

**02 INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS(PI/PD) and  
co-PRINCIPAL INVESTIGATORS/co-PROJECT DIRECTORS**

---

Submit only ONE copy of this form for each PI/PD and co-PI/PD identified on the proposal. The form(s) should be attached to the original proposal as specified in GPG Section II.B. Submission of this information is voluntary and is not a precondition of award. This information will not be disclosed to external peer reviewers. **DO NOT INCLUDE THIS FORM WITH ANY OF THE OTHER COPIES OF YOUR PROPOSAL AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.**

---

**PI/PD Name:** Herbert L Dershem

**Gender:**  Male  Female  
**Ethnicity:** (Choose one response)  Hispanic or Latino  Not Hispanic or Latino

**Race:**  
(Select one or more)  
 American Indian or Alaska Native  
 Asian  
 Black or African American  
 Native Hawaiian or Other Pacific Islander  
 White

**Disability Status:**  
(Select one or more)  
 Hearing Impairment  
 Visual Impairment  
 Mobility/Orthopedic Impairment  
 Other  
 None

**Citizenship:** (Choose one)  U.S. Citizen  Permanent Resident  Other non-U.S. Citizen

**Check here if you do not wish to provide any or all of the above information (excluding PI/PD name):**

**REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project**

---

**Ethnicity Definition:**

**Hispanic or Latino.** A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

**Race Definitions:**

**American Indian or Alaska Native.** A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

**Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

**Black or African American.** A person having origins in any of the black racial groups of Africa.

**Native Hawaiian or Other Pacific Islander.** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

**White.** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

---

**WHY THIS INFORMATION IS BEING REQUESTED:**

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PIs/PDs. To gather information needed for this important task, the proposer should submit a single copy of this form for each identified PI/PD with each proposal. Submission of the requested information is voluntary and will not affect the organization's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exceptions are the PI/PD name and the information about prior Federal support, the last question above.)

Collection of this information is authorized by the NSF Act of 1950, as amended, 42 U.S.C. 1861, et seq. Demographic data allows NSF to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category; to ensure that those in under-represented groups have the same knowledge of and access to programs and other research and educational opportunities; and to assess involvement of international investigators in work supported by NSF. The information may be disclosed to government contractors, experts, volunteers and researchers to complete assigned work; and to other government agencies in order to coordinate and assess programs. The information may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records", 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records", 63 Federal Register 268 (January 5, 1998).

## List of Suggested Reviewers or Reviewers Not To Include (optional)

---

### **SUGGESTED REVIEWERS:**

Not Listed

### **REVIEWERS NOT TO INCLUDE:**

Not Listed

---

## COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE/if not in response to a program announcement/solicitation enter NSF 04-23					<b>FOR NSF USE ONLY</b>
<b>NSF 06-527</b>		<b>04/12/06</b>			<b>NSF PROPOSAL NUMBER</b>
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)					<b>0631044</b>
<b>DUE - S-STEM:SCHLR SCI TECH ENG&amp;MATH</b>					
<b>DATE RECEIVED</b>	<b>NUMBER OF COPIES</b>	<b>DIVISION ASSIGNED</b>	<b>FUND CODE</b>	<b>DUNS#</b> (Data Universal Numbering System)	<b>FILE LOCATION</b>
<b>04/12/2006</b>	<b>2</b>	<b>11040000 DUE</b>	<b>1536</b>	<b>050947084</b>	<b>02/18/2009 5:13pm S</b>
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)		SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL		IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF YES, LIST ACRONYM(S)	
<b>381381271</b>					
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE		
<b>Hope College</b>			<b>Hope College</b>		
AWARDEE ORGANIZATION CODE (IF KNOWN)			<b>141 E. 12th</b>		
<b>0022731000</b>			<b>Holland, MI. 494229000</b>		
NAME OF PERFORMING ORGANIZATION, IF DIFFERENT FROM ABOVE			ADDRESS OF PERFORMING ORGANIZATION, IF DIFFERENT, INCLUDING 9 DIGIT ZIP CODE		
PERFORMING ORGANIZATION CODE (IF KNOWN)					
IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions)		<input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> FOR-PROFIT ORGANIZATION		<input type="checkbox"/> MINORITY BUSINESS <input type="checkbox"/> WOMAN-OWNED BUSINESS	
				<input type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE	
TITLE OF PROPOSED PROJECT <b>Scholarships for Transfer Students in Science, Engineering, and Mathematics</b>					
REQUESTED AMOUNT	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE		
\$ <b>500,000</b>	<b>60</b> months	<b>09/01/06</b>			
CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW					
<input type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.A)		<input checked="" type="checkbox"/> HUMAN SUBJECTS (GPG II.D.6) Exemption Subsection _____ or IRB App. Date <b>04/10/06</b>			
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C)		<input type="checkbox"/> INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)			
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.B, II.C.1.d)		_____			
<input type="checkbox"/> HISTORIC PLACES (GPG II.C.2.j)		<input type="checkbox"/> HIGH RESOLUTION GRAPHICS/OTHER GRAPHICS WHERE EXACT COLOR REPRESENTATION IS REQUIRED FOR PROPER INTERPRETATION (GPG I.G.1)			
<input type="checkbox"/> SMALL GRANT FOR EXPLOR. RESEARCH (SGER) (GPG II.D.1)		_____			
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.D.5) IACUC App. Date _____		_____			
PI/PD DEPARTMENT		PI/PD POSTAL ADDRESS			
<b>Department of Computer Science</b>		<b>27 Graves Place</b>			
PI/PD FAX NUMBER		<b>Holland, MI 494229000</b>			
<b>616-395-7123</b>		<b>United States</b>			
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Electronic Mail Address	
PI/PD NAME					
<b>Herbert L Dershem</b>	<b>PhD</b>	<b>1969</b>	<b>616-395-7508</b>	<b>dershem@cs.hope.edu.</b>	
CO-PI/PD					
CO-PI/PD					
CO-PI/PD					
CO-PI/PD					

## CERTIFICATION PAGE

### Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 04-23. Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

### Drug Free Work Place Certification

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Drug Free Work Place Certification contained in Appendix C of the Grant Proposal Guide.

### Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes

No

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Debarment and Suspension Certification contained in Appendix D of the Grant Proposal Guide.

### Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

### Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE	DATE
NAME <b>Tracey Arndt</b>		<b>Electronic Signature</b>	<b>Apr 12 2006 4:14PM</b>
TELEPHONE NUMBER <b>616-395-7190</b>	ELECTRONIC MAIL ADDRESS <b>arndt@hope.edu</b>	FAX NUMBER <b>616-395-7923</b>	

\*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

**NATIONAL SCIENCE FOUNDATION  
Division of Undergraduate Education**

**NSF FORM 1295: PROJECT DATA FORM**

The instructions and codes to be used in completing this form are provided in Appendix II.

1. **Program-track** to which the Proposal is submitted: **S-STEM: SCHLR SCI TECH ENG & MATH**
2. Name of **Principal Investigator/Project Director** (as shown on the Cover Sheet):  
**Dershem, Herbert**
3. Name of submitting **Institution** (as shown on Cover Sheet):  
**Hope College**
4. **Other Institutions** involved in the project's operation:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Project Data:**

- A. Major Discipline Code: **99**
- B. Academic Focus Level of Project: **UP**
- C. Highest Degree Code: **B**
- D. Category Code: \_\_\_\_\_
- E. Business/Industry Participation Code: **NA**
- F. Audience Code: \_\_\_\_\_
- G. Institution Code: **PRIV**
- H. Strategic Area Code: \_\_\_\_\_
- I. Project Features: \_\_\_\_\_

Estimated number in each of the following categories to be directly affected by the activities of the project during its operation:

- J. Undergraduate Students: **24**
- K. Pre-college Students: **0**
- L. College Faculty: **14**
- M. Pre-college Teachers: **0**
- N. Graduate Students: **0**

## Project Summary

This project provides scholarships for students with financial need who transfer to Hope College from a community college to study biology, chemistry, computer science, engineering, geological and environmental sciences, mathematics, or physics. The scholarships of \$10,000 per year are offered to eight transferring students each year over three years. The scholarships are renewable for a second year if the student meets eligibility requirements.

The objectives of this project are to (1) improve the articulation between local community colleges and Hope College STEM programs; (2) recruit STEM students at community colleges who would not ordinarily consider attending Hope; (3) increase the number of community college students who transfer into STEM programs at Hope College; and (4) increase the retention of community college transfers in STEM disciplines at Hope.

This project will identify and recruit students on six community college campuses in Hope's geographic region and develop articulation documents to facilitate their transfer to Hope College.

Scholarship recipients will be selected after personal interviews and review of their college admissions packets. Selection is based on promise for academic success and potential for the scholarship to affect career choice.

Scholars will be supported in their study at Hope by intensive faculty advising, timely and appropriate academic assistance, peer mentoring, career counseling and education, internship and research opportunities, and a program for building community among S-STEM scholars.

Intellectual Merit: This project will build upon the nationally recognized Hope STEM programs, the current Hope CSEMS program, and the college's extensive infrastructure for student support to enable 24 students to transfer to Hope and pursue degrees in one of the STEM disciplines.

Broader Impacts: This project especially targets community college students who usually do not consider attending a private liberal arts college like Hope, thus increasing economic and racial diversity in STEM fields.

## TABLE OF CONTENTS

For font size and page formatting specifications, see GPG section II.C.

	Total No. of Pages	Page No.* (Optional)*
Cover Sheet for Proposal to the National Science Foundation		
Project Summary (not to exceed 1 page)	1	_____
Table of Contents	1	_____
Project Description (Including Results from Prior NSF Support) (not to exceed 15 pages) <b>(Exceed only if allowed by a     specific program announcement/solicitation or if approved in     advance by the appropriate NSF Assistant Director or designee)</b>	15	_____
References Cited	_____	_____
Biographical Sketches (Not to exceed 2 pages each)	2	_____
Budget (Plus up to 3 pages of budget justification)	7	_____
Current and Pending Support	1	_____
Facilities, Equipment and Other Resources	0	_____
Special Information/Supplementary Documentation	5	_____
Appendix (List below. ) <b>(Include only if allowed by a specific program announcement/     solicitation or if approved in advance by the appropriate NSF     Assistant Director or designee)</b>	_____	_____
Appendix Items:		

\*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

## **Project Description**

### **a. Results from Prior NSF Support**

Hope College is currently receiving NSF support for a CSEMS project DUE-0422388, "CSEMS Scholarship Program in Computer Science, Engineering, and Mathematics." The PI of the proposed S-STEM project is also the PI of the CSEMS project. This project, in its third year of four, is supporting 32 undergraduate students in the study of computer science, engineering, and mathematics at Hope College. These students have been enrolled in a focused first-year seminar and have received additional counseling and assistance through the CSEMS program. Although it is still too early to obtain definitive data, preliminary data indicate that this program will be successful in recruiting and retaining students in the CSEMS disciplines at Hope College.

The ongoing CSEMS project differs from the proposed project in several ways. While the CSEMS project focuses on incoming first-year students, the S-STEM project will focus on students transferring as third-year students from community colleges. The proposed project also includes all of the Science, Technology, Engineering, and Mathematics (STEM) disciplines at Hope rather than only computer science, engineering, and mathematics. By recruiting community college transfer students, this S-STEM project will enable Hope College to provide quality education in the STEM disciplines to students who do not currently benefit from it. The two projects will be connected, however, by upper level CSEMS students mentoring the arriving S-STEM.

### **b. Project Objectives and Plans**

The objectives of the proposed project are:

1. To improve the articulation between local community colleges and Hope College STEM programs.
2. To generate applications to Hope College from community college students who intend to major in a STEM discipline and who would not ordinarily consider attending Hope College.
3. To increase the number of community college students who transfer into STEM programs at Hope College.
4. To improve the retention of community college transfer students who come to Hope College planning to major in science, engineering, and mathematics.

### Program Plan

Hope College will develop a formal relationship with six Michigan community colleges that will result in the identification and recruitment of qualified community college students in order that they might pursue degrees in science, engineering, or mathematics at Hope. This will include assisting students in choosing the appropriate courses at their community colleges to prepare them for a smooth transition to the corresponding Hope College STEM program.

Once the students are enrolled at Hope College, the S-STEM program will both provide financial support and facilitate success through the establishment of a cohort group of



S-STEM scholars, faculty and student mentoring, and enhanced academic advising. These activities will not only attempt to ensure academic success, but also to assist the S-STEM recipients in preparation for employment and graduate studies.

#### Program activities

All S-STEM scholarship recipients will participate in project activities with the purpose of facilitating the transition to a four-year college environment and increasing retention of these students in one of the target disciplines. These activities will include faculty advising, academic assistance, peer and faculty mentoring, community-building events, information about research and internship opportunities, and career planning seminars.

### **c. Significance of Project and Rationale**

#### How this project supports the goals of S-STEM

##### *1. Improved educational opportunities for students.*

Community college students rarely consider continuing their studies in science, engineering, or mathematics at a four-year private liberal arts college like Hope due to the expense of such institutions. For this reason, such students are unable to take advantage of many of the documented benefits of such colleges, including undergraduate research and the overall success of such institutions in preparing leaders in the STEM fields. See Section h of this proposal for a description of these benefits at Hope College. This project will provide financial aid to community college students to allow them to consider pursuing a degree in science, engineering, or mathematics at Hope College. This aid and the project activities will encourage students who might not otherwise consider pursuing these disciplines in a liberal arts environment to do so.

##### *2. Increased retention of students to degree achievement.*

The financial incentive, the close faculty-student working relationships at Hope, and the activities included in the Hope College S-STEM program will improve retention in the Hope degree program and the STEM disciplines.

##### *3. Improved student support programs at institutions of higher education.*

The cohort group development, faculty advising, and peer and faculty mentoring activities of this project will build upon and improve present support activities for Hope College students, especially students with the special qualifications required of S-STEM scholars. In addition, Hope College's support services for all transferring students, including articulation, will be improved by procedures implemented through the S-STEM program.

##### *4. Increased numbers of well educated and skilled employees in technical areas of national need.*

This project will meet this objective by creating programs to support and encourage at least 24 students to successfully prepare for careers in science, engineering, or mathematics. It will also provide an infrastructure that will support and encourage an increase in the number of students entering these disciplines in the future. This infrastructure will accomplish this by strengthening the linkages through which the

pool of student talent at community colleges can access continued study at a four-year, liberal arts institution.

Information on Demographics

The most recent retention data for the general student population at Hope College indicates the following rates at the end of each year:

<b>Hope College Retention Rates ending 2003</b>					
<b>At end of Year 1</b>	<b>At End of Year 2</b>	<b>At End of Year 3</b>	<b>At End of Year 4</b>	<b>At End of Year 5</b>	<b>At End of Year 6</b>
89.5%	83.1%	77.9%	75.9%	76.1%	74.6%

We expect that with the special services provided to S-STEM scholars, the retention rate of this group will meet or exceed the percentages above.

The number of graduating seniors for each of the participating departments over the past five years is given in the following table:

<b>Graduating Majors by Year</b>							
<b>Department</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>Ave.</b>	<b>% female</b>
Biology	53	56	50	26	34	43.8	58.8%
Chemistry	31	36	42	27	32	33.6	46.9%
Computer Science	16	16	18	14	9	14.6	12.3%
Engineering	10	9	11	8	5	8.6	23.3%
Geology & Environmental sciences	9	7	5	5	2	7.0	42.9%
Mathematics	10	7	12	15	11	11.0	36.4%
Physics	5	1	4	3	4	3.4	35.3%

Students graduating from Hope College who are transfers from community colleges are shown in the Table below:

<b>Year</b>	<b>Graduating Students</b>	<b>Graduating Students who are CC transfers</b>		<b>Graduating Students who are CC transfers &amp; STEM major</b>	
2002	706	6	0.8%	1	0.1%
2003	809	14	1.7%	2	0.2%
2004	751	15	2.0%	1	0.1%
2005	647	20	3.1%	2	0.3%

The above table shows that the number of Hope College graduates who are transfers from community colleges is very low. In addition, only one or two of these graduates each year complete majors in one of the STEM disciplines. Although we do not have supporting data, we believe that this is due in large degree to the expense of attending Hope in comparison with state institutions. This belief is corroborated by counselors at the community colleges with whom we have consulted in the preparation of this proposal.

Hope College financial aid data indicate that 60% of Hope students have financial need at the level required for S-STEM scholarship recipients. Although corresponding data are not available for transferring community college students, we believe that such students require aid at a higher rate. In addition, many forms of financial aid that are targeted to incoming first-year students at Hope are not available to transfer students. This includes all merit-based scholarships.

Rationale for number of scholarships and scholarship amount

We propose funding eight incoming students per year each year of the project at the maximum amount allowed of \$10,000 or the amount of unmet need of the student, whichever is smaller. This will maximize the effectiveness of this project as an incentive to targeted community college students and allow Hope College to establish a strong connection with our partner community colleges. The successful completion of a Hope degree in an STEM discipline by all of the S-STEM recipients will result in a 40% increase in the number of Hope College graduates who transfer from a community college and more than a 4-fold increase in the number graduating with a major in a STEM discipline. While this represents a dramatic increase, discussions with representatives of local community colleges indicate this is not an unreasonable expectation.

The plan for awarding the scholarships is given below:

	2006-2007 Year 1	2007-8 Year 2	2008-9 Year 3	2009-10 Year 4	2010-11 Year 5
Incoming student scholarships	0	8	8	8	0
Second-year student scholarships	0	0	8	8	8
Total scholarships awarded	0	8	16	16	8

This plan is based on the assumption that there will be no attrition among the scholarship recipients. Any scholarship funds made available through attrition will be distributed as described in Section e under the heading *Eligibility and Replacement Process*.

**d. Activities on Which the Current Project Builds**

*Undergraduate Research:* All Hope STEM departments have long-established NSF-REU Site projects where undergraduates participate in research projects with department faculty. These REU projects have been effective tools in the recruitment and retention of talented students to these Hope College programs, but have never included community college students. S-STEM participants will be encouraged to apply for participation in these programs both prior to their first semester at Hope and during the summer after their first year. The existence of the S-STEM program will also provide both opportunity and incentive for the directors of the Hope REU programs to recruit undergraduate research participants on community college campuses.

*CSEMS Project:* In the fall of 2006, there will be 32 Hope College students who are supported by the NSF CSEMS scholarship program. Of this group, 5 will graduate in 2008, 15 in 2009, and 12 in 2010. These CSEMS students will serve as peer mentors for the S-STEM scholars when they arrive on the Hope College campus. In addition, activities will be scheduled that will combine the two groups of scholarship recipients.

*Academic Support Center:* The Hope College Academic Support Center assists students in the transition to college and helps them improve their studying habits, learning skills, and class performance. It provides its services to all Hope College students, individually or in small groups. These services include individual tutoring, small group help sessions, workshops, academic advising and counseling, and a mathematics and statistics lab. S-STEM scholars will learn about the Academic Support Center during their orientation and will be encouraged by the PI to utilize the services of the Office as appropriate.

*Office of Multicultural Life:* The mission of the Hope College Office of Multicultural Life is to promote education, understanding across racial and cultural boundaries, and a safe environment where all students, faculty and staff are able to find creative ways for understanding mutuality and respect. Using a variety of approaches, such as workshops, lectures, interactive programs, films, discussions and others, the Office seeks to cultivate understanding that promotes justice, respect and an environment where all persons are valued. With the advice and guidance of colleagues at Hope College, the Office of Multicultural Life seeks to assist students with the requisite skills, knowledge, and understanding for living in a global society. S-STEM scholars will learn about the Office of Multicultural Life during their orientation and will be encouraged by the PI to utilize the services of the Office as appropriate.

#### **e. S-STEM Project Management Plan**

##### Personnel

The ongoing operation and management of this program will be the responsibility of the Project Leadership Team. This team will be chaired by the PI, Herbert Dershem, who is Professor of Computer Science. Professor Dershem served as chair of the Hope College Computer Science Department for 28 years, directed the Hope College Computer Science NSF-REU Site program for 12 years, and has served as the PI for the Hope College CSEMS program for the past three years. He was interim Dean of the Natural Sciences at Hope College in 2005. He has also served as the admissions liaison for the Hope College Computer Science Department for the past 27 years. In that capacity, he meets with many prospective students, their parents, and counselors each year for the purpose of recruiting these students to Hope College. The PI will be assisted in carrying out the administrative duties of this project by Bev Harper, administrative assistant to the Dean of Natural Sciences. Since Bev's position is funded through the various projects on which she works, pay for her contributions to this project is included in the project budget.

Also on the Project Leadership Team will be a representative from the Dean of Natural Sciences Office and each of the other six STEM departments. Each member will serve as a liaison with their department, informing members about S-STEM activities, soliciting the assistance of departmental faculty, and coordinating S-STEM activities with department chairs. The department representatives will be: Tracey Arndt, Assistant to the Dean of Natural Sciences and Director of Federal Grant Programs, Prof. Tom Bultman, Biology, Prof. Michael Seymour, Chemistry, Prof. Herbert Dershem, Computer Science, Prof. Roger Veldman, Engineering, Prof. Brian Bodenbender, Geological and Environmental Sciences, Prof. Aaron Cinzori, Mathematics, and Prof. Paul DeYoung, Physics. It should be noted that Project Leadership Team member Professor Paul

DeYoung is a graduate of both Muskegon Community College and Hope College, providing special insight into the opportunities and challenges facing the S-STEM scholars.

In addition, an oversight committee will implement and evaluate the S-STEM program. This committee will consist of the PI plus the following members of the Hope College community:

- Moses Lee, Dean of the Natural Sciences
- James Bekkering, Vice President for Admissions
- Phyllis Kleder Hooyman, Director of Financial Aid
- Jon Huisken, Dean for Academic Services and Registrar

The oversight committee will meet at the conclusion of each semester to review the S-STEM program, evaluate its success in meeting its objectives, and determine adjustments that need to be made. This committee will be convened by the PI, who will be responsible for presenting a report for the committee's review at each meeting.

In addition, each of the seven STEM departments at Hope College will review the S-STEM project at one department meeting each year to assess the program from the departmental viewpoint and to recommend changes. The departmental recommendations will then go to the oversight committee for further consideration and action.

The Project Advisory Committee will consist of a representative from each of the six target community colleges. This committee will meet once each year and will assist the PI in evaluating the effectiveness of recruitment and articulation efforts. The members of the Project Advisory Committee will be:

- Rick Olsen, Dean of Arts and Sciences, Grand Rapids Community College
- Tom Deits, Chair of the Science Department, Lansing Community College
- Michael Masterson, Science Department Chair, Kellogg Community College
- Jim Taylor, Dean of Health and Science, Kalamazoo Valley Community College,
- Tony Jenkins, Academic Chair of Science and Math, Northwestern Michigan College
- Arun Datta, Chair of Math & Physical Sciences, Muskegon Community College

### Recruiting

Recruiting S-STEM scholars will be coordinated by the Project Leadership Team working closely with the Project Advisory Team. Recruiting efforts will focus on six community colleges that are located nearest to Hope College and from which Hope has received the largest number of transfer students. The following community colleges make up the target institutions at the present time:

- Grand Rapids Community College (Grand Rapids, MI)
- Muskegon Community College (Muskegon, MI)
- Kalamazoo Valley Community College (Kalamazoo, MI)
- Kellogg Community College (Battle Creek, MI)
- Lansing Community College (Lansing, MI)

- Northwestern Michigan College (Traverse City, MI)

Additional community colleges may be added to the target group during the course of this project. Students from other community colleges will be recruited through referral from the Hope College admissions office as these students inquire about Hope College.

The PI will maintain contact with each of the target institutions through the Project Advisory Committee member, faculty in the STEM disciplines, and articulation officers to identify students who are candidates for a Hope S-STEM award. The PI will visit each campus at least once each year for this purpose and will facilitate visits of other Hope College faculty and students to the community college campuses and visits of community college faculty and students to Hope College.

Hope College will prepare articulation documents at each of the six targeted community colleges for each of the STEM disciplines at Hope, as well as for the Hope general education requirements. These documents will define which community college courses will fulfill requirements for a Hope College degree, aiding the students in planning their schedules and facilitating their transition to Hope. At this time, no such articulation documents exist. The PI will coordinate the production of these documents with the articulation officers of the participating community colleges, the Hope STEM department chairs and the registrar at Hope College. These documents will be produced during the summer of 2006, prior to notification of the funding for this project.

#### Selection

Identified candidates for scholarships on each of the six community college campuses will be invited to submit applications for the S-STEM scholarships. The deadline for the applications will be March 1 of each year. All candidates will be invited to the Hope campus and interviewed by the PI and given a tour of the appropriate campus facilities, including laboratories of their field of interest. In addition, each candidate will be asked to provide contact information for a community college instructor, who will be contacted as a reference by the PI. The Project Leadership team will review all of the application materials submitted by the candidates along with their college application and will apply the eligibility and selection criteria given in Section f to determine the recipients of the scholarships. An ordered list of qualified alternates will be maintained to provide a pool of recipients in the case where successful applicants decide to attend a school other than Hope College. The target date for notification will be April 1.

Applicants from students at community colleges that are not in our target group of six will also be considered, though the project recruiting strategies will not be implemented beyond the target institutions. If there are not eight qualified community college applicants for this program in a given year, the remaining scholarships will be awarded to transfer students from four-year colleges or universities.

#### Record Maintenance and Reporting

The PI will be responsible for collecting all data needed for eligibility determination, assessment of the project, reporting to the Hope College oversight committee, and reporting to the National Science Foundation. He will be assisted in these efforts by the

Hope College Frost Center for Social Science Research, Registrar's Office, Admissions Office, and Financial Aid Office.

#### Student Support Programs Oversight

The support programs of the S-STEM project, described in Section g, will utilize services already present on the Hope campus. In many cases, Hope students who could benefit from these services fail to do so because they fail to take the initiative required, do not know a service exists, or are unaware that they could benefit from the service.

The PI will be responsible for making all S-STEM recipients aware of the support services provided by the college in conjunction with the S-STEM program. This will occur during the orientation workshop for the S-STEM program. He will also work with the offices providing those services to develop appropriate adaptations that meet the particular needs of the S-STEM program.

Each S-STEM recipient will have an academic advisor who is a faculty member in the student's major department. In most cases, this advisor will be a member of the Program Leadership Team. Each S-STEM scholar will meet with her or his faculty advisor monthly, either individually or in a group. These meetings will be used to assess the scholar's progress in the academic program, provide career counseling, and identify other issues that need to be addressed to ease the scholar's transition into the Hope College environment.

The PI will also coordinate mentoring, research, and internship activities with the seven S-STEM departments by working closely with the department chairs, each department's internship coordinator, and each department's undergraduate research coordinator.

The academic support program for S-STEM scholars will be run through the Hope College Academic Support Office. See Section d for a further description of this office. The PI will work with the Director of Academic Support to ensure appropriate assistance is available through tutoring, academic skills building, or the formation of directed study groups. The PI will also work with the academic advisors to encourage S-STEM scholars to utilize the academic support services that are provided.

The career investigation component of the S-STEM program will be directed by the PI in partnership with Sara Dalman, the Assistant Director of Career Services at Hope College. This will not be essentially different from the services provided to all Hope students.

Where appropriate, S-STEM scholars will be directed to the Hope College Office of Multicultural Life (see Section d) for support services.

#### Eligibility and Replacement Process

At the time of the selection of S-STEM scholars and at the conclusion of each semester, the PI will determine if each candidate or scholar meets the eligibility requirements as listed in Section f.

When an S-STEM scholar becomes ineligible to continue receiving the scholarship, the remaining funds for that scholar will be reallocated by action of the Project Leadership Team to one of the following:

- An S-STEM student who previously lost eligibility, but has since regained it.
  - A student transferring to Hope College from a four-year college or university who meets the eligibility requirements.
  - A student who is already enrolled in her third or fourth year in one of the S-STEM departmental programs and who meets the eligibility requirements.
- Preference will be given to students who have a large amount of unmet need.

These replacement scholarships will be awarded for at least one year, but will not necessarily be for the full \$10,000 nor renewed for a second year, even if eligibility requirements continue to be met.

#### Evaluation and Assessment

The assessment and evaluation plan described in Section i will be directed by the PI in consultation with the Hope College Frost Center for Social Science Research. In addition, the evaluations performed by the participating departments and the oversight committee will be coordinated by the PI.

#### Rationale for Size of Program

The Hope College STEM departments can easily support an additional eight students per year within their present infrastructure. The departments of Computer Science, Geological and Environmental sciences, Mathematics, and Physics are all operating far below their capacity for upper-level students. The other departments are also able to accommodate additional students. Eight students per year provide a significant cohort group for mutual support to aid their transition to a residential, four-year campus.

#### Project Administration Calendar

<b>Hope College S-STEM Project Administrative Calendar</b>			
	Year 1	Years 2-4	Year 5
Aug	Develop articulation documents for all STEM departments at target institutions (This will be done prior to notification of funding for this project)	Orientation program for incoming S-STEM scholars	
Sept	Contact community college administrators and instructors to identify candidates	Begin mentoring program Contact community college personnel to identify candidates	
Oct	Contact candidates through community college visits and invite them to Hope campus	Contact candidates through community college visits and invite them to Hope campus	
Dec		Eligibility check for S-STEM scholars. Oversight Committee meets	Eligibility check Oversight Comm. meets



<b>Hope College S-STEM Project Administrative Calendar</b>			
	<b>Year 1</b>	<b>Years 2-4</b>	<b>Year 5</b>
Mar	Review applications and conduct interviews with candidates	Review applications and conduct candidate interviews	
Apr	8 S-STEM scholars selected	8 S-STEM scholars selected	
May	Oversight Committee meets. Submit progress report to NSF	Eligibility check Oversight Committee meets. Submit annual report to NSF	Oversight Comm. meets. Submit final report to NSF

**f. Student Selection Process and Criteria**

While only the six regional community colleges will be targeted through articulation and recruitment, applications from students transferring from any community college. Community college students will be eligible for an S-STEM scholarship if they meet the following criteria:

1. The student must meet the eligibility requirements for citizenship and financial need as specified in the S-STEM guidelines.
2. The student must have a community college GPA of 2.5 or better, been accepted for admission to Hope College, and have adequate preparation to pursue a major in a STEM field at Hope College.
3. The student must have indicated an interest in pursuing a major in one of the S-STEM disciplines.

Each candidate for an S-STEM scholarship will be required to submit a statement indicating her academic and career goals and stating how the S-STEM scholarship will benefit the student in attaining those goals. Each candidate will also be required to submit the name of a community college instructor who will serve as a reference for the student. The candidate will also be interviewed by the PI during a visit to the Hope College campus.

All students who are awarded an S-STEM Scholarship will be selected from among qualified applicants by the Project Leadership Team using the following criteria:

1. Promise of academic success.
2. Interest in an academic and professional career in one of the STEM disciplines.
3. Perceived impact the scholarship will have on the student’s pursuing a major in a STEM discipline.

Preference will be given to candidates from under represented groups when they meet all of the above criteria.

Scholarship Renewal

At the completion of each semester of their academic program, recipients of the S-STEM scholarships must meet the following criteria in order to retain their scholarship for the following semester:

1. The student must maintain an overall GPA of 2.5 or better on a 4.0 scale. This level is intentionally lower than the requirement for most scholarships at Hope College to emphasize that this scholarship is not strictly awarded for academic

- excellence, but to encourage students at all satisfactory levels of achievement to obtain their degrees in STEM disciplines at Hope College.
2. The student must have declared a major in one of the STEM disciplines and be progressing satisfactorily toward completing that major.
  3. The student must have been an active participant in S-STEM sponsored student activities during the semester just completed.

#### **g. S-STEM Student Support Services and Programs**

##### Orientation

All S-STEM scholars will be required to attend a two-day orientation session prior to their enrollment at Hope College. At this session, the scholars will become acquainted with Hope College and its facilities. They will meet with their faculty advisors and peer mentors and learn about many of the support services listed below. This will include an introduction to the Offices of Career Planning and Placement, Academic Support, Multicultural Life, Registrar, and Residential Life.

##### Student Housing

Efforts will be made to house the incoming S-STEM scholars in the same Hope College residence hall during their first year. This will help to establish a spirit of community among the S-STEM scholars.

##### Faculty Advising

Each S-STEM scholar will have a faculty advisor, who is a member of one of the STEM departments, usually a member of the Project Leadership Team. In addition, the PI will contact each S-STEM scholar monthly to assess the student's progress. Through these contacts, the PI will monitor the students' academic progress, successful integration into the four-year college environment, and progress in career planning.

##### Academic Assistance

The Hope College Academic Support Center provides tutoring in specific courses and assistance with a variety of academic skills. All S-STEM scholars will tour the Academic Support Center during their orientation and be advised of the services it provides. The faculty advisors will direct the S-STEM scholars to the Center as appropriate. In addition, the PI will encourage the formation of S-STEM study groups in courses where such groups will be helpful.

##### Peer Mentoring

Each S-STEM scholar will be paired with a student who is a participant in the Hope College CSEMS programs. These mentors will be students majoring in computer science, engineering, or mathematics in their third or fourth year at Hope. During the first few weeks of class, an event will be held where S-STEM scholars and their mentors will be introduced. After that, the pairs will be encouraged to meet as often as is useful.

##### Career Services

The S-STEM scholars will be introduced to the resources of the Hope College Career Services Office during their orientation. These resources are useful for the choice of

career and for assisting students in the process of finding a job upon graduation. In addition, local graduates of Hope College with majors in STEM disciplines will be asked to informally mentor S-STEM scholars during their time at Hope.

### Multicultural Life

The Hope College Office of Multicultural Life works with students of all racial/ethnic backgrounds in a variety of ways, providing personal guidance, assistance with financial aid questions and linking students with campus organizations and departments or offices. S-STEM scholars will be introduced to the staff and services of this office during their orientation and counseled to make use of this resource whenever appropriate.

### Internships

Most of the Hope College STEM departments have an active internship program. S-STEM scholars will be introduced to the procedures for obtaining internships during their orientation and encouraged to pursue opportunities for both summer and school year internships. Organizations that regularly provide internship opportunities will be informed of the S-STEM program and its objectives.

### Undergraduate Research

Each of the STEM departments at Hope has an undergraduate research program supported in part by the NSF REU program. S-STEM scholars will be encouraged to apply to these programs and to undergraduate research programs at other locations as well, both the summer before they begin at Hope and the summer after their first year. Applications from S-STEM scholars will be given preferential consideration. Future NSF REU proposals from Hope College may provide for inclusion of S-STEM scholars funded as a separate class of participants.

### Community Building

A minimum of two activities will be scheduled each year that will include all S-STEM scholars, with the objective being to build community among the scholars. These events will alternate between social events and informational sessions, with the emphasis being on informality and enthusiastic participation. When appropriate, students and faculty from the target community colleges will be invited to attend these events as well. At least one of these events each year will include the Hope College CSEMS scholars as well.

### **h. Quality Educational Programs**

This S-STEM project links community college students to the high quality educational STEM programs at Hope College. As demonstrated below, it provides an enhanced opportunity for community college students to succeed in obtaining advanced degrees and reaching the highest level of achievement in their chosen fields.

The Division of Natural Sciences at Hope includes the departments of Biology, Chemistry, Computer Science, Engineering, Geological & Environmental Sciences, Mathematics, Nursing, and Physics and totals over 60 FTE faculty members. Hope College has a long-standing commitment to provide students opportunities to learn cutting-edge science in coherent and rigorous laboratory courses that stress hands-on,

research-based modes of learning, and to work in an interdisciplinary and collaborative manner with faculty in research. The Division of Natural Sciences at Hope is recognized by Project Kaleidoscope as a whole "Program that Works" and as a model for other institutions, and is one of only 10 liberal arts institutions to be recognized by the NSF with an Award for the Integration of Research and Education. Additionally, the undergraduate research program at Hope has been identified in *U.S. News & World Report* as among the leading programs in the nation (ranked 4<sup>th</sup> among all institutions in 2003).

The mission of the program in science and mathematics at Hope mirrors that of the college to provide an **innovative curriculum**, which intertwines **student learning** and **faculty development**. We operate on the principle that undergraduate research is an essential component of good teaching and effective learning. The collegial culture within the Division of Natural Sciences is the key ingredient in sustaining an intellectually vital learning community for faculty and students. Our community is enriched by several seminar series that bring as many as 3 external speakers/week to campus. In this way students and faculty learn together and take what they have learned back to the classrooms and research laboratories. Students work in a collaborative fashion in a number of ways, and upper-level students serve as mentors and role models for younger students in formal and informal capacities. Faculty are expected to be scholar/educators, and the administration is expected to sustain an infrastructure and environment to support student and faculty activities. In the past five years, Hope science faculty/administrators received awards totaling greater than \$2,400,000 annually in new resources from extramural sources to support our research, educational and outreach programs. Included among current awards are 6 separate NSF-REU site awards (Biology, Chemistry, Computer Science, Geology, Mathematics, and Physics/Engineering) to support undergraduate research.

Our goal at Hope College is to prepare students to be productive members of the scientific community who are able to pursue a variety of career opportunities. We aim to instill in them an appreciation for the art of the scientific endeavor. Student learning in our programs for the science/mathematics major is embedded in a curriculum that is challenging and provides individual attention to promote scientific growth. It is a research-rich environment in which faculty and students see themselves as partners in the learning process.

We seek to identify and sustain students who have a diversity of ethnic backgrounds. To assist us in this regard we have formed a unique partnership with the University of Michigan to cooperatively recruit students of color for fully-supported undergraduate education at Hope College followed by fully-supported graduate and/or medical education at the University of Michigan. This highly successful program, along with outreach programs to K-12 students representing traditionally underrepresented groups in science and mathematics, work together to assist us in our goal to provide opportunities for science/mathematics education to all individuals. A new outreach program to underrepresented students in local high schools is called REACH (Research Experiences Across Cultures at Hope). This program, funded internally, invites up to two teachers and

six students from local high schools to participate in Hope College summer research projects along with the undergraduates and professors.

We expect students to leave Hope with an ability to understand, communicate, and critically appraise different ways of knowing and to be fully capable of making critical judgments about a fundamental body of knowledge. An unusually high number of students (~40%) enter Hope with an interest in science and mathematics. During their time at Hope we integrate students into a supportive community of learners that provides an environment rich in research-based learning opportunities. On the average, each summer over 120 students do research with faculty, supported in part by separate NSF-REU site awards. Many students indicate that the prospect of doing undergraduate research is a major factor that helped them to identify Hope College as their choice for a college education. Although we do not have a research requirement, ~85% of Hope science and mathematics majors do research. Approximately 33% of seniors graduate with a degree in science or mathematics. Of these, ~30% enter graduate school. According to a recent NSF study, our record in training students who achieve the Ph.D. is one of the strongest nationally. About 35% of our science-mathematics graduates seek to enter professional school. The 10-year acceptance rate for these students is 71%, and it is 90% for students who engage in research while at Hope. The remaining students enter the workforce directly upon graduation, with many entering the teaching profession as K-12 educators.

Faculty and students sustain vitality by engaging in research. Hope College faculty rank 4th of all liberal arts institutions for numbers of faculty research publications and 14th overall for highest impact of those publications as measured by the Science Citation Index. Since 1990 over 300 undergraduate students have co-authored research publications with faculty. Corporate and university recruiters have identified the value-added component of experience in research/teaching laboratories as an important attribute that students carry with them beyond Hope. Research in and out of the class promotes in students' critical thinking, reasoning and problem solving, traits that are essential to success in any endeavor. The success of our research-based education program in science and mathematics is evident in its impact on the college at large. Hope recently instituted a collaborative research program for faculty and students in the humanities, social sciences, and arts, and collaborative research with students is an expected norm of every new faculty hire. This has resulted, in part, in an institutional core curriculum that emphasizes interdisciplinary learning.

#### **i. Assessment and Evaluation**

Assessment of the program will be supported by a number of different activities:

- 1. Tracking data for S-STEM participants.*

Data collected will include progress toward degree, academic performance, participation in internship and research, retention in the major, graduation rate, job placement, and percentage of minorities and females. The data for S-STEM participants will be compared to results prior to S-STEM support and to the results for non-S-STEM supported majors in STEM disciplines during the period

of this project. We will also track the change in the number of transfers to Hope College during the years of the S-STEM program.

2. *Annual survey of all participants.*

All participants in this program (students, Project Leadership Team members, and faculty advisors) will be surveyed annually to determine the impact of the program. Student participants will also be surveyed prior to their arrival on the Hope campus.

3. *Exit survey.*

All participants, when exiting the program, will be asked to complete a survey. There will be separate surveys for students who depart the program prior to graduating and for those who graduate as S-STEM scholars.

4. *Applications from students at targeted community colleges.*

The number of applications received from students at the targeted community colleges will be collected each year and compared with counts from years prior to the S-STEM program.

All data collection and survey design will be coordinated by the PI in consultation with the Hope College Frost Center for Social Science Research. Similar instruments already exist for the assessment and evaluation of the Hope College CSEMS program and these will be adapted to use in the S-STEM program.

All data will be used for evaluation purposes by the oversight committee, which will meet at the end of each semester to evaluate assessment data and recommend adjustments to the program.

Dissemination of the results of this program will be done through the construction of a project web page. This web page will contain complete information about the project, including all assessment data. The availability of this web page will be announced through the web pages of all of the participating departments and the web page of the Hope College Natural Science Division.

### **Summary**

This project will provide an effective way to attract and retain a group of students to the STEM programs at Hope College who would not ordinarily consider doing so. This will provide an opportunity for these students to benefit from the strong Hope College STEM programs. As a result of this project, pipelines will be established between the community colleges and Hope College that will benefit all institutions beyond this project's time frame. In addition, all students and faculty at Hope College will benefit from the increase in student diversity that will result.

## Biographical Sketches

**Principal Investigator: Herbert L. Dershem**

### **(i) Professional Preparation**

B.S. University of Dayton, 1965

M.S. (Computer Science) Purdue University, 1967

Ph.D. (Computer Science) Purdue University, 1969

### **(ii) Appointments**

Hope College, Assistant Professor, 1969-1974, Associate Professor, 1974-1981,  
Professor, 1981-present, Chair, Computer Science Dept, 1976-2003, Interim Dean  
for Natural Science, 2005.

Oak Ridge National Laboratories, Visiting Research Scientist, 1977-1978

Boston University Overseas Program, Visiting Professor, 1982-1983

United States Air Force Academy, Distinguished Visiting Professor, 1993-1994

### **(iii) Publications**

#### **Up to 5 publications most closely related to the proposed project:**

Dershem, H.L., McFall, R.L., and N. Uti\*, "A Linked List Prototype for the Visual  
Representation of Abstract Data Types," *Interactive Multimedia Electronic Journal of  
Computer-Enhanced Learning*, 4,2(Oct, 2002).

Dershem, H.L., McFall, R.L., and N. Uti\*, "Animation of Java Linked Lists," *SIGCSE  
Bulletin*, 34,1(Mar, 2001), 53-57.

Dershem, H.L., Dykstra\*, J., and K. Suppes\*, "An Abstract Window Toolkit Visualizer  
for Computer Science Instruction," *Proceedings of the 33rd Midwest Instruction and  
Computing Symposium (CD-ROM)*, April 14-15, 2000, Minneapolis, MN.

Dershem, H.L., Parker\*, D.E., and R. Weinhold\*, "A Java Function Visualizer," *Journal  
of Computing in Small Colleges*, 15,1(Oct, 1999), 221-230.

Dershem, H.L. and J. Vanderhyde\*, "Java Class Visualization for Teaching Object-  
Oriented Concepts," *SIGCSE Bulletin*, 30,1(Mar, 1998), 53-57.

#### **Up to 5 other significant publications, whether or not related to the proposed project:**

Dershem, H.L. and P. Brummund\*, "Tools for Web-Based Sorting Animation," *SIGCSE  
Bulletin*, 30,1(Mar, 1998), 222-226.

Dershem, H.L., Barth\*, W., Bowsher\*, C., and D. Brown\*, "Data Structures with Ada  
Packages, Laboratories, and Animations," *Proceedings of the First Australasian  
Conference on Computer Science Education*, July, 1996, 32-38.

Dershem, H.L. and M.J. Jipping, *Programming Languages: Models and Structures:  
Second Edition*, PWS Publishing Co., 1995.

McFall\*, R. and Dershem, "Finite State Machine Simulation in an Introductory Lab,"  
*SIGCSE Bulletin*, 26,1(Mar 1994), 126-140.

### **(iv) Synergistic Activities**

#### **a. Previous grants awarded:**

Co-director, "Introduction of the Computer in the Statistics Curriculum", NSF Office  
of Computing Activities, 1971-1973, \$45,800.

Director, "A Modular Approach to the Introductory Course in Computer Science",  
NSF Local Course Improvement Program, 1978-1980, \$14,200

Co-Director, "A Microcomputer Laboratory for use in Teaching Statistics", NSF  
Instructional Scientific Equipment Program, 1979-1980, 10,315.

Director, "CSNET Membership in Support of Computer Science Research", NSF  
RUI Program, 1987-1990, \$9,375.

Director, "Computer Science Undergraduate Research Program", NSF REU Program, 1992-1994, \$86,550; 1995-1997, \$114,393; 1998-2000, \$146,700; 2001-2003, \$163,213, 2004-2008, \$352,000.  
Director, "Use of Ada, Laboratories, and Visualization in the Teaching of Data Structures and Discrete Mathematics", DARPA Curriculum Development Grant, 1993- 1994, \$23,010.  
Director, "Curriculum and Textbook Development Using Ada 9X for the Teaching of Object-Oriented Concepts", US Air Force Contract, 1995-1996, \$34,464.  
Co-Director, "An Integrated Classroom/Laboratory for Introducing Students to Object Oriented Concepts", NSF ILI Program, 1996-1998, \$46,356.  
Director, "Computer Science, Engineering, and Mathematics Scholarship Program", NSF CSEMS Program, 2005-2008, \$398,040.

**b. Councilor for the Council on Undergraduate Research:**

Councilor, Division of Mathematics and Computer Science, 1994-2000, 2003-present.  
Member of consultants committee, 1996-present.  
Leader at CUR Proposal Writing Institute, 2002.

**c. Member of panels related to undergraduate research:**

Dershem, H., with Engel G., McFall\*, R., Lopez, A., and S. Wiltz\*. "Research Experiences for Undergraduates," Twenty-fourth SIGCSE Technical Symposium on Computer Science Education, Indianapolis, IN, March, 1993.  
Dershem, H., with Bard, G., and D. Berque. "Finding and Developing Research Experiences for Undergraduates in the Small College Setting," Third Annual CCSC Midwestern Conference, Greencastle, IN, October, 1996.  
Dershem, H., with Sanders, D., Eller-Meshreki, R., and G. Pitts. "Undergraduate Research - Welcome to the 21st Century," Twenty-eighth SIGCSE Technical Symposium on Computer Science Education, San Jose, CA, February, 1997.  
Dershem, H., with Hedges, H. "Birds of a Feather Session on NSF-REU Program for Computer Science," Twenty-ninth SIGCSE Technical Symposium on Computer Science Education, Atlanta, GA, March, 1998.  
Dershem, H. with McGuffee, J., Lankewicz, L., Lewandowski, G., Lopez, D., and O. Slotterbeck. "Managing Undergraduate CS Research," Thirty-third SIGCSE Technical Symposium on Computer Science Education, Cincinnati, KY, 2002.

**(v) Collaborations and Other Affiliations**

**a. Collaborators and Co-Editors**

A list of scientists collaborated with on projects over the last 48 months would include:

Scott Grissom (Grand Valley State University), Michael Jipping (Hope College), Ryan McFall (Hope College), Myles McNally (Alma College), Thomas Naps (University of Wisconsin-Oshkosh), Samuel Rebelsky (Grinnell College), Henry Walker (Grinnell College).

**b. Graduate and Postdoctoral Advisors**

Robert E. Lynch (Purdue University)

**c. Thesis Advisor and Postgraduate-Scholar Sponsor**

None



# SUMMARY PROPOSAL BUDGET YEAR 1

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted	
				A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)			
				CAL	ACAD	SUMR	
1. <b>Herbert L Dershem - PI</b>				0.00	0.00	0.00	\$ 0 \$
2.							
3.							
4.							
5.							
6. ( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. ( 1 ) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. ( 0 ) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00	0
2. ( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. ( 0 ) GRADUATE STUDENTS							0
4. ( 0 ) UNDERGRADUATE STUDENTS							0
5. ( 1 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							2,000
6. ( 0 ) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							2,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							2,000
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							500
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ _____				0			
2. TRAVEL _____				0			
3. SUBSISTENCE _____				0			
4. OTHER _____				0			
TOTAL NUMBER OF PARTICIPANTS ( 0 ) TOTAL PARTICIPANT COSTS							0
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							500
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							1,500
H. TOTAL DIRECT COSTS (A THROUGH G)							4,000
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base: )							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							4,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 4,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PD NAME <b>Herbert L Dershem</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Tracey Arndt</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked		Date Of Rate Sheet		Initials - ORG	

# SUMMARY PROPOSAL BUDGET YEAR 2

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted	
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
		CAL	ACAD	SUMR			
1.	<b>Herbert L Dershem - PI</b>	0.00	0.00	0.00	\$ 0	\$	
2.							
3.							
4.							
5.							
6.	( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0		
7.	( 1 ) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	0.00	0		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1.	( 0 ) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0		
2.	( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0		
3.	( 0 ) GRADUATE STUDENTS				0		
4.	( 0 ) UNDERGRADUATE STUDENTS				0		
5.	( 1 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				2,000		
6.	( 0 ) OTHER				0		
TOTAL SALARIES AND WAGES (A + B)					2,000		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					0		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					2,000		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT					0		
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					500		
2. FOREIGN					0		
F. PARTICIPANT SUPPORT COSTS							
1.	STIPENDS \$ <u>80,000</u>						
2.	TRAVEL <u>0</u>						
3.	SUBSISTENCE <u>0</u>						
4.	OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS ( 8 ) TOTAL PARTICIPANT COSTS					80,000		
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES					1,000		
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					0		
3. CONSULTANT SERVICES					500		
4. COMPUTER SERVICES					0		
5. SUBAWARDS					0		
6. OTHER					0		
TOTAL OTHER DIRECT COSTS					1,500		
H. TOTAL DIRECT COSTS (A THROUGH G)					84,000		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base: )							
TOTAL INDIRECT COSTS (F&A)					0		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					84,000		
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)					0		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				\$	84,000	\$	
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PD NAME <b>Herbert L Dershem</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Tracey Arndt</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

# SUMMARY PROPOSAL BUDGET YEAR 3

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted
				A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)		
			CAL	ACAD	SUMR	
1. <b>Herbert L Dershem - PI</b>			0.00	0.00	0.00	\$ 0 \$
2.						
3.						
4.						
5.						
6. ( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)			0.00	0.00	0.00	0
7. ( 1 ) TOTAL SENIOR PERSONNEL (1 - 6)			0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. ( 0 ) POST DOCTORAL ASSOCIATES			0.00	0.00	0.00	0
2. ( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)			0.00	0.00	0.00	0
3. ( 0 ) GRADUATE STUDENTS						0
4. ( 0 ) UNDERGRADUATE STUDENTS						0
5. ( 1 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						2,000
6. ( 0 ) OTHER						0
TOTAL SALARIES AND WAGES (A + B)						2,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						2,000
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT						0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						500
2. FOREIGN						0
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ <u>160,000</u>						
2. TRAVEL <u>0</u>						
3. SUBSISTENCE <u>0</u>						
4. OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS ( 16 )			TOTAL PARTICIPANT COSTS			160,000
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3. CONSULTANT SERVICES						500
4. COMPUTER SERVICES						0
5. SUBAWARDS						0
6. OTHER						0
TOTAL OTHER DIRECT COSTS						1,500
H. TOTAL DIRECT COSTS (A THROUGH G)						164,000
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base: )						
TOTAL INDIRECT COSTS (F&A)						0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						164,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)						0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$ 164,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0			AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME <b>Herbert L Dershem</b>			FOR NSF USE ONLY			
ORG. REP. NAME* <b>Tracey Arndt</b>			INDIRECT COST RATE VERIFICATION			
			Date Checked	Date Of Rate Sheet	Initials - ORG	

# SUMMARY PROPOSAL BUDGET YEAR 4

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted
				NSF Funded Person-months		
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				CAL	ACAD	SUMR
1. <b>Herbert L Dershem - PI</b>				0.00	0.00	0.00
2.						
3.						
4.						
5.						
6. ( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00
7. ( 1 ) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.00
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. ( 0 ) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00
2. ( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00
3. ( 0 ) GRADUATE STUDENTS						0
4. ( 0 ) UNDERGRADUATE STUDENTS						0
5. ( 1 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						2,000
6. ( 0 ) OTHER						0
TOTAL SALARIES AND WAGES (A + B)						2,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						2,000
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT						0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						500
2. FOREIGN						0
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ <u>160,000</u>						
2. TRAVEL <u>0</u>						
3. SUBSISTENCE <u>0</u>						
4. OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS ( 16 ) TOTAL PARTICIPANT COSTS						160,000
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3. CONSULTANT SERVICES						500
4. COMPUTER SERVICES						0
5. SUBAWARDS						0
6. OTHER						0
TOTAL OTHER DIRECT COSTS						1,500
H. TOTAL DIRECT COSTS (A THROUGH G)						164,000
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base: )						
TOTAL INDIRECT COSTS (F&A)						0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						164,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)						0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$ 164,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$		
PI/PI NAME <b>Herbert L Dershem</b>				FOR NSF USE ONLY		
ORG. REP. NAME* <b>Tracey Arndt</b>				INDIRECT COST RATE VERIFICATION		
		Date Checked	Date Of Rate Sheet	Initials - ORG		

# SUMMARY PROPOSAL BUDGET YEAR 5

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted	
				A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)			
				CAL	ACAD	SUMR	
1. <b>Herbert L Dershem - PI</b>				0.00	0.00	0.00	\$ 0 \$
2.							
3.							
4.							
5.							
6. ( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. ( 1 ) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. ( 0 ) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00	0
2. ( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. ( 0 ) GRADUATE STUDENTS							0
4. ( 0 ) UNDERGRADUATE STUDENTS							0
5. ( 1 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							2,000
6. ( 0 ) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							2,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							2,000
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							500
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ <u>80,000</u>							
2. TRAVEL <u>0</u>							
3. SUBSISTENCE <u>0</u>							
4. OTHER <u>0</u>							
TOTAL NUMBER OF PARTICIPANTS ( 8 ) TOTAL PARTICIPANT COSTS							80,000
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							500
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							1,500
H. TOTAL DIRECT COSTS (A THROUGH G)							84,000
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base: )							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							84,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 84,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PD NAME <b>Herbert L Dershem</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Tracey Arndt</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked		Date Of Rate Sheet		Initials - ORG	

# SUMMARY PROPOSAL BUDGET Cumulative

ORGANIZATION <b>Hope College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Herbert L Dershem</b>				AWARD NO.	Proposed	Granted	
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
				CAL	ACAD	SUMR	
1. <b>Herbert L Dershem - PI</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>\$ 0</b>
2.							
3.							
4.							
5.							
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0</b>
7. ( <b>1</b> ) TOTAL SENIOR PERSONNEL (1 - 6)				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0</b>
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. ( <b>0</b> ) POST DOCTORAL ASSOCIATES				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0</b>
2. ( <b>0</b> ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0</b>
3. ( <b>0</b> ) GRADUATE STUDENTS							<b>0</b>
4. ( <b>0</b> ) UNDERGRADUATE STUDENTS							<b>0</b>
5. ( <b>5</b> ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							<b>10,000</b>
6. ( <b>0</b> ) OTHER							<b>0</b>
TOTAL SALARIES AND WAGES (A + B)							<b>10,000</b>
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							<b>0</b>
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							<b>10,000</b>
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							<b>0</b>
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							<b>2,500</b>
2. FOREIGN							<b>0</b>
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ <b>480,000</b>							
2. TRAVEL <b>0</b>							
3. SUBSISTENCE <b>0</b>							
4. OTHER <b>0</b>							
TOTAL NUMBER OF PARTICIPANTS ( <b>48</b> )				TOTAL PARTICIPANT COSTS			<b>480,000</b>
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							<b>5,000</b>
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							<b>0</b>
3. CONSULTANT SERVICES							<b>2,500</b>
4. COMPUTER SERVICES							<b>0</b>
5. SUBAWARDS							<b>0</b>
6. OTHER							<b>0</b>
TOTAL OTHER DIRECT COSTS							<b>7,500</b>
H. TOTAL DIRECT COSTS (A THROUGH G)							<b>500,000</b>
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)							
TOTAL INDIRECT COSTS (F&A)							<b>0</b>
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							<b>500,000</b>
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)							<b>0</b>
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							<b>\$ 500,000</b>
M. COST SHARING PROPOSED LEVEL \$ <b>0</b>				AGREED LEVEL IF DIFFERENT \$			
PI/PD NAME <b>Herbert L Dershem</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Tracey Arndt</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked		Date Of Rate Sheet		Initials - ORG	

C \*ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

## **Budget Justification**

**PI Support:** The PI will devote approximately one-half month each summer and one-ninth of his time during the academic year to his responsibilities for this project. His time will be supported as a college contribution to this project and no funds are requested.

**Scholarships:** The budget is calculated based on eight new fully-funded participants each year for three years. It is anticipated that students will receive the maximum stipend of \$10,000 for two years.

**Program Administration:** The **secretarial support** of \$2,000 per year will be paid to Bev Harper, administrative assistant to the Dean of Natural Science, for her services in assisting the PI with the administration of this project. This is budgeted under category **B5**.

Project assessment and evaluation will be carried out by the Frost Center for Social Science Research at Hope College. This supported is budgeted at \$500 per year under the category **G3, Consultant Services**.

**Travel costs** are to support faculty and student travel between the community college campuses and Hope College for the purposes of recruitment and advisory team meetings. This is requested on line **E1** at a rate of \$500 per year.

The total Program Administration cost is \$10,000, which is 2.0% of the total project budget.

**Student Support Costs:** Each year of the project, \$1,000 has been allocated for **materials and supplies** (line **G1**) that will be connected with the student support activities. This will include costs for orientation activities and miscellaneous supplies involved with recruiting. This totals \$5,000 per year, which is 1.0% of the total budget.

## Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Herbert Dershem	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:    Scholarships for Transfer Students in Science, Engineering, and Mathematics	
Source of Support:    National Science Foundation - S-STEM Total Award Amount: \$    495,000 Total Award Period Covered:    09/01/06 - 08/31/11 Location of Project:    Hope College Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.00	
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:    REU Site: An Undergraduate Research Participation Program in Computer Science	
Source of Support:    National Science Foundation - REU Total Award Amount: \$    398,040 Total Award Period Covered:    08/01/04 - 07/31/08 Location of Project:    Hope College Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.50	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$                      Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.    Cal:              Acad:              Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$                      Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.    Cal:              Acad:              Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$                      Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.    Cal:              Acad:              Summ:	

\*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.





April 8, 2006

To Whom It May Concern:

The Science and Mathematics Academic Area of Northwestern Michigan College in Traverse City, MI, endorses the NSF grant proposal submitted by Herbert Dershem of Hope College which provides scholarships for community college students transferring to Hope College for degrees in science or mathematics.

The Science and Mathematics Academic Area at NMC is proud of the success our students have enjoyed at their transfer institutions. The vast majority of our students in the past, due to financial constraints, have transferred to public, state supported universities to complete their education. Schools like Michigan State and Michigan Tech are outstanding institutions; the scholarship money that this grant provides would allow our transfer students to also consider Hope as a viable option. The intimacy of a small college like Hope, its excellent academic reputation, and the ability to do undergraduate research will likely appeal to a number of our students.

The faculty and staff in the Science and Math Academic Area at NMC look forward to working with representatives of Hope College upon approval of this proposal, and are excited about the opportunity these scholarships provide for our students.

Sincerely,

A handwritten signature in red ink that reads "Tony Jenkins". The signature is written in a cursive style.

Tony Jenkins  
Science and Mathematics Academic Area Chair  
Northwestern Michigan College



5400 Science Department  
Lansing Community College  
P. O. Box 40010  
Lansing, Michigan 48901-7210  
Phone: (517) 483-1085 Fax: (517) 483-1003

April 7, 2006

Mr. Herbert L. Dershem, Ph.D.  
Interim Chair for natural Science  
Hope College  
35 E 12<sup>th</sup> St  
Holland MI 49423

Prof. Dershem:

I am pleased to offer my support for the NSF Division of Undergraduate Education proposal entitled "Scholarships for Transfer Students in Science, Engineering and Mathematics."

I will be happy to serve as the advisory board member for Lansing Community College as envisaged in this project.

LCC will work with Hope College to improve our articulation of courses between our institutions; Sophie Jeffries, our interim Director of Instruction in the Liberal Studies Division, will provide valuable articulation expertise in this process.

LCC has a long experience in articulation with 4-year colleges and in supporting our students' transitional experiences. An excellent example of this commitment is the new LCC University Center, currently under construction, which will support, on the LCC campus, course offerings at the undergraduate and graduate level from a number of 4-year colleges from across Michigan.

In addition, the Science Department has been actively involved in easing this transition through a number of innovative programs. One example is the recently completed articulation agreement with Central Michigan University which will allow LCC students to smoothly transition to a CMU baccalaureate curriculum in elementary education with a science emphasis. This program will allow LCC students to complete all degree requirements through coursework and internships at LCC and in the Lansing area.

Lansing Community College is a large (serving approximately 20,000 students) and highly diverse urban community college. As such, we believe that this is fertile ground for identification of worthy scholarship candidates who will greatly benefit from the opportunities that this program represents.

We look forward to working with you to make this project a success.

Best wishes,

Thomas L. Deits  
Chairperson, Science Department



143 Bostwick Avenue, NE  
Grand Rapids, Michigan 49503-3295  
www.grcc.edu  
ph: (616) 234-GRCC  
fax: (616) 234-4005

April 11, 2006

Dr. Herbert L. Dershem  
Hope College  
35 E. 12<sup>th</sup> Street  
Holland, MI 49423-9000

Dear Dr. Dershem:

On behalf of Grand Rapids Community College, I offer this letter of support for the National Science Foundation grant in support of the S-STEM proposal.

The S-STEM proposal represents an excellent opportunity for the students at Grand Rapids Community College (GRCC). As indicated in the grant proposal, GRCC students in science, technology, engineering, and mathematics often thrive in educational environments that include small classes, significant educational support and occasional intervention to help them assess their progress. Hope College, particularly under the conditions outlined in the S-STEM proposal, offers an excellent environment for our community college students to continue their success in areas that are critical to the economic health of the State of Michigan. I confirm the dilemma presented in the project proposal. Economic barriers are a likely factor in preventing some of our best students from participating in the excellent learning environments embodied by Hope College. The availability of \$10,000 scholarships, combined with excellent support by Hope College faculty and staff, should attract and retain significantly more GRCC students.

Grand Rapids Community College welcomes the opportunity for our students and enthusiastically supports the goals of the S-STEM proposal. We believe the processes outlined in the grant proposal will result in a high probability of success for GRCC students should they chose to attend Hope College under the S-STEM proposal. Success in the STEM areas will benefit not only the students, but also Hope College and the State of Michigan. Thank you for the opportunity this proposal represents for our students.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard F. Olsen".

Richard F. Olsen, Dean  
School for Arts and Sciences  
Grand Rapids Community College

## MEMORANDUM

DATE: April 10, 2006

TO: Herb Dershem, Ph.D., Computer Science Dept.  
Tracey Arndt  
Director of Federal Grant Programs

FROM: John Patnott, Chairperson, Human Subjects Review Board  
Kinesiology Dept.

RE: Research proposal approval

Your research proposal titled "Scholarships for Transfer Students in Science, Engineering, and Mathematics." has been approved by the HSRB. This approval is for a 12-month period.

Thank you for submitting your proposal and I hope all goes well with your research.



## Proposal Status | MAIN ▶

**Organization:** Hope College

### Review #5

**Proposal Number:** 0631044  
**Performing Organization:** Hope College  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Principal Investigator:** Dershem, Herbert L  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Rating:** Good

#### REVIEW:

What is the intellectual merit of the proposed activity?

The infrastructure of Hope College lends itself to a productive program. It models the program after the CSEM NS., which proved to be moderately successful for them. The merit of this proposal is that outreach to community colleges will be intensive to recruit those students who ordinarily might not have chosen Hope college because of cost. would Those students who would be given a S-STEM scholarship would not only enhance Hope college, but also all C.C involved.

What are the broader impacts of the proposed activity?

The racial and the economic impact will enhance not only the school but the community at large...The fact that they will be recruiting on 6 Community college campuses for Minority students will make a big impact Hope College as a whole which will highlight their mission of providing an innovative curriculum which intertwines student learning and faculty development which has the added dimension of Diversity. All of which will be because of the added dimension of the S-STEM Scholars program

Summary Statement

There will be a web page constructed that will be composed of all assessment data garnered from the program. Hope is a liberal arts research institution ranked 4th in the country. Corporate America realizes the importance of research. Research gives a forum for critical thinking, reasoning and problem solving invaluable attributes for industry. Hope has a collaborative research program for students and faculty in the humanities, social sciences and the arts Collaborative research with students is an expected norm for every newly hired faculty ....interdisciplinary learning.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

## Proposal Status | MAIN ▶

**Organization:** Hope College

### Proposal Detail:

#### Proposal Information

**Proposal Number:** 0631044  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Received by NSF:** 04/12/06  
**Principal Investigator:** Herbert Dershem  
**Performing Organization:** Hope College

This Proposal has been Electronically Signed by the Authorized Organizational Representative (AOR).

#### NSF Program Information

**NSF Division:** Division of Undergraduate Education  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Program Officer:** Susan L. Burkett  
**PO Telephone:** (703) 292-0000  
**PO Email:** [sburkett@nsf.gov](mailto:sburkett@nsf.gov)

#### Proposal Status

Status As of Today Dated: **02/18/09**

This proposal has been declined by NSF.

#### Comments from the cognizant Program Officer:

As indicated in an e-mail that you will receive from the Acting Director of NSF's Division of Undergraduate Education, this proposal could not be funded within this year's budget for the NSF Scholarships in Science, Technology, Engineering, and Mathematics Program. We regret to inform you of this decision.

Your proposal was reviewed by a panel of STEM and student-support professionals. The reviews, together with the program officer's evaluation of the proposal, were a major factor in our decision not to fund the proposal. Please understand that individual reviewers' comments do not necessarily reflect NSF's policy or position.

We appreciate your interest in undergraduate education.

Susan Burkett  
National Science Foundation  
4201 Wilson Blvd.  
Suite 835  
Arlington, VA 22230  
(703) 292-4629  
[sburkett@nsf.gov](mailto:sburkett@nsf.gov)

#### Reviews

All of the reviews of your proposal that have been released to you by your NSF program officer can be viewed below. Please note that the Sponsored Project Office (or equivalent) at your organization is NOT given the capability to view your reviews.

**Document:** [Panel Summary #1](#)      **Release Date:** Aug 17 2006 11:06AM

<a href="#">Review #1</a>	Aug 17 2006 11:09AM
<a href="#">Review #2</a>	Aug 17 2006 11:09AM
<a href="#">Review #3</a>	Aug 17 2006 11:09AM
<a href="#">Review #4</a>	Aug 17 2006 11:09AM
<a href="#">Review #5</a>	Aug 17 2006 11:09AM

## Context Statement

### **General Information for Applicants, FY2006**

For the April 3, 2006, deadline, the NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program received 375 proposals requesting about \$178 million. Of these, 372 proposals were determined to be eligible for review. It is anticipated that approximately \$50 million will be available to support S-STEM projects in FY2006. These funds will permit support of approximately 110 awards.

Each proposal was evaluated by a panel of reviewers, who had electronic access to the proposals assigned to that panel through NSF's FastLane system. Each reviewer read proposals and wrote individual reviews, and then the panel convened as a group to discuss the proposals under consideration. Following these discussions, reviewers finalized their individual written reviews of each proposal. The written remarks are addressed to NSF and reflect the views of individual reviewers. For each proposal, one member of the panel prepared a summary of the discussion.

Decisions about particular proposals are often difficult, and factors other than reviewers' comments and ratings enter into the decision. Comments by a reviewer must sometimes be considered in the context of other reviews by the same person. The amount of funds available to the program for proposals and general Foundation policies are also important decision factors.

Principal and Co-Principal Investigators may read the Panel Summary and the individual reviews of their proposal via FastLane. Please feel free to contact the cognizant program officer if more information would be helpful. To see the awards that are made as a result of this competition, you are encouraged to consult the Division of Undergraduate Education's (DUE) Web-based *Project Information Resource System (PIRS)* at [http://www.ehr.nsf.gov/pirs\\_prs\\_web/search/](http://www.ehr.nsf.gov/pirs_prs_web/search/). This resource is intended to provide access to current information about projects funded by NSF through the programs in DUE.

It is anticipated that the S-STEM program will hold a competition in fiscal year 2007. Please visit DUE's Web site (<http://www.nsf.gov/div/index.jsp?div=DUE>) to find up-to-date information on the next proposal deadline and to view the new program solicitation, which will be published at least 90 days before the proposal deadline.

[◀ Back to Status Search Results](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

**National Science Foundation**  
4201 Wilson Boulevard, Arlington, Virginia 22230, USA  
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and  
Security](#)



## Proposal Status | MAIN ▶

**Organization:** Hope College

### Panel Summary #1

**Proposal Number:** 0631044

**Panel Summary:**  
Panel Summary

This program proposes to fund eight transfer students from six community colleges with scholarships of \$10,000 to pursue bachelor's degrees in STEM disciplines. The graduation rate of transfer students in the STEM disciplines has been exceptionally low due to the small numbers in the community college pipeline and PI believes this is due to economic reasons, i.e, the students are not choosing Hope College because of the prohibitive tuition costs. The current CSEMS program at Hope and a variety of other institutional support programs will be used to provide the community S-STEM scholars with mentoring, tutoring, research opportunities and career planning. The panel views the use of existing programs such as an NSF-REU, a CSEMS award, Academic Support Center, and Office of Multicultural life as a strength of the program.

The panel was concerned that the target recruitment and retention goals have not been clearly stated. Further, the details of the retention results from the CSEMS grant have not been reported. The panel feels that there could have been more clearly defined commitments in the program.

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

**National Science Foundation**  
4201 Wilson Boulevard, Arlington, Virginia 22230, USA  
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and Security](#)

## Proposal Status | MAIN ▶

**Organization:** Hope College

### Review #1

**Proposal Number:** 0631044  
**Performing Organization:** Hope College  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Principal Investigator:** Dershem, Herbert L  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Rating:** Good

### REVIEW:

What is the intellectual merit of the proposed activity?

There is presently a CSEMS project at this institution; however, few details are given with respect to its effectiveness. The CSEMS students will act as peer mentors to this new set of S-STEM students. This would be a much stronger proposal if CSEMS outcomes were given in detail. This institution has NSF REU programs in place and there will be strong interactions between the REU and S-STEM programs.

What are the broader impacts of the proposed activity?

This program will give incentive for the community college student to continue their studies at this four-year institution in STEM disciplines. It will provide important opportunities for financially disadvantaged students.

Summary Statement

Project objectives include improved institutional cooperation with community colleges, improved recruitment in the STEM disciplines at this institution, and improved retention. The relationships with six community colleges will be formalized and strengthened. According to the PI, these community college students rarely continue their studies at 4-year institutions in the science, engineering, or mathematics due to the expense. This scholarship program will provide \$10,000 scholarships to 8 transferring students each year for three years. For qualified students the scholarships are renewable for a second year.

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

**National Science Foundation**  
4201 Wilson Boulevard, Arlington, Virginia 22230, USA  
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and Security](#)

## Proposal Status | MAIN ▶

**Organization:** Hope College

### Review #2

**Proposal Number:** 0631044  
**Performing Organization:** Hope College  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Principal Investigator:** Dershem, Herbert L  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Rating:** Good

#### REVIEW:

What is the intellectual merit of the proposed activity?

The strength of the academic programs appears sound along with the quality of the student support structures. The management plan lacks articulation agreements with participating community colleges.

What are the broader impacts of the proposed activity?

The proposed plan does not include expected results and therefore it is unclear as to how the resulting outcomes of this effort will be assessed to determine whether the objectives of the proposed efforts are being reached.

#### Summary Statement

The project proposes to provide scholarships for students with financial need who transfer to Hope College from a community college to study biology, chemistry, computer science, engineering, geology and environmental sciences, mathematics or physics. \$10K per year scholarships are offered to eight transferring students each year over a three year period, renewable for a second year if the student meets eligibility requirements. The objectives of the proposed project are clearly stated, however measurable goals and assessment tools that are to be utilized to determine the success of the proposed efforts are missing. The stated objectives are: improved articulation between Hope and community colleges in STEM programs; recruit STEM students who would not ordinarily consider attending Hope; increasing the number of community college students who transfer into STEM programs at Hope and; increased retention of student transfers. The planned approach includes identification and recruitment of students enrolled at six community colleges in the Hope geographic region and the development of articulation agreements to facilitate their transfer to Hope.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

## Proposal Status | MAIN ▶

**Organization:** Hope College

### Review #3

**Proposal Number:** 0631044  
**Performing Organization:** Hope College  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Principal Investigator:** Dershem, Herbert L  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Rating:** Very Good

#### REVIEW:

What is the intellectual merit of the proposed activity?

This project will build upon the current Hope College CSEMS program and the institution's extensive infrastructure (e.g., NSF REU, Academic Support Center, and Office of Multicultural Life) for student support to enable 24 students to transfer to Hope from community colleges in pursuit of bachelor's degrees in the STEM disciplines.

What are the broader impacts of the proposed activity?

The PI plans to reach a group of economically disadvantaged students, many of whom are ethnic minorities, who would not typically consider attending a private liberal arts institution by offering scholarships to students from nearby community colleges. The students will be admitted to and matriculate through Hope as a cohort in order to build a sense of community and to benefit from Hope's support structures as a group.

Summary Statement

The proposed program is well planned with opportunities for enrichment of both the students and faculty.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

**National Science Foundation**  
4201 Wilson Boulevard, Arlington, Virginia 22230, USA  
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and Security](#)

## Proposal Status | MAIN ▶

**Organization:** Hope College

### Review #4

**Proposal Number:** 0631044  
**Performing Organization:** Hope College  
**NSF Program:** S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH  
**Principal Investigator:** Dershem, Herbert L  
**Proposal Title:** Scholarships for Transfer Students in Science, Engineering, and Mathematics  
**Rating:** Fair

#### REVIEW:

What is the intellectual merit of the proposed activity?

This proposal provides scholarship opportunities to eight transfer students per year for three years in a wide range of STEM disciplines including biology, chemistry, computer science, engineering, geological and environmental sciences, mathematics, and physics. Support structures for scholarship recipients include faculty advising, peer mentoring, career counseling, internship and research opportunities, and community building. Articulation agreements with local community colleges will provide a pipeline for students entering the program.

What are the broader impacts of the proposed activity?

It is not clear who the target group is for the proposed scholarships. A target group should be selected and goals for retention and graduation established. The program is currently in its third year of a CSEMS grant. Yet, there is no retention data presented for the first two years compared to a selected period prior to receipt of the CSEMS grant (for a target group). Preliminary data was mentioned but not presented.

Many of the ideas presented in this proposal appear to be non-committal. That is, they lack formal structure and institutionalization. This is a major weakness of this proposal.

#### Summary Statement

While there is some merit to the proposed activities, the proposal is not recommended for funding at this time. Some concerns and weaknesses need to be addressed.

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files