

Transforming Earth System Science Education

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

ESST-2

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 offers ESST-2 as an opportunity for teachers to explore advanced topics in Earth System Science through an authentic research project. The program consists of:

- 1) a research cruise in the Great Bay estuary.
- 2) an intensive research project, conducted in a small-group environment with the mentorship of TESSE faculty and their associated laboratory personnel.
- 3) time spent discussing practical and pedagogical considerations in utilizing authentic research projects in your own classroom.
- 4) creation and presentation of a scientific poster.

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:

- ❖ \$900 stipend for completion of ESST-2;
- ❖ Authentic field and laboratory experience as the means of modeling approaches to student research;
- ❖ Opportunity to work with sophisticated scientific equipment;
- ❖ Opportunity to work collaboratively with UNH faculty, graduate students, laboratory technicians and your fellow teachers;
- ❖ Strategies and best practices for bringing authentic student research in Earth System Sciences into the middle and high school classroom.

Location, Dates, and Times

ESST-2 will take place from July 23 - 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). There are no organized activities on Sunday, July 26. Participants should plan on a full (9:00-5:00) day, plus additional evening time, as needed, to complete your group's research project. This is a full-time commitment. During the course, 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-2: (3 cr.) This course is designed for in-service teachers who have a strong background in Earth System Science, and who want to enhance their content knowledge and understanding of scientific research through experience. Approaches to bringing student-directed inquiry into the middle and high school classroom, through extended research projects, will be discussed.

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

Participant Expectations

❖ **ESST-2 Summer Institute:** Daily attendance and full participation in the program is expected. Participants should expect to be here from 9am—5pm daily, as well as spend some evening time as demanded by your particular project. Projects are completed by small groups, and as a result the group's success is highly dependent on the active participation and availability of all group members. Some laboratory instrumentation may only be able to run at certain times, so evening activity may be unpredictable.

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 Froborg – 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 Application

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

Program Contact

For additional information regarding the TESSE program please contact:

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

Transforming Earth Systems Science Education (TESSE) In-Service Teacher Application—ESST-2

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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)

Transforming Earth Systems Science Education (TESSE) In-Service Teacher Application—ESST-2



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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 why you are interested in ESST-2, 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

Funded by a National Science Foundation grant
awarded to a partnership among
University of New Hampshire
Dillard University
Elizabeth City State University
Pennsylvania State University



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