

Transforming Earth System Science Education

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

2009 Pre-service Teacher Application Materials



TESSE



Transforming Earth System Science Education Information and Application Materials for Pre-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 pre-service teachers, the program consists of:

- 1) a summer course in Earth Systems Science, which emphasizes the linkages between Earth's major processes, combined with inquiry-based approaches to teaching Earth System Science as a functioning system. ESST-1 is appropriate for most pre-service teachers, and that is the course that they are expected to take part in, unless TESSE program faculty have approved enrollment in ESST-2 instead (see course descriptions).
- 2) a Research Immersion Experience (RIE) that is either an eight week full-time summer program, or a semester-long program of an equivalent number of hours. TESSE faculty will work with you to arrange a mentoring relationship with an appropriate researcher. The details of the RIE execution are somewhat flexible.

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 pre-service teachers participating in the TESSE program include:

- ❖ \$4,000 stipend for completion of both components (RIE & ESST-1);
- ❖ Authentic Earth System Science research experience with guidance from a faculty mentor;
- ❖ Opportunity to apply personal research interests to best practices in curriculum development;
- ❖ Opportunity to work on curriculum components that are specific to needs that you anticipate in future employment or student teaching;
- ❖ 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 20 - 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). 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 either 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

- ❖ 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.
- ❖ Full-time commitment to research activities and regular meetings with faculty mentor.
- ❖ Demonstration of satisfactory progress in Research Immersion Experience, as determined by program senior personnel and faculty mentor.

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) Pre-Service Teacher Application

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

1. Full Name: Last _____ First _____
2. Social Security Number: _____
3. Permanent Mailing Address: *(Number, Street, Apt. No., or Post Office Box)*
 Street _____
 City _____ State _____ Zip Code _____
4. Phone: (____) _____ e-mail _____
5. How did you learn about this program? _____
6. Educational History – List all colleges/universities attended (most recent first) 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	Mo.	Yr.	Cert./Degree
1						
2						
3						
4						

6. Earth Science Coursework – In the space provided below, list (most recent first) any college-level Earth Science courses you have taken.



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

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7. On a separate sheet, briefly (approximately 200-300 words) describe 1) any areas of Earth System Science that hold particular interest to you, and 2) how the TESSE program can assist you in meeting your career goals as a professional educator.

8. Provide one Letter of Recommendation from a university faculty member, who can vouch for your academic ability, written and oral communication skills, scholastic motivation, and interpersonal skills. Recommender should enclose letter within a sealed envelope and sign across the back and return letter to applicant so it can be included with all other application materials.

9. Provide one (unofficial) copy of all of your college-level transcripts.

Send all completed materials in a single envelope to Erik Froburg at the address shown below. See program website (<http://leitzelcenter.unh.edu/geo-teach/applications.html>) for application deadlines:

Erik Froburg
Joan and James Leitzel Center
138 Parsons Hall
23 College Rd.
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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