the Program Contact (see below).

Program Faculty/Staff

Julie Bryce – Assistant Professor, UNH Dept. of Earth Science;
Geochemistry and Volcanology

Liza Finkel – Senior Program Director of the Center for Classroom Teaching and Learning; Northwest Regional Education Laboratory

Erik Froburg – Education & Outreach Specialist, UNH Leitzel Center

Karen Graham – Director, UNH Leitzel Center and Professor of Mathematics

Stephen Hale – Research Associate, UNH Leitzel Center

Joel Johnson – Assistant Professor, UNH Dept. of Earth Science; *Marine Geology and Sedimentology*

Ruth Varner – Research Assistant Professor, UNH Institute for the Study of Earth, Oceans & Space and Dept. of Earth Science; *Biogeochemistry & Carbon Cycling*

Mimi Winder— Program Support Assistant, UNH Leitzel Center

Program Contact

For additional information regarding the TESSE program please contact:

Erik Froburg
Joan and James Leitzel Center
138 Parsons Hall
23 College Rd.
Durham, NH 03824
(603) 862-0297
erik.froburg@unh.edu

Transforming Earth Systems Science Education (TESSE) In-Service Teacher Application - ESST1

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Please complete front and back of application and type or print in black or dark blue

1. Full Name Last First

2. Permanent Mailing Address (Number, Street, Apt. No., or Post Office Box)

3. Street

City State Zip Code

3. Telephone (include Area Code) e-mail

4. Current School:

5. Grade level & class(es) currently teaching:

6. Indicate if you would like to receive free room and board (in a UNH dormitory) during the summer institute. You can change your mind, but responding now will help general event planning (please check one).

Yes

No

7. What type of documentation of successful completion of the GEO-Teach course would you most like to have as evidence toward your status as a Highly Qualified Teacher (HQT)?
(Check all that apply)

Course Credit

Program Certificate

Letter of Endorsement

Curricular Materials

Continuing Education Units

Other (please specify)

8. Please indicate how you heard about the TESSE program. (Check all that apply)

email

Colleague

Flyer

Mailing

Conference

Other (please specify)

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9. Teaching History – Indicate your total years of service in teaching at the various grade levels, and in the space provide, list your teaching employment history.

K – 5 6 – 8 9 – 12 12+

School District	City, State	Years

10. Courses Taught – List your most recently taught courses related to Earth Science. Include the grade-level of the students. *e.g., Earth Science (7-8)*

Course	Grade Level

11. Educational History – List all colleges/universities attended including dates and majors for any degrees earned. Please place an “X” in the Cert./Degree column you are currently working toward.

(*e.g., University of New Hampshire Durham, NH 05 2004 B.A. Math Education*)

	Name of School or College	City, State	End Date		Cert./Degree
			Mo.	Yr.	
1					
2					
3					
4					

12. On a separate sheet: 1) Briefly (approximately 200-300 words) describe any areas of Earth System Science that hold particular interest to you, and how the TESSE program can assist you in meeting your career goals as a professional educator. 2) List any college-level Earth Science courses you have taken.

Send all completed materials in a single envelope to at the address below:

TESSE PROGRAM
Joan and James Leitzel Center
138 Parsons Hall
23 Academic Way
Durham, NH 03824

Address any questions to:
Erik Froburg
erik.froburg@unh.edu
603-862-0297

Signature Date

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