

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Post
9/2/8

Date: June 18, 1976

Project Title: "Restructuring the Undergraduate Learning Environment"

Project No: G-41-510

Project Director: Dr. J. R. Stevenson

Sponsor: National Science Foundation

Agreement Period: From June 2, 1976 Until August 31, 1978

Type Agreement: Grant No. SER76-14971

Amount:	\$ 9,200	NSF
	<u>18,739</u>	GIT (G-41-220)
	<u>\$27,939</u>	TOTAL

Reports Required:

Annual Letter Technical, Final Report

Sponsor Contact Person (s):

Technical Matters

Contractual Matters

(thru OCA)

Mr. James L. Bostick
Grants Officer
National Science Foundation
Washington, D. C. 20550
(202) 632-5965

No letter

Defense Priority Rating: N/A

Assigned to: Physics (School/Laboratory)

COPIES TO:

- | | |
|----------------------------|------------------------------------|
| Project Director | Library, Technical Reports Section |
| Division Chief (EES) | Office of Computing Services |
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| Accounting Office | Project File (OCA) |
| Procurement Office | Project Code (GTRI) |
| Security Coordinator (OCA) | Other _____ |
| Reports Coordinator (OCA) | |

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT TERMINATION

Posted
2/10
OK

Date: 1/10/79

Project Title: Restructuring the Undergraduate Learning Environment

Project No: G-41-510

Project Director: Dr. J. R. Stevenson

Sponsor: National Science Foundation

TERMINATED

Effective Termination Date: 8/31/78 (Grant Expiration)

Clearance of Accounting Charges: n/a - all have cleared

Grant/Contract Closeout Actions Remaining:

- Final Invoice and Closing Documents
- Final Fiscal Report (via Quarterly FCTR)
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Assigned to: Physics (School/Laboratory)

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- Library, Technical Reports Section
- Office of Computing Services
- Director, Physical Plant
- EES Information Office
- Project File (OCA)
- Project Code (GTRI)
- Other _____

6-41-510

PLEASE READ INSTRUCTIONS ON REVERSE BEFORE COMPLETING

PART I-PROJECT IDENTIFICATION INFORMATION

1. Institution and Address School of Physics Georgia Institute of Technology Atlanta, Georgia 30332	2. NSF Program RULE	3. NSF Award Number SER 76-14971
	4. Award Period From 6/2/76 To 8/31/78	5. Cumulative Award Amount \$9,200

6. Project Title

Restructuring the Undergraduate Learning Environment

PART II-SUMMARY OF COMPLETED PROJECT (FOR PUBLIC USE)

A new physics course and laboratory entitled "Transport Phenomena" has been developed. The course serves as an integrating experience for students in the undergraduate applied physics program in which many of the mathematical and physical descriptions of the phenomena are shown to be similar. The course is team taught by faculty with research interests and experience in solid state, acoustics, and plasmas. Lectures treat sound energy transport, including a description of shock waves, electrical and thermal conductivity in solids and gases, mass transport in diffusion processes, and fluid flow. The laboratory experience includes such experiments as measurements of physical parameters in plasmas, fuel cells, and acoustical systems. Students give oral presentations on their results.

PART III-TECHNICAL INFORMATION (FOR PROGRAM MANAGEMENT USES)

1. ITEM (Check appropriate blocks)	NONE	ATTACHED	PREVIOUSLY FURNISHED	TO BE FURNISHED SEPARATELY TO PROGRAM	
				Check (✓)	Approx. Date
a. Abstracts of Theses	X				
b. Publication Citations	X				
c. Data on Scientific Collaborators		X			
d. Information on Inventions	X				
e. Technical Description of Project and Results		X			
f. Other (specify)					
2. Principal Investigator/Project Director Name (Typed) James R. Stevenson	3. Principal Investigator/Project Director Signature			4. Date 12/7/78	

Attachment

NSF RULE Program
SER 76-14971

Scientific Collaborators:

Dr. E. W. Thomas - Professor of Physics
Dr. E. T. Patronis, Jr. - Professor of Physics

TECHNICAL SUMMARY

Course Content:

- I. Transport Phenomena in Gases - E. W. Thomas
 - A) Description of a Plasma
 - B) Excitation and Ionization Processes
 - C) Charge and Mass Transport in a Plasma
 - D) Application of the Boltzmann Transport Equation to Plasmas

- II. Transport of Acoustical Energy - E. T. Patronis, Jr.
 - A) Wave Equation
 - B) Adiabatic and Isothermal Approximations
 - C) Applications to Nozzles and Shock Waves

- III. Transport Phenomena in Solids - James R. Stevenson
 - A) Drude Theory of Electrical and Thermal Conductivity
 - B) Boltzmann Transport Equation
 - C) Diffusion and Charge Transport in Semiconductors
 - D) Photoconductivity

- IV. Typical Laboratory Experiments
 - A) Characterization of the Operational Parameters for a Hydrogen Fuel Cell
 - B) Determination of the Velocity of Sound in the Isothermal and Adiabatic Transition Region
 - C) Langmuir Probe Experiment on Characterization of a Plasma
 - D) Haynes-Shockley Experiment for Measurement of the Mobility of Minority Carriers in Silicon