

# HOFSTRA UNIVERSITY

## **Progress Report on IDEAS**

Reporting Period: January, 2004- June, 2005

Submitted by Janice Koch, Ph.D., Director

**IDEAS, the Institute for Education in the Advanced Sciences**, is housed within the School of Education and Allied Services Building, Hagedorn Hall, a state-of-the art technology facility that was constructed with the support of a grant from the New York State Office of Science, Technology & Academic Research. IDEAS provides science and technology teachers with access to cutting edge instructional strategies as well as state of the art technology. IDEAS provides forums for the general public, local public and private school teachers and administrators, and college educators to focus on contemporary issues in science and technology. Through lectures, workshops, field trips and seminars, the Institute seeks to create public visibility and increased understanding of advances in science and technology. It further seeks to encourage greater interest in advanced study in the sciences and technology by enhancing the skills of pre-college and college science and technology educators.

IDEAS sponsors free public lectures on science topics that address the interests of both the general public and science enthusiasts. Several of these lectures are co-sponsored with the natural sciences department of HCLAS and their Hofstra Discovery Nights program. In the first year, attendance at these lectures averaged 35 people. Currently, attendance for the public lectures is climbing as we build a base of attendees, get word of mouth going, and build our database of contacts. In the spring, semester, 2005, the average attendance was 70 people for each IDEAS lecture, with 93 present for the geology lecture. Lectures occur on a Wednesday or Thursday evenings from 7 PM- 9 PM. Following each lecture (weather permitting), attendees are invited to view the night sky through guided observations (led by staff and students of the Physics and Astronomy Department) at the nearby Hofstra University Observatory. IDEAS has emphasized scientists speaking about their own research and making it accessible to the general public – thereby bringing science to a “personal” level and diminishing the “mystery” of scientific work.

During this reporting period, IDEAS has addressed its role in the professional development of K-12 teachers by exploring topics that are not typically offered in formal science education programs but that address needed areas of development. All day workshops and field trips continue to be given and attended by an average of 10- 20 teachers. Many teachers attend more than one event. IDEAS workshops emphasize learning which is experiential and relevant to the world outside of school. Exit surveys completed by workshop attendees demonstrate enthusiasm and a desire for further work. Topics suggested for future workshops include more field trips as well as more physics and chemistry work. Survey results revealed that, for secondary science teachers, there has been little subject specific professional development available beyond the Masters

degree in the Long Island area. At the elementary level, many teachers expressed a lack of science background in their professional preparation. IDEAS is filling a void for both of these groups of teachers.

As another aspect of its professional development programming, IDEAS strives to build on established partnerships and liaisons with nearby minority districts on behalf of districts' K-12 science teachers. To that end, IDEAS promotes on-going relationships with school district teachers in the hopes of establishing a love of science and fostering teachers' ability to teach the connections of science to their daily life, both inside and outside the classroom, by including "out-of-the-box" science experiences in professional development workshops.

Thus far, five of the 24 events sponsored by IDEAS addressed the professional development of college level professors in the natural and applied sciences. These faculty seminars, given by Hofstra and invited faculty from other universities, address nationwide and local innovations for improving the quality of undergraduate education in the sciences and engineering. Further, IDEAS is responsible for evaluating the National Science Foundation grant awarded to the Biology Department for reforming the undergraduate biology curriculum. Titled "FIRST", Faculty Institutes for Research in Science teaching, this grant has made significant reforms in the Hofstra biology course offerings.

The work of IDEAS has been presented to a broad audience through the Association for Science Teacher Educators Conference in Colorado Springs, Colorado, the Leadership Conference on Civil Rights Education Fund in Washington, DC, and the American Educational Research Association's Annual Meeting in Montreal, Canada. The commitment of Hofstra University to the success of IDEAS is demonstrated by its inclusion in the recent "State of the University" address given by the University President, Stuart Rabinowitz. He stated "the IDEAS Institute has had a very successful initial year and has been extremely effective in enhancing the understanding of science issues among teachers, administrators and the general public."

**Free public lectures:**

|   |  |
|---|--|
| 2/27/04: The Tortoise and the Lava Flow                   |  |
| 4/22/04: Physics of the Heart                             | Dr. Flavio Fenton (Physics Dept.)  |
| 5/12/04: Treating Lower Back Pain                         | Bronwyn Spira, Director Madison Avenue Rehabilitation and Physical Therapy |
| 5/20/04: Dead Stars do Tell Tales                         | Dr. Stephen Lawrence (Astronomy Dept)                                      |
| 9/23/04: Turtles in the Big Apple                         | Dr. Russell Burke (Biology Dept)   |
| 10/21/04: 12 Million Thirsty People                       | Dr. Charles Merguerian (Geology Dept)                                      |
| 11/10/04: Pandora's Baby                                  | Robin Henig (New York Times)   |
| 11/18/04: A Cure for the Common Cold?                     | Dr. Sabrina Sobel (Chemistry Dept)   |
| 12/2/04: Hot Jupiters and Cold Stars                      | Dr. Stephen Lawrence (Astronomy Dept)                                      |
| 2/16/05: It's Not Your Father's Universe Anymore          | Dr. Brett Bochner (Physics Dept)   |
| 4/21/05: The Science Behind <i>The Day After Tomorrow</i> | Dr. Emma Farmer (Geology Dept)   |

5/05/05: Imaging the Consequences of Drug Abuse in the Human Brain      Dr. Stephen Dewey (Brookhaven National Lab)

**Seminars for university natural and applied science faculty members:**

2/27/04: *Teaching for Understanding in University Science Courses:*

4/30/04:      *Parts 1 and 2*

Dr. Jacqueline Grennon Brooks (C&T Dept)

3/27/04: *Integrating Scientific Research and Science Education*

Dr. Diane Ebert May (University of Michigan)

10/8/04: *Process Oriented Guided Inquiry Learning*

Dr. David Hanson (SUNY Stony Brook)

3/11/05: *Reforming the Biology Curriculum: Improving Student Learning*

Dr. Beverly Clendening (Biology Dept).

**Workshops for pre-college teachers of science and technology:**

3/20/04: Making Science Inclusive: Teaching science to students with disabilities

4/17/04: i-Movie in the Science Classroom

5/8/04: Science Activities that Work: Successful strategies for elementary science.

7/6-23/04: MST Summer Institute: Problem solving, inquiry and mathematical analysis.

10/16-17/04: Geology for Teachers and Travelers: A field trip.

10/30/04: Science in the Daily Life of the Classroom

1/15/05: Teachers as Researchers: continued on 2/15 and 3/15.

3/5/05: Classroom Demonstrations in Chemistry and Physics

3/12 and 3/19/05: i-Movie in the Science Classroom

4/30/05: Using the Web to Promote Science Learning

7/05-7/15/05: The MST (Mathematics, Science and Technology) Institute.

7/22- 8/01/05: The Geology of Northern Arizona: a field trip.

**Upcoming events for Fall 2005**

Free Public Lectures

Thursday, Sept. 22, 2005

**“Bones and Bonobos: Making Scientific Sense of Human Evolution”**

Dr. Daniel Varisco, Hofstra University Department of Anthropology

7:30–9 p.m., Monroe Lecture Center, South Campus

Thursday, October 6, 2005

**What’s Sex Got to Do with It?**

**Issues of Gender and Success in Science**

Dr. Vita Rabinowitz, co-director of the Gender Equity Project and

chairperson of the Department of Psychology at Hunter College, CUNY

6:30–8 p.m., Plaza Rooms, Student Center, North Campus

Thursday, Oct. 20, 2005

**“How Miracle Drugs Create Menacing Microbes: The Evolution of Antibiotic Resistance in Disease-Causing Bacteria”**

Dr. Joanne Willey, Hofstra University Department of Biology  
7:30–9 p.m., Monroe Lecture Center, South Campus

Thursday, Nov. 17, 2005

**“The Evolution of Earth’s Oldest Biosphere: New Ideas in the Search for Ancient Life”**

Dr. J. Bret Bennington, Hofstra University Department of Geology  
7:30–9 p.m., Monroe Lecture Center, South Campus

**Workshops for pre-college teachers of science and technology:**

Saturday, October 1, 2005

**“Invitations to Writing in the Science Classroom”**

Amy Gaddes, Hofstra University Literacy Studies Department; Hofstra University  
This workshop may be taken for 8 hours toward in-service credit or 1 semester hour of Hofstra University graduate credit.

Fee: \$95 (*does not include cost of graduate credit*)

8:30 a.m.–5 p.m. Hagedorn Hall, South Campus

**This workshop is appropriate for teachers of science, grades 3-12.**

Saturday, October 29 and Sunday, October 30, 2005

**“Fossils and Environments of Devonian Seas:  
A Paleontological Survey of Central New York State for Science Teachers: An Overnight Field Geology Workshop”**

Dr. J. Bret Bennington, Hofstra University Geology Department

This two-day field experience will investigate the rich record of marine life preserved in the Devonian rocks of central New York State.

Depart Sat. Oct 29 at 7:30 a.m. and return Sunday, Oct. 30 at 6:00 p.m.

Saturday, November 19, 2005

**“Constructivism In the Classroom: Lessons that Liberate”**

Dr. Jacqueline Grennon-Brooks, Hofstra University Department of Curriculum and Teaching

8:30 a.m.–5 p.m. Hagedorn Hall, South Campus

This workshop may be taken for 8 hours toward in-service credit or 1 semester hour of Hofstra University graduate credit.

Fee: \$95 (*does not include cost of graduate credit*)

Saturday, December 3, 2005

**“Teaching Evolution and the Nature of Science:  
Pitfalls and Opportunities”**

Dr. Ross Nehm, City College of New York School of Education

8:30 a.m.–5 p.m. Hagedorn Hall, South Campus

This workshop may be taken for 8 hours toward in-service credit or 1 semester hour of Hofstra University graduate credit.

Fee: \$95 (does not include cost of graduate credit)

**Providing lectures through the IDEAS web site:**

Effective July, 2005, two public lectures offered in April and May of 2005 are available on the IDEAS web site by clicking on "View the Event" under the descriptions of both lectures on the events web page. We anticipate offering this service for each of the upcoming public lectures.

**IDEAS evaluates the NSF funded Biology Department Grant**

Dr. Janice Koch and her research assistant Denise Capasso, M.S., visited Biology 11 and Biology 12 labs and lectures, interviewed biology students, administered and analyzed surveys, and developed reports about the new biology courses being established for Hofstra University's undergraduate biology majors in the 2004-2005 academic year. Dr. Beverly Clendening made a report about this pedagogical initiative in the natural sciences to Hofstra faculty in March.

**Revenue generated by IDEAS for the 2004-2005 Academic Year**

IDEAS has been generating a modest income through the fees that are charged for the teacher professional development courses and the tuition received from teachers who elect to take the courses for graduate credit. Further, IDEAS solicits a \$1000.00 membership fee from school districts in Nassau and Suffolk County. Membership entitles the district to a reduced rate for teacher participation in all professional development courses. The following funds have been collected in the 2004-2005 fiscal year, excluding July and August, 2005; programs are still running at this time.

**Professional Development Workshops**

|         |          |
|---------|----------|
| Fees    | 8323.00  |
| Tuition | 16250.00 |

**National Science Foundation Biology Grant Evaluation**

|     |         |
|-----|---------|
| Fee | 1500.00 |
|-----|---------|

**MST Summer Institute**

|         |          |
|---------|----------|
| Fees    | 22100.00 |
| Tuition | 1950.00  |

Arizona Field Trip

|         |          |
|---------|----------|
| Fees    | 11600.00 |
| Tuition | 7800.00  |

District Memberships (n=4)

|  |         |
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| Herricks, Roosevelt,<br>Oceanside, Southampton | 4000.00 |
|--|---------|

|              |                   |
|--------------|-------------------|
| <b>Total</b> | <b>73, 523.00</b> |
|--------------|-------------------|

**Support for IDEAS**

Melissa Connolly's office has networked our program through contacts with Long Island Business News and the Long Island Women's Agenda. Her office has facilitated public announcement of our lectures on NPR as well as an advertisement in the Sunday New York Times; both promotions stimulated telephone inquiries and increased attendance at public lectures. Dr. Koch will also be contacting foundations listed with the help of Sofia Kakaloudis and Allan Kelly for further financial support.