

Opportunity Title:	Hispanic-Serving Institutions STEM
Offering Agency:	U.S. Department of Education
CFDA Number:	84.031
CFDA Description:	Higher Education Institutional Aid
Opportunity Number:	ED-GRANTS-032511-002
Competition ID:	
Opportunity Open Date:	03/25/2011
Opportunity Close Date:	04/29/2011
Agency Contact:	Carolyn Proctor Education Program Specialist E-mail: Carolyn.Proctor@ed.gov Phone: 2025027567

This electronic grants application is intended to be used to apply for the specific Federal funding opportunity referenced here.

If the Federal funding opportunity listed is not the opportunity for which you want to apply, close this application package by clicking on the "Cancel" button at the top of this screen. You will then need to locate the correct Federal funding opportunity, download its application and then apply.

This opportunity is only open to organizations, applicants who are submitting grant applications on behalf of a company, state, local or tribal government, academia, or other type of organization.

* Application Filing Name: STEM Regional Community College-to-Univ

Mandatory Documents

Move Form to Complete

Move Form to Delete

Mandatory Documents for Submission

Application for Federal Assistance (SF-424)
Dept of Education Supplemental Information for
Dept of Education Budget Information for Non-Co
Budget Narrative Attachment Form
Project Narrative Attachment Form
ED Abstract Form
Other Attachments Form

Optional Documents

Move Form to Submission List

Move Form to Delete

Optional Documents for Submission

Instructions

- 1 Enter a name for the application in the Application Filing Name field.
 - This application can be completed in its entirety offline; however, you will need to login to the Grants.gov website during the submission process.
 - You can save your application at any time by clicking the "Save" button at the top of your screen.
 - The "Save & Submit" button will not be functional until all required data fields in the application are completed and you clicked on the "Check Package for Errors" button and confirmed all data required data fields are completed.
- 2 Open and complete all of the documents listed in the "Mandatory Documents" box. Complete the SF-424 form first.
 - It is recommended that the SF-424 form be the first form completed for the application package. Data entered on the SF-424 will populate data fields in other mandatory and optional forms and the user cannot enter data in these fields.
 - The forms listed in the "Mandatory Documents" box and "Optional Documents" may be predefined forms, such as SF-424, forms where a document needs to be attached, such as the Project Narrative or a combination of both. "Mandatory Documents" are required for this application. "Optional Documents" can be used to provide additional support for this application or may be required for specific types of grant activity. Reference the application package instructions for more information regarding "Optional Documents".
 - To open and complete a form, simply click on the form's name to select the item and then click on the => button. This will move the document to the appropriate "Documents for Submission" box and the form will be automatically added to your application package. To view the form, scroll down the screen or select the form name and click on the "Open Form" button to begin completing the required data fields. To remove a form/document from the "Documents for Submission" box, click the document name to select it, and then click the <= button. This will return the form/document to the "Mandatory Documents" or "Optional Documents" box.
 - All documents listed in the "Mandatory Documents" box must be moved to the "Mandatory Documents for Submission" box. When you open a required form, the fields which must be completed are highlighted in yellow with a red border. Optional fields and completed fields are displayed in white. If you enter invalid or incomplete information in a field, you will receive an error message.
- 3 Click the "Save & Submit" button to submit your application to Grants.gov.
 - Once you have properly completed all required documents and attached any required or optional documentation, save the completed application by clicking on the "Save" button.
 - Click on the "Check Package for Errors" button to ensure that you have completed all required data fields. Correct any errors or if none are found, save the application package.
 - The "Save & Submit" button will become active; click on the "Save & Submit" button to begin the application submission process.
 - You will be taken to the applicant login page to enter your Grants.gov username and password. Follow all onscreen instructions for submission.

Application for Federal Assistance SF-424

Version 02

*** 1. Type of Submission:**

- ☐ Preapplication
☒ Application
☐ Changed/Corrected Application

*** 2. Type of Application:**

- ☒ New
☐ Continuation
☐ Revision

*** If Revision, select appropriate letter(s):**

*** Other (Specify)**

*** 3. Date Received:**

04/29/2011

4. Applicant Identifier:

5a. Federal Entity Identifier:

*** 5b. Federal Award Identifier:**

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

*** a. Legal Name:**

Hartnell Community College District

*** b. Employer/Taxpayer Identification Number (EIN/TIN):**

77-0086025

*** c. Organizational DUNS:**

087016606

d. Address:

*** Street1:**

411 Central Avenue

Street2:

*** City:**

Salinas

County:

*** State:**

CA: California

Province:

*** Country:**

USA: UNITED STATES

*** Zip / Postal Code:**

93901-1697

e. Organizational Unit:

Department Name:

Science and Math Department

Division Name:

Academic Affairs

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

Ms.

*** First Name:**

Beverly

Middle Name:

*** Last Name:**

Grova

Suffix:

Title:

Vice President of Advancement

Organizational Affiliation:

*** Telephone Number:**

831-755-6810

Fax Number:

*** Email:**

bgrova@hartnell.edu

Application for Federal Assistance SF-424

Version 02

9. Type of Applicant 1: Select Applicant Type:

S: Hispanic-serving Institution

Type of Applicant 2: Select Applicant Type:

H: Public/State Controlled Institution of Higher Education

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

U.S. Department of Education

11. Catalog of Federal Domestic Assistance Number:

84.031

CFDA Title:

Higher Education_Institutional Aid

*** 12. Funding Opportunity Number:**

ED-GRANTS-032511-002

* Title:

Hispanic-Serving Institutions STEM

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Salinas, King City, Soledad, Greenfield, Gonzales, Chular, Prunedale, Castroville, Monterey County

*** 15. Descriptive Title of Applicant's Project:**

STEM Regional Community College-to-University Success Program

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant CA-017

* b. Program/Project CA-017

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date: 10/01/2011

* b. End Date: 09/30/2016

18. Estimated Funding (\$):

* a. Federal	6,000,000.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	6,000,000.00

* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

☐ Yes ☒ No

21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Ms. * First Name: Sharon
Middle Name: Marie
* Last Name: Alheit
Suffix:

* Title: Grants Manager

* Telephone Number: 831-755-6835 Fax Number: 831-759-6047

* Email: salheit@hartnell.edu

* Signature of Authorized Representative: Sharon Alheit * Date Signed: 04/29/2011

Application for Federal Assistance SF-424

Version 02

*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

**SUPPLEMENTAL INFORMATION
REQUIRED FOR
DEPARTMENT OF EDUCATION GRANTS**

1. Project Director:

Prefix:	* First Name:	Middle Name:	* Last Name:	Suffix:
Mr.	Gary		Hughes	

Address:

* Street1:	411 Central Avenue
Street2:	
* City:	Salinas
County:	
* State:	CA: California
* Zip Code:	93901-1697
* Country:	USA: UNITED STATES

* Phone Number (give area code) Fax Number (give area code)

831-755-6870	
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Email Address:

ghughes@hartnell.edu

2. Applicant Experience:

Novice Applicant ☐ Yes ☐ No ☒ Not applicable to this program

3. Human Subjects Research

Are any research activities involving human subjects planned at any time during the proposed project Period?

☐ Yes ☒ No

Are ALL the research activities proposed designated to be exempt from the regulations?

☐ Yes Provide Exemption(s) #:

☐ No Provide Assurance #, if available:

Please attach an explanation Narrative:

Add Attachment

Delete Attachment

View Attachment

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</p> <p>Sharon Alheit</p>	<p>* TITLE</p> <p>Grants Manager</p>
<p>* APPLICANT ORGANIZATION</p> <p>Hartnell Community College District</p>	<p>* DATE SUBMITTED</p> <p>04/29/2011</p>

**U.S. DEPARTMENT OF EDUCATION
BUDGET INFORMATION
NON-CONSTRUCTION PROGRAMS**

OMB Control Number: 1890-0018

Expiration Date: 02/28/2011

* Name of Institution/Organization

Hartnell Community College District

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

**SECTION A - BUDGET SUMMARY
U.S. DEPARTMENT OF EDUCATION FUNDS**

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel	433,767.00	444,662.00	455,919.00	447,337.00	445,151.00	2,226,836.00
2. Fringe Benefits	107,948.00	110,909.00	113,967.00	111,872.00	111,444.00	556,140.00
3. Travel	33,910.00	38,908.00	38,907.00	38,882.00	38,902.00	189,509.00
4. Equipment	112,246.00	30,000.00	21,000.00	49,500.00	41,000.00	253,746.00
5. Supplies	82,479.00	106,216.00	77,963.00	97,215.00	98,437.00	462,310.00
6. Contractual	40,000.00	50,000.00	50,000.00	50,000.00	50,000.00	240,000.00
7. Construction	20,000.00	0.00	20,000.00	0.00	0.00	40,000.00
8. Other	369,650.00	419,305.00	422,244.00	405,194.00	415,066.00	2,031,459.00
9. Total Direct Costs (lines 1-8)	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	6,000,000.00
10. Indirect Costs*						
11. Training Stipends						
12. Total Costs (lines 9-11)	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	6,000,000.00

***Indirect Cost Information (To Be Completed by Your Business Office):**

If you are requesting reimbursement for indirect costs on line 10, please answer the following questions:

(1) Do you have an Indirect Cost Rate Agreement approved by the Federal government? ☐ Yes ☐ No

(2) If yes, please provide the following information:

* Period Covered by the Indirect Cost Rate Agreement: From: To: (mm/dd/yyyy)

* Approving Federal agency: ☐ ED ☐ Other (please specify):

(3) For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that:

☐ Is included in your approved Indirect Cost Rate Agreement? or, ☐ Complies with 34 CFR 76.564(c)(2)?

* Name of Institution/Organization Hartnell Community College District		Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.				
SECTION B - BUDGET SUMMARY NON-FEDERAL FUNDS						
Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel						
2. Fringe Benefits						
3. Travel						
4. Equipment						
5. Supplies						
6. Contractual						
7. Construction						
8. Other						
9. Total Direct Costs (lines 1-8)						
10. Indirect Costs						
11. Training Stipends						
12. Total Costs (lines 9-11)						
SECTION C - BUDGET NARRATIVE (see instructions)						

CERTIFICATION REGARDING LOBBYING

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 an 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.

Statement for Loan Guarantees and Loan Insurance

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

If any 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 commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement 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 statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

*** APPLICANT'S ORGANIZATION**

Hartnell Community College District

*** PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE**

Prefix: Ms. * First Name: Sharon Middle Name: Marie

* Last Name: Alheit Suffix:

* Title: Grants Manager

* SIGNATURE: Sharon Alheit

* DATE: 04/29/2011

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB

0348-0046

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name <input type="text" value="Hartnell Community College District"/> * Street 1 <input type="text" value="411 Central Avenue"/> Street 2 <input type="text"/> * City <input type="text" value="Salinas"/> State <input type="text" value="CA: California"/> Zip <input type="text" value="93901-1697"/> Congressional District, if known: <input type="text" value="CA-017"/>		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime: 		
6. * Federal Department/Agency: <input type="text" value="U.S. Department of Education"/>	7. * Federal Program Name/Description: <input type="text" value="Higher Education_Institutional Aid"/> CFDA Number, if applicable: <input type="text" value="84.031"/>	
8. Federal Action Number, if known: <input type="text"/>	9. Award Amount, if known: \$ <input type="text"/>	
10. a. Name and Address of Lobbying Registrant: Prefix <input type="text"/> * First Name <input type="text" value="none"/> Middle Name <input type="text"/> * Last Name <input type="text" value="none"/> Suffix <input type="text"/> * Street 1 <input type="text"/> Street 2 <input type="text"/> * City <input type="text"/> State <input type="text"/> Zip <input type="text"/>		
b. Individual Performing Services (including address if different from No. 10a) Prefix <input type="text"/> * First Name <input type="text" value="none"/> Middle Name <input type="text"/> * Last Name <input type="text" value="none"/> Suffix <input type="text"/> * Street 1 <input type="text"/> Street 2 <input type="text"/> * City <input type="text"/> State <input type="text"/> Zip <input type="text"/>		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. * Signature: <input type="text" value="Sharon Alheit"/> * Name: Prefix <input type="text"/> * First Name <input type="text" value="Sharon"/> Middle Name <input type="text" value="Marie"/> * Last Name <input type="text" value="Alheit"/> Suffix <input type="text"/> Title: <input type="text" value="Grants Manager"/> Telephone No.: <input type="text" value="831-755-6835"/> Date: <input type="text" value="04/29/2011"/>		
Federal Use Only:		Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)

Survey on Ensuring Equal Opportunity For Applicants

OMB No. 1890-0014 Exp. 2/28/2009

Purpose:

The Federal government is committed to ensuring that all qualified applicants, small or large, non-religious or faith-based, have an equal opportunity to compete for Federal funding. In order for us to better understand the population of applicants for Federal funds, we are asking nonprofit private organizations (not including private universities) to fill out this survey.

Upon receipt, the survey will be separated from the application. Information provided on the survey will not be considered in any way in making funding decisions and will not be included in the Federal grants database. While your help in this data collection process is greatly appreciated, completion of this survey is voluntary.

Instructions for Submitting the Survey

If you are applying using a hard copy application, please place the completed survey in an envelope labeled "Applicant Survey." Seal the envelope and include it along with your application package. If you are applying electronically, please submit this survey along with your application.

Applicant's (Organization) Name:	Hartnell Community College District
Applicant's DUNS Name:	087016606
Federal Program:	Hispanic-Serving Institutions STEM
CFDA Number:	84.031

1. Has the applicant ever received a grant or contract from the Federal government?

☒ Yes ☐ No

2. Is the applicant a faith-based organization?

☐ Yes ☒ No

3. Is the applicant a secular organization?

☐ Yes ☒ No

4. Does the applicant have 501(c)(3) status?

☐ Yes ☒ No

5. Is the applicant a local affiliate of a national organization?

☐ Yes ☒ No

6. How many full-time equivalent employees does the applicant have? (Check only one box).

☐ 3 or Fewer ☐ 15-50
☐ 4-5 ☐ 51-100
☐ 6-14 ☒ over 100

7. What is the size of the applicant's annual budget? (Check only one box.)

☐ Less Than \$150,000
☐ \$150,000 - \$299,999
☐ \$300,000 - \$499,999
☐ \$500,000 - \$999,999
☐ \$1,000,000 - \$4,999,999
☒ \$5,000,000 or more

Survey Instructions on Ensuring Equal Opportunity for Applicants

OMB No. 1890-0014 Exp. 2/28/2009

Provide the applicant's (organization) name and DUNS number and the grant name and CFDA number.

1. Self-explanatory.
2. Self-identify.
3. Self-identify.
4. 501(c)(3) status is a legal designation provided on application to the Internal Revenue Service by eligible organizations. Some grant programs may require nonprofit applicants to have 501(c)(3) status. Other grant programs do not.
5. Self-explanatory.
6. For example, two part-time employees who each work half-time equal one full-time equivalent employee. If the applicant is a local affiliate of a national organization, the responses to survey questions 2 and 3 should reflect the staff and budget size of the local affiliate.
7. Annual budget means the amount of money your organization spends each year on all of its activities.

Paperwork Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this

information collection is **1890-0014**. The time required

to complete this information collection is estimated to average five (5) minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection.

If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: The Agency Contact listed in this grant application package.

NOTICE TO ALL APPLICANTS

The purpose of this enclosure is to inform you about a new provision in the Department of Education's General Education Provisions Act (GEPA) that applies to applicants for new grant awards under Department programs. This provision is Section 427 of GEPA, enacted as part of the Improving America's Schools Act of 1994 (Public Law (P.L.) 103-382).

To Whom Does This Provision Apply?

Section 427 of GEPA affects applicants for new grant awards under this program. **ALL APPLICANTS FOR NEW AWARDS MUST INCLUDE INFORMATION IN THEIR APPLICATIONS TO ADDRESS THIS NEW PROVISION IN ORDER TO RECEIVE FUNDING UNDER THIS PROGRAM.**

(If this program is a State-formula grant program, a State needs to provide this description only for projects or activities that it carries out with funds reserved for State-level uses. In addition, local school districts or other eligible applicants that apply to the State for funding need to provide this description in their applications to the State for funding. The State would be responsible for ensuring that the school district or other local entity has submitted a sufficient section 427 statement as described below.)

What Does This Provision Require?

Section 427 requires each applicant for funds (other than an individual person) to include in its application a description of the steps the applicant proposes to take to ensure equitable access to, and participation in, its Federally-assisted program for students, teachers, and other program beneficiaries with special needs. This provision allows applicants discretion in developing the required description. The statute highlights six types of barriers that can impede equitable access or participation: gender, race, national origin, color, disability, or age. Based on local circumstances, you should determine whether these or other barriers may prevent your students, teachers, etc. from such access or participation in, the Federally-funded project or activity. The description in your application of steps to be taken to overcome these barriers need not be lengthy; you may provide a clear and succinct

description of how you plan to address those barriers that are applicable to your circumstances. In addition, the information may be provided in a single narrative, or, if appropriate, may be discussed in connection with related topics in the application.

Section 427 is not intended to duplicate the requirements of civil rights statutes, but rather to ensure that, in designing their projects, applicants for Federal funds address equity concerns that may affect the ability of certain potential beneficiaries to fully participate in the project and to achieve to high standards. Consistent with program requirements and its approved application, an applicant may use the Federal funds awarded to it to eliminate barriers it identifies.

What are Examples of How an Applicant Might Satisfy the Requirement of This Provision?

The following examples may help illustrate how an applicant may comply with Section 427.

- (1) An applicant that proposes to carry out an adult literacy project serving, among others, adults with limited English proficiency, might describe in its application how it intends to distribute a brochure about the proposed project to such potential participants in their native language.
- (2) An applicant that proposes to develop instructional materials for classroom use might describe how it will make the materials available on audio tape or in braille for students who are blind.
- (3) An applicant that proposes to carry out a model science program for secondary students and is concerned that girls may be less likely than boys to enroll in the course, might indicate how it intends to conduct "outreach" efforts to girls, to encourage their enrollment.

We recognize that many applicants may already be implementing effective steps to ensure equity of access and participation in their grant programs, and we appreciate your cooperation in responding to the requirements of this provision.

Estimated Burden Statement for GEPA Requirements

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is **1894-0005**. The time required to complete this information collection is estimated to average 1.5 hours per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to:** U.S. Department of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202-4537.

Optional - You may attach 1 file to this page.

Section 427 GEPA FINAL.doc

Add Attachment

Delete Attachment

View Attachment

Section 427 of GEPA: Ensuring equitable access to and participation in the Hartnell College cooperative application for a grant under the U.S. Department of Education Hispanic-Serving Institutions Science, Technology, Engineering, and Mathematics (STEM) Articulation Program project

The Hartnell College HSI STEM Articulation Program project directly affects the needs of Hispanic and other low-income students by providing access to programs, services and instruction geared to their needs. Specific attention is scheduled for those individuals who have academic barriers due to English language skills and poor mathematics and science skills, but NO student or faculty will be denied access to programs regardless of race, gender, national origin, color, disability or age. Project application and hiring processes and procedures will be conducted as required by college policies to ensure equal access and participation as described in the Key Personnel and Project Management Sections.

Hartnell College, California State University Monterey Bay, and the University of California Santa Cruz will provide reasonable accommodations to persons with disability(s). All buildings used for the project are architecturally barrier-free.

In accordance with GEPA, Section 427, the partners will provide: 1.) materials in languages necessary for potential participants; 2.) alternative presentation formats including audio tape, Braille, and computerized access; 3.) phone and voice email in Spanish and English; 4.) reasonable accommodations to the physically changed; 5.) exceptions, latitude and accommodations to learning; and 6.) encouragement for all students and faculty to participate in all programs and services.

Other Attachment File(s)

* Mandatory Other Attachment Filename:

To add more "Other Attachment" attachments, please use the attachment buttons below.

Hispanic-Serving Institutions STEM & Articulation

Program Profile

INSTRUCTIONS: *ALL applicants must complete and submit this profile. You may copy or recreate this form, but do not amend or modify the required information or format. Please complete all sections of this form. Upon completion, attach this document as a .pdf into Part III of the "Other Attachments Form" of the Grants.gov application package.*

1. Name of Institution/Campus Requesting: (Use your institution's complete name. If your institution is a branch campus, use the parent institution's name but follow it with the name of the branch campus. For example, you would cite the State University of New York, Brockport Campus.)

Institution/Campus OPE ID#: 00120900

DUNS#: 087016606

2. Applicant Address: (All applicants must indicate the address where the project will be located)

Project Address: 411 Central

City: Salinas

State: CA

Zip: 93901

3. Participating Institutions in a Cooperative Arrangement:

3a. Name of Applicant Institution (Lead): Hartnell College

3b. Name of Participating Institutions	DUNS Number	Location (city/state)
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1. California State University at Monterey Bay	082412920	Monterey, California
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2. University of California at Santa Cruz	125084723	Santa Cruz, California
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3.

4. Tiebreaker Information: Enter the full-time equivalent (FTE) enrollment for Fall 2009. See the Application Guide and Federal Register Notice for instructions on calculating FTE enrollment.

Total Fall 2009 FULL-TIME EQUIVALENT (FTE) students = 3443.2

Total market value of endowment fund for 2009-10 = \$4,555,000

1. Total expenditures for library material during 2009-10 = \$97,336

Note: Failure to provide information requested in items a) and b) above may result in the Department not considering the application under a tie-breaker situation

5. Endowment Fund Assurance:

☒ The institution certifies that it proposes to use no more than twenty percent (20%) of the Hispanic-Serving Institutions STEM and Articulation Programs grant, made under the authority of Title V, of the Higher Education Act of 1965, as amended to establish or increase the institution's endowment fund. The institution agrees to abide by the Department of Education's regulations governing the Endowment Challenge Grant Program, 34 CFR Part 628, the program statute, and the program regulations, 34 CFR Part 606. The institution further agrees to raise the required matching funds.

6. Institutional Assurance Statistics: See the Application Guide and the Federal Register Notice for HSI Assurance Instructions. Please provide us with the data your institution reported to the following: IPEDS and State Reported Enrollment. Enter information for all areas below for Fall 2009 (up to September 30, 2009). **NOTE: If you are a four-year HSI applicant submitting a grant under the competitive preference priorities, the two-year HSI must also submit its HSI assurances.**

<p>7a. HSI STEM & Articulation Program Assurance: Break-out by ethnicity not available: Hand calculated from Datatel report</p> <p>Total Undergraduate FTE Enrollment Count:</p> <p>Hispanic Undergraduate FTE Enrollment Count:</p> <p>Total Hispanic Enrollment Count:</p> <p>Undergraduate FTE Hispanic Percent:</p> <p>Two-year HSI STEM & Articulation Programs Assurance:</p> <p>Total Undergraduate FTE Enrollment Count: 3443.2</p> <p>Hispanic Undergraduate FTE Enrollment Count: 2169.2</p> <p>Total Hispanic Enrollment Count: 5749</p> <p>Undergraduate FTE Hispanic Percent: 63%</p>	<p>7b. State Enrollment Reported Data:</p> <p>Hispanic Undergraduate FTE Enrollment:</p> <p>Undergraduate FTE Hispanic Percent:</p> <p>Two-year HSI State Enrollment Data: Total FTES Number is: 3443.2 The state of California does not break this out by ethnicity</p> <p>Hispanic Undergraduate FTE Enrollment:</p> <p>Undergraduate FTE Hispanic Percent: 63%</p>	<p>7c. IPEDS Reported Data:</p> <p>Hispanic Undergraduate FTE Enrollment:</p> <p>Undergraduate FTE Hispanic Percent:</p> <p>Two-year HSI IPEDS Reported Data:</p> <p>Hispanic Undergraduate FTE Enrollment: 5749</p> <p>Undergraduate FTE Hispanic Percent: 55%</p>
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8. Eligibility Documentation: Please provide us with the documentation the institution relied upon in determining that at least 25 percent of the institution's undergraduate FTE students are Hispanic.

Based on Fall 2009 IPEDS Hartnell is 55% Hispanic Population Application for designation as a HSI eligible Title V institution was established on January 21, 2011 by the U.S. Department of Education.

NOTE: The Department will cross-reference for verification, data reported to the Integrated Postsecondary Education Data System (IPEDS), the institution's state reported enrollment data, and the institutional annual report. If there are any differences in the percentages reported to the above reference, the institution should justify the differences as a part of their eligibility documentation. When providing eligibility documentation to support your HSI assurance, please note that the Department does not consider a replication of the instructions sufficient justification. If the Department receives a replica of the instructions and/or cannot validate assurance, the application will be deemed ineligible.

9. Priorities: The Department has established a competitive priority for the FY 2010 grant competition. The competitive priority is selected from the final supplemental priorities and definitions for discretionary grant programs notice published in the Federal Register on December 15, 2010 (75FR 78486). **Competitive Preference Priorities:** ☒ By checking this box, the applicant certifies that it meets the requirement of the FY 2010 Competitive Priority as announced in the Federal Register Notice.

10. Certifying Representative:

Name: Mr. Gary Hughes

Title: Associate Vice President

Contact Number: 831-755-6725

Fax Number: 831-759-6084

11. ☒ By checking this box, the applicant and President of the institution certify that the IHE will comply with the statutory requirements, program standards, and program assurance cited in the HSI program regulations 34 CFR Part 606.

Budget Narrative File(s)

* **Mandatory Budget Narrative Filename:**

To add more Budget Narrative attachments, please use the attachment buttons below.

Hispanic-Serving Institutions Program Activity Budget Detail Form

INSTRUCTIONS: ALL applicants must complete and submit this form. You may copy or recreate this form, but do not amend or modify the required information or format. Upon completion, attach this document as a .doc, .rtf or .pdf into Part III of the "Other Attachments Form" of the Grants.gov application package.

Activity Budget (To be completed for every activity for which funding is requested) Summary of all Activities											
1. Name of Institution: All Institutions - Summary				2. CUSP Program							
3. Budget Categories By Year	First Year		Second Year		Third Year		Fourth Year		Fifth Year		Total Funds Requested
Object Class	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	
a. Personnel											
Activity 1 Hartnell		218,046		222,487		227,062		211,614		202,356	1,081,565
Activity 2 CSUMB		53,500		55,105		56,758		58,461		60,215	284,040
Activity 3 UCSC		65,933		67,893		69,947		72,045		74,207	350,025
Grant Management		96,288		99,177		102,152		105,217		108,373	511,207
SUB-TOTAL		433,767		444,662		455,919		447,337		445,151	2,226,836
b. Fringe Benefits VAR%		107,948		110,909		113,967		111,872		111,444	556,140
c. Travel		33,910		38,908		38,907		38,882		38,902	189,509
d. Equipment		112,246		30,000		21,000		49,500		41,000	253,746
e. Supplies		82,479		106,216		77,963		97,215		98,437	462,310
f. Contractual		40,000		50,000		50,000		50,000		50,000	240,000
g. Construction		20,000		0		20,000		0		0	40,000
h. Other		369,650		419,305		422,244		405,194		415,066	2,031,459
i. TOTAL DIRECT CHARGES		1,200,000		1,200,000		1,200,000		1,200,000		1,200,000	6,000,000

1. Explain in detail how you arrived at the total amount requested in each object class in each year of the activity. If you fail to provide sufficient details, we may disallow costs.

Hispanic-Serving Institutions Program Activity Budget Detail Form

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Activity Budget (To be completed for every activity for which funding is requested)											
1. Name of Institution: Hartnell College				2. CUSP Program - Grant Management							
3. Budget Categories By Year	First Year		Second Year		Third Year		Fourth Year		Fifth Year		Total Funds Requested
Object Class	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	
a. Personnel	40%	56,400	40%	58,092	40%	59,835	40%	61,630	40%	63,479	299,436
Grant Coordinator	100%	39,888	100%	41,085	100%	42,317	100%	43,587	100%	44,894	211,771
Office Assist.											
SUB-TOTAL		96,288		99,177		102,152		105,217		108,373	511,207
b. Fringe Benefits VAR%		25,035		25,786		26,559		27,357		28,177	132,914
c. Travel		4,000		4,000		4,000		4,000		4,000	20,000
d. Equipment		0		0		0		0		0	0
e. Supplies		13,000		13,000		13,000		13,000		13,000	65,000
f. Contractual		20,000		20,000		20,000		20,000		20,000	100,000
g. Construction		0		0		0		0		0	0
h. Other		4,000		4,000		4,000		4,000		4,000	20,000
i. TOTAL DIRECT CHARGES		162,323		165,963		169,711		173,574		177,550	849,121

2. Explain in detail how you arrived at the total amount requested in each object class in each year of the activity. If you fail to provide sufficient details, we may disallow costs.

HARTNELL BUDGET JUSTIFICATION INFORMATION

A. PERSONNEL: All salaries and wages as per Hartnell salary schedules for individuals named below (if no individual is named a mid-range cost on the salary schedule is shown); all new full-time hires will be retained at the end of the grant. 3% COLA included in Years 2-5.		
Title V Project Director 40% load - Base Salary \$141,000 The President/Superintendent is designating Gary Hughes as the HSI STEM and Articulation Program Director, reporting to the President/Superintendent with full autonomy and authority.	Year 1	56,400
	Year 2	58,092
	Year 3	59,835
	Year 4	61,630
	<u>Year 5</u>	<u>63,479</u>
	Total	299,436
Secretary, (HSI STEM and Articulation Program) 100% FTE – Base Salary \$39,888 (To Be Hired) Under direction of the HSI STEM and Articulation Program Director will maintain and reconcile budgets, prepare reports, purchase equipment and supplies, arrange travel and maintain records for the HSI STEM and Articulation Program Activities.	Year 1	39,888
	Year 2	41,085
	Year 3	42,317
	Year 4	43,587
	<u>Year 5</u>	<u>44,894</u>
	Total	211,771
Total Personnel		511,207
B. Benefits		
Includes full share of college responsibility for workers' compensation, FICA, SUI, medi-cal and, where applicable, medical, dental, life and disability insurance, and retirement at the composite rate of 26%.	Year 1	25,035
	Year 2	25,786
	Year 3	26,559
	Year 4	27,357
	<u>Year 5</u>	<u>28,177</u>
	Total	132,914
Total Benefits		132,914
Total Personnel (A & B)		644,121
C. Travel.		
Year 1 - 5		
- One person to Title V Annual Conference: Conference fee \$500, Airfare \$750, Hotel (4 nights) \$1,000, per diem, parking, cab, etc. (\$750) - Travel between collaborative colleges (\$1,000)	Year 1	4,000
	Year 2	4,000
	Year 3	4,000
	Year 4	4,000
	<u>Year 5</u>	<u>4,000</u>
	Total	20,000
Total Travel		20,000

D. Equipment (Value \$5,000 or more)	Total	0
Total Equipment		0
E. Supplies	Year 1	13,000
Year 1-5:	Year 2	13,000
Office supplies (\$1,000) Hosting an Annual Regional STEM Conference to present local research (\$12,000)	Year 3	13,000
	Year 4	13,000
	<u>Year 5</u>	<u>13,000</u>
	Total	65,000
Total Supplies		65,000
F. Contractual	Year 1	20,000
Year 1-5: External Evaluator for all three partners (\$10,000) Researcher to compile and analyze data about transfer, persistence, and retention (\$10,000)	Year 2	20,000
	Year 3	20,000
	Year 4	20,000
	<u>Year 5</u>	<u>20,000</u>
	Total	100,000
Total Contractual		162,000
G. Construction	Total	0
Total Construction		0
H. Other (consultants, equipment rental, computer use costs)	Year 1	4,000
Year 1-5 Regional STEM Conference student stipends (\$1,000) Conference Guest Speaker (\$3,000)	Year 2	4,000
	Year 3	4,000
	Year 4	4,000
	<u>Year 5</u>	<u>4,000</u>
	Total	20,000
Total Other		20,000
Total Hartnell College Management Direct Charges		
Year 1 Year 2 Year 3 Year 4 Year 5		
Total \$162,323 \$165,963 \$169,711 \$173,574 \$177,550	Total	849,121

Hispanic-Serving Institutions Program Activity Budget Detail Form

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Activity Budget (To be completed for every activity for which funding is requested)											
1. Name of Institution: Hartnell College				2. Activity 1 Title: CUSP Program							
3. Budget Categories By Year	First Year		Second Year		Third Year		Fourth Year		Fifth Year		Total Funds Requested
Object Class	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	
a. Personnel											
Activity 1 Director	60%	55,800	60%	57,474	60%	59,198	60%	60,974	60%	62,803	296,249
Internship Coordinator	100%	60,000	100%	61,800	100%	63,654	80%	52,451	60%	40,518	278,423
Counseling	50%	32,246	50%	33,213	50%	34,210	40%	28,189	40%	29,035	156,893
Tutors		20,000		20,000		20,000		20,000		20,000	100,000
Supplemental Instruction		50,000		50,000		50,000		50,000		50,000	250,000
SUB-TOTAL		218,046		222,487		227,062		211,614		202,356	1,081,565
b. Fringe Benefits VAR%		47,592		48,746		49,936		45,919		43,513	235,706
c. Travel		10,000		15,000		15,000		15,000		15,000	70,000
d. Equipment		32,600		6,000		0		17,500		20,000	76,100
e. Supplies		33,479		47,216		19,963		34,215		35,437	170,310
f. Contractual		10,000		20,000		20,000		20,000		20,000	90,000
g. Construction		20,000		0		20,000		0		0	40,000
h. Other		165,000		170,000		170,000		170,000		170,000	845,000
i. TOTAL DIRECT CHARGES		536,717		529,449		521,961		514,248		506,306	2,608,681

3. Explain in detail how you arrived at the total amount requested in each object class in each year of the activity. If you fail to provide sufficient details, we may disallow costs.

HARTNELL COLLEGE

BUDGET JUSTIFICATION INFORMATION

A. PERSONNEL: All salaries and wages as per Hatnell salary schedules for individuals named below (if no individual is named a mid-range cost on the salary schedule is shown); all new full-time hires will be retained at the end of the grant. 3% COLA included in Years 2-5.		
<u>Activity 1 Student Success Academy Director 60% load</u> - Base Salary \$93,000 The President/Superintendent is designating Dr. Brooke Haag as Activity 1 Director, reporting to the President/Superintendent with full autonomy and authority.	Year 1	55,800
	Year 2	57,474
	Year 3	59,198
	Year 4	60,974
	<u>Year 5</u>	<u>62,803</u>
	Total	296,249
<u>Internship Coordinator: 100% of load for years 1-3, 80% load for year 4 and 60% load for year 5</u> - Base Salary \$60,000 (To Be Hired) Under direction of the HSI STEM Activity director the internship coordinator will manage the different internship sites where Hartnell College students are participating. The coordinator will also find new sites and manage the training of the mentor scientists. The coordinator will be responsible for the management of the internship budget, student time cards, and training students to be effective STEM interns.	Year 1	60,000
	Year 2	61,800
	Year 3	63,654
	Year 4	52,451
	<u>Year 5</u>	<u>40,518</u>
	Total	278,423
<u>Counseling 50% load for years 1-3, 40% load for years 4-5</u> - Base Salary \$64,492 Compensation for counseling hours or a part-time STEM counselor to work with the university partners to develop clear articulation pathways and advise incoming students into STEM majors.	Year 1	32,246
	Year 2	33,213
	Year 3	34,210
	Year 4	28,189
	<u>Year 5</u>	<u>29,035</u>
	Total	156,893
<u>Tutors Student Leaders - \$10 per hour</u> To support the STEM students. These tutors will address issues in courses that are barrier classes (CSS 2A, Chem 22, Bio 10, Physics 1A and transfer math classes) to STEM students.	Year 1	20,000
	Year 2	20,000
	Year 3	20,000
	Year 4	20,000
	<u>Year 5</u>	<u>20,000</u>
	Total	100,000
<u>Supplemental Instruction Student Leaders - \$12 per hour</u> Students with 3.0 or higher GPA in requisite courses will be hired and trained to provide supplemental instruction in STEM courses.	Year 1	50,000
	Year 2	50,000
	Year 3	50,000
	Year 4	50,000
	<u>Year 5</u>	<u>50,000</u>
	Total	250,000

Total Personnel		1,081,565
B. Benefits		
Includes full share of college responsibility for workers' compensation, FICA, SUI, medi-cal and , where applicable, medical, dental, life and disability insurance, and retirement at the composite rate of 26%. Benefits continued	Year 1	47,592
	Year 2	48,746
	Year 3	49,936
	Year 4	45,919
	<u>Year 5</u>	<u>43,513</u>
	Total	235,706
Total Benefits		235,706
Total Personnel and Benefits (A & B)		1,317,271
C. Travel.		
Year 1		
<ul style="list-style-type: none"> - Two people to Society for American Association of Physics Teachers: Airfare \$500; Hotel (4 nights) \$820, per diem \$375, Incidentals \$100, Conference Fee \$575. ($2,370 \times 2 = \\$4,740$) - Two people to Math Institute of California Community College League Annual Conference: Conference fee \$300, transportation \$200, per diem \$130 per person/year. ($630 \times 2 = \\$1,260$) - One person to the Conference on Student Assessment: Airfare \$400; Hotel (3 nights) \$600, per diem \$250, Incidentals \$75, Conference Fee \$300 each year. (\$1,625) - Two people to Curriculum Institute: Conference fee \$400, Airfare \$500, Hotel (3 nights) \$450, per diem \$300, Incidentals \$165 per person. (1 person full \$1,815 and one for \$560 = \$2,375) 	Year 1	10,000
	Year 2	15,000
	Year 3	15,000
	Year 4	15,000
	<u>Year 5</u>	<u>15,000</u>
	Total	70,000
Year 2		
<ul style="list-style-type: none"> - Two people to California Science Teachers Association Conference: Travel \$200; Hotel (4 nights) \$600, per diem \$375, Incidentals \$100, Conference Fee \$250. ($1,525 \times 2 = \\$3,050$) - Two people to Math Institute of California Community College League Annual Conference: Conference fee \$300, transportation \$200, per diem \$130 per person/year. ($630 \times 2 = \\$1,260$) - One person to Western Society of Naturalists: Airfare \$400; Hotel (3 nights) \$600, per diem \$250, Incidentals \$76, Conference Fee \$300 each year. (\$1,626) - Two people to California Association of Chemistry Teachers Conference: fee \$400, Airfare \$500, Hotel (3 nights) \$567, per diem \$400, Incidentals \$165 per person. (1 person full $2,032 \times 2 = \\$4,064$) - Regional Travel between Partner Colleges (\$5,000) 		
Year 3		

<ul style="list-style-type: none"> - Two people to American Association of Physics Teachers Conference: Airfare \$500; Hotel (4 nights) \$820, per diem \$375, Incidentals \$100, Conference Fee \$575. ($\\$2,370 \times 2 = \\$4,740$) - Two people to California Engineering Liaison Council: Conference fee \$300, transportation \$200, per diem \$130 per person/year. ($\\$630 \times 2 = \\$1,260$) - Two people to National Assn of Biology Teachers: Conference fee \$450, Airfare \$600, Hotel (3 nights) \$550, per diem \$300, Incidentals \$100 per person. (1 person full $\\$2,000 \times 2 = \\$4,000$) - Regional Travel between Partner Colleges (\$5,000) <p>Year 4</p> <ul style="list-style-type: none"> - Two people to Society for Advancement of Chicanos/Latinos and Native Americans in Science: Airfare \$500; Hotel (4 nights) \$820, per diem \$375, Incidentals \$100, Conference Fee \$575. ($\\$2,370 \times 2 = \\$4,740$) - One person to the Conference on Student Assessment: Airfare \$400; Hotel (3 nights) \$600, per diem \$250, Incidentals \$80, Conference Fee \$300. (\$1,630) - Two people to National Association of Math Teachers: Conference fee \$400, Airfare \$500, Hotel (3 nights) \$450, per diem \$300, Incidentals \$165 per person. (1 person full $\\$1,815 \times 2 = \\$3,630$) - Regional Travel between Partner Colleges (\$5,000) <p>Year 5</p> <ul style="list-style-type: none"> - Two people to Society for Hispanic Professional Engineers: Airfare \$500; Hotel (4 nights) \$820, per diem \$375, Incidentals \$100, Conference Fee \$575. ($\\$2,370 \times 2 = \\$4,740$) - Three people to Math Institute of California Community College League Annual Conference: Conference fee \$300, transportation \$200, per diem \$130 per person/year. ($\\$630 \times 3 = \\$1,890$) - One person to the American Astronomical Society: Airfare \$400; Hotel (3 nights) \$600, per diem \$250, Incidentals \$75, Conference Fee \$300 each year. (\$1,625) - One person to Western Society of Naturalists: Conference fee \$400, Airfare \$500, Hotel (3 nights) \$400, per diem \$300, Incidentals \$145. (\$1,745) - Regional Travel between Partner Colleges (\$5,000) 		
Total Travel		70,000
<p>D. Equipment (Value \$5,000 or more)</p> <p>Year 1: Teaching tensile testing system (\$32,600)</p> <p>Year 2: Solar Wind Turbine (\$6,000)</p> <p>Year 4: X-Ray Diffraction System (\$17,500)</p> <p>Year 5: Inverted Materials Science Microscope (\$20,000)</p>	<p>Year 1</p> <p>Year 2</p> <p>Year 4</p> <p><u>Year 5</u></p> <p>Total</p>	<p>32,600</p> <p>6,000</p> <p>17,500</p> <p><u>20,000</u></p> <p>76,100</p>

Total Equipment		76,100
E. Supplies		
Year 1: 4 Computers (\$3,479), Library Books (\$5,000), Library STEM Data bases (\$5,000), Chemistry Classroom upgrade (Computer, Plasma, cart, etc \$20,000)	Year 1	33,479
Year 2: 16 Computers (\$13,216), Library Books (\$5,000), Library STEM Data bases (\$10,000), Energy Transfer Generator (\$2,595), Solar Power Kit (15 @ \$87 = \$1,305), Solar Pathfinder (15 @ \$348=\$5,220), Labview Software (\$5,500), Energy Transfer Hydro accessory (15@\$86=\$1,290), Water reservoir (15@\$97=\$1455), Energy Transfer Wind Turbine (15@\$20=\$300), Wind power source electric fan (15@\$48=\$720), Other supplies \$615	Year 2	47,216
Year 3: 5 Computers (\$4,963), Library Books (\$5,000), Library STEM Data bases (\$10,000),	Year 3	19,963
Equipment Continued	Year 4	34,215
Year 4: 11 Computers (\$10,413), Library Books (\$5,000), Library STEM Data bases (\$10,000), Thermoelectric converter (15 @ \$151 = \$2,265), Hydrogen car (22 @ \$297.13 = \$6,537)	Year 5	<u>35,437</u>
Year 5: 11 Computers (\$10,413), Library Books (\$5,000), Library STEM Data bases (\$10,000), Solar Power Kit (15 @ \$87 = \$1,305), Engineering test equipment and assorted student kits (\$8,719)	Total	170,310
Total Supplies		170,310
F. Contractual		
Year 1: Researcher on student success data (\$10,000)	Year 1	10,000
Year 2: Researcher on student success data (\$10,000), Accuplacer math placement licenses (5,000 units @ \$2.00)	Year 2	20,000
Year 3: Researcher on student success data (\$10,000), Accuplacer math placement licenses (5,000 units @ \$2.00)	Year 3	20,000
Year 4: Researcher on student success data (\$10,000), Accuplacer math placement licenses (5,000 units @ \$2.00)	Year 4	20,000
Year 5: Researcher on student success data (\$10,000), Accuplacer math placement licenses (5,000 units @ \$2.00)	Year 5	<u>20,000</u>
	Total	90,000
Total Contractual		90,000
G. Construction		
Year 1: Develop collaborative learning environments in three rooms (carpet, paint, partitions, study carrels, electrical and data drops (two parts)	Year 1	20,000
Year 3: Develop collaborative learning environments in three rooms (carpet, paint, partitions, study carrels, electrical and data drops (two parts)	Year 3	<u>20,000</u>
	Total	40,000
Total Construction		40,000
H. Other (consultants, equipment rental, computer use costs)		
Year 1: High school Stem faculty externships at research institutions stipends (\$10,000), NASA SEMA outreach stipends to support high school student summer experiences (\$10,000), Internship mentor training instructor stipends (\$10,000), Staff/Faculty Stipends in support of student four year university visit experiences (\$5,000), Internship stipends (\$30,000), Endowment for continuation of Internships after grant (\$100,000)	Year 1	165,000
Year 2: High school Stem faculty externships at research institutions stipends (\$10,000), NASA SEMA outreach stipends to	Year 2	170,000
	Year 3	170,000
	Year 4	170,000
	Year 5	<u>170,000</u>

support high school student summer experiences (\$15,000), Internship mentor training instructor stipends (\$10,000), Staff/Faculty Stipends in support of student four year university visit experiences (\$5,000), Internship stipends (\$30,000), Endowment for continuation of Internships after grant (\$100,000) Year 3: High school Stem faculty externships at research institutions stipends (\$10,000), NASA SEMA outreach stipends to support high school student summer experiences (\$15,000), Internship mentor training instructor stipends (\$10,000), Staff/Faculty Stipends in support of student four year university visit experiences (\$5,000), Internship stipends (\$30,000), Endowment for continuation of Internships after grant (\$100,000) Year 4: High school Stem faculty externships at research institutions stipends (\$10,000), NASA SEMA outreach stipends to support high school student summer experiences (\$15,000), Internship mentor training instructor stipends (\$10,000), Staff/Faculty Stipends in support of student four year university visit experiences (\$5,000), Internship stipends (\$30,000), Endowment for continuation of Internships after grant (\$100,000) Year 5: High school Stem faculty externships at research institutions stipends (\$10,000), NASA SEMA outreach stipends to support high school student summer experiences (\$15,000), Internship mentor training instructor stipends (\$10,000), Staff/Faculty Stipends in support of student four year university visit experiences (\$5,000), Internship stipends (\$30,000), Endowment for continuation of Internships after grant (\$100,000)					Total	845,000
					Total Other	845,000
Total Hartnell College Direct Charges						
	Year 1	Year 2	Year 3	Year 4	Year 5	
Total	\$536,717	\$529,449	\$521,961	\$514,248	\$506,306	Total 2,608,681

Hispanic-Serving Institutions Program Activity Budget Detail Form

INSTRUCTIONS: ALL applicants must complete and submit this form. You may copy or recreate this form, but do not amend or modify the required information or format. Upon completion, attach this document as a .doc, .rtf or .pdf into Part III of the "Other Attachments Form" of the Grants.gov application package.

Activity Budget (To be completed for every activity for which funding is requested)											
1. Name of Institution: University Corporation at Monterey Bay on behalf of California State University Monterey Bay (CSUMB)					2. Activity 2 Title: <u>CUSP Program</u>						
3. Budget Categories By Year	First Year		Second Year		Third Year		Fourth Year		Fifth Year		Total Funds Requested
Object Class	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	% Of Time	Funds Requested	
a. Personnel											
Activity 2 Director	25%	23,000	25%	23,690	25%	24,401	25%	25,133	25%	25,887	122,111
Coordinator (UROC)	36%	18,000	36%	18,540	36%	19,096	36%	19,669	36%	20,259	95,564
(Undergraduate Research Opportunities Center)											
Coordinator (MBRACE)	25%	12,500	25%	12,875	25%	13,261	25%	13,659	25%	14,069	66,364
SUB-TOTAL		53,500		55,105		56,758		58,461		60,215	284,039
b. Fringe Benefits VAR%											
		20,330		20,940		21,569		22,215		22,882	107,935
c. Travel		10,000		10,000		10,000		10,000		10,000	50,000
d. Equipment		0		0		0		0		0	0
e. Supplies		25,000		25,000		25,000		25,000		25,000	125,000
f. Contractual		10,000		10,000		10,000		10,000		10,000	50,000
g. Construction		0		0		0		0		0	0
h. Other		131,650		131,249		130,837		130,413		129,975	654,124
i. TOTAL DIRECT CHARGES		250,480		252,294		254,164		256,089		258,072	1,271,099

4. Explain in detail how you arrived at the total amount requested in each object class in each year of the activity. If you fail to provide sufficient details, we may disallow costs.

UNIVERSITY CORPORATION AT MONTEREY BAY (ON BEHALF OF CSUMB)

BUDGET JUSTIFICATION INFORMATION

A. PERSONNEL: All salaries and wages as per CSUMB salary schedules for individuals named below (if no individual is named a mid-range cost on the salary schedule is shown); all new full-time hires will be retained at the end of the grant. 3% COLA included in Years 2-5.		
Activity 1 Student Success Academy Director 60% load - Base Salary \$93,000 Dr. William Head has been designated by California State University, Monterey Bay as the Activity 2 Director. Dr. Head will be responsible for day-to-day management of the services implemented at CSUMB. He will coordinate articulation with Hartnell; organize and implement student and academic support services; deliver faculty mentor training; assign guest lecturers; coordinate student research internship placements; and laboratory improvements.	Year 1	23,000
	Year 2	23,690
	Year 3	24,401
	Year 4	25,133
	<u>Year 5</u>	<u>25,887</u>
	Total	122,111
UROC (Undergraduate Research Opportunities Center) Coordinator - Base Salary \$50,000 Will be hired upon grant award. The Undergraduate Research Opportunities Center (UROC) coordinator will oversee Hartnell outreach and identify, place, and prepare students for science, math, and technology-based internships and research experiences. The coordinator will also serve as the primary point person for the external evaluator and Student Success Research.	Year 1	18,000
	Year 2	18,540
	Year 3	19,096
	Year 4	19,669
	<u>Year 5</u>	<u>20,259</u>
	Total	95,564
Coordinator (MBRACE) - Base Salary \$50,000 Will be hired upon grant award. The Monterey Bay Regional Academy of Computing Education (mbrace) coordinator will identify, place, and prepare students for computer-science based internships and research experiences. The coordinator will also collaborate on Hartnell outreach opportunities and other program activities.	Year 1	12,500
	Year 2	12,875
	Year 3	13,261
	Year 4	13,659
	<u>Year 5</u>	<u>14,069</u>
	Total	66,364
Total Personnel		284,039
B. Benefits		
Includes full share of University/UCorp responsibility for medical, dental, life and disability insurance, workmen's compensation, FICA and retirement. Benefit rates are averaged at 38% rate for faculty and professional staff; 12% for part-time hourly employees but actual or federally negotiated benefit rates at the time of effort will be charged to the grant.	Year 1	20,330
	Year 2	20,940
	Year 3	21,568
	Year 4	22,215
	<u>Year 5</u>	<u>22,882</u>
	Total	104,935
Total Benefits		107,935
Total Personnel (A & B)		391,975

C. Travel.		
Year 1:		
One person to SACNAS (San Jose, CA; 3 nights/4 days): Transportation \$60, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$600. (\$1,410).	Year 1	10,000
Two people to CUR (New Jersey, NY; 4 nights / 5 days): Airfare \$450, Hotel \$500, Per Diem \$250, Incidentals \$100, Conference Fee \$420. (\$1,720 x 2 people = \$3,440).	Year 2	10,000
One person to Northern California Forum for Diversity in Graduate Education (San Francisco, CA; 1 night / 2 days): Transportation \$100, Hotel \$150, Per Diem \$100, Incidentals \$50 (\$400).	Year 3	10,000
Two people to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$350, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,550 x 2 people = \$3,100).	Year 4	10,000
One person to Hispanic Association of Colleges and Universities Conference (San Antonio, TX; 3 days / 4 nights): Airfare \$350, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$550. (\$1,650).	<u>Year 5</u>	<u>10,000</u>
	Total	50,000
Year 2:		
One person to SACNAS (Seattle, WA; 3 nights/4 days): Airfare \$350, Hotel \$500, Per Diem \$200, Incidentals \$100, Conference Fee \$600. (\$1,750).		
Two people to Northern California Forum for Diversity in Graduate Education (San Francisco, CA; 1 night / 2 days): Transportation \$100, Hotel \$150, Per Diem \$100, Incidentals \$50 (\$400 x 2 people = \$800).		
Two people to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$525, Hotel \$500, Per Diem \$200, Incidentals \$100, Conference Fee \$500. (\$1,825 x 2 people = \$3,650).		
Two people to Hispanic Association of Colleges and Universities Conference (TBD; 3 nights / 4 days): Airfare \$450, Hotel \$600, Per Diem \$200, Incidentals \$100, Conference Fee \$550. (\$1,900 x 2 people = \$3,800).		
Year 3:		
One person to SACNAS (TBD; 3 nights/4 days): Airfare \$300, Hotel \$425, Per Diem \$200, Incidentals \$100, Conference Fee \$600. (\$1,625).		
Two people CUR (TBD; 4 nights / 5 days): Airfare \$350, Hotel \$600, Per Diem \$250, Incidentals \$100, Conference Fee \$420. (\$1,820 x 2 people = \$3,540).		
One person to Northern California Forum for Diversity in Graduate Education (TBD; 1 night / 2 days): Transportation \$100, Hotel \$150, Per Diem \$100, Incidentals \$50 (\$400).		
One person to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$350, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,550).		
One person to Hispanic Association of Colleges and Universities Conference (TBD; 3 nights / 4 days): Airfare \$450, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,650).		
One person to Annual Conference on Understanding Interventions (TBD; 3 nights / 4 days): Airfare \$400, Hotel \$240, Per Diem \$200, Incidentals \$100, Conference Fees \$295. (\$1,235).		
Year 4:		
One person to SACNAS (TBD; 3 nights/4 days): Transportation \$330, Hotel \$350, Per Diem \$200, Incidentals \$100, Conference Fee \$600. (\$1,580).		
Two people to Northern California Forum for Diversity in Graduate Education (TBD; 1 night / 2 days): Transportation \$100, Hotel \$150, Per Diem \$100, Incidentals \$50 (\$400 x 2 people = \$800).		
One person to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$430,		

<p>Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,630).</p> <p>Two people to Hispanic Association of Colleges and Universities Conference (TBD; 3 nights / 4 days): Airfare \$450, Hotel \$450, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,650 x 2 people = \$3,300).</p> <p>Two people to Annual Conference on Understanding Interventions (TBD; 3 nights / 4 days): Airfare \$350, Hotel \$395, Per Diem \$200, Incidentals \$100, Conference Fees \$300. (\$1,345 x 2 people = \$2,690).</p> <p>Year 5:</p> <p>One person to SACNAS (TBD; 3 nights/4 days): Transportation \$350, Hotel \$350, Per Diem \$200, Incidentals \$100, Conference Fee \$600. (\$1,600).</p> <p>Two people to CUR (TBD; 4 nights / 5 days): Airfare \$450, Hotel \$585, Per Diem \$250, Incidentals \$100, Conference Fee \$420. (\$1,805 x 2 people = \$3,610).</p> <p>One person to Northern California Forum for Diversity in Graduate Education (TBD; 1 night / 2 days): Transportation \$100, Hotel \$150, Per Diem \$100, Incidentals \$50 (\$400).</p> <p>One person to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$450, Hotel \$400, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,600).</p> <p>One person to American Association of Hispanics in Higher Education (TBD; 3 nights / 4 days): Airfare \$430, Hotel \$375, Per Diem \$200, Incidentals \$100, Conference Fee \$450. (\$1,555).</p> <p>One person to Annual Conference on Understanding Interventions (TBD; 3 nights / 4 days): Airfare \$400, Hotel \$240, Per Diem \$200, Incidentals \$100, Conference Fees \$295. (\$1,235).</p>		
Total Travel		50,000
D. Equipment (Value \$5,000 or more)	Year 1-5	0
Total Equipment		0
E. Supplies		
Year 1: Internship and undergraduate research supplies (such as computer boards with Field Programmable Array (FPGA) capability, pipetmen, land surveying equipment, bird identification software, etc.) (\$15,000); two computers for UROC and MBRACE students (\$4,000); ; books to support STEM disciplines (\$3,000); graduate school preparation materials, including GRE resources (\$2,000); UROC and MBRACE supplies (\$1,000).	Year 1	25,000
Year 2: Database and statistical software (\$2,500); research poster supplies (\$1,000); internship and undergraduate research supplies (such as field gear, GIS handheld systems, lab coats, safety equipment, etc.) (\$16,500); instructional supplies (\$2,000); ; books to support STEM disciplines (\$2,000); UROC and MBRACE supplies (\$1,000).	Year 2	25,000
Year 3: STEM reference books (\$2,000); internship and undergraduate research supplies (such as high-resolution imaging software, digital camera, total station, etc.) (\$16,000); two computers for UROC and MBRACE students (\$4,000); ; instructional supplies (\$2,000); UROC and MBRACE supplies (\$1,000).	Year 3	25,000
Year 4: STEM tutoring material (\$2,000); ; books to support STEM disciplines (\$2,000); internship and undergraduate research supplies (such as pipetmen, water baths, respirometry chambers, etc.) (\$17,000); graduate school preparation materials, including GRE resources (\$1,000); instructional supplies (\$2,000); UROC and MBRACE supplies (\$1,000).	Year 4	25,000
Year 5: Research poster supplies (\$2,000), Internship and undergraduate research supplies (such as habitat modeling	<u>Year 5</u>	<u>25,000</u>
	Total	125,000

software, Powerlab software, Autoclave, etc.) (\$17,000); ; books to support STEM disciplines (\$3,000); graduate school preparation materials, including GRE resources (\$2,000); UROC and MBACE supplies (\$1,000).		
Total Supplies		125,000
F. Contractual		
Year 1: Student Success Research conducted by external evaluator (\$10,000)	Year 1	10,000
Year 2: Student Success Research conducted by external evaluator (\$10,000)	Year 2	10,000
Year 3: Student Success Research conducted by external evaluator (\$10,000)	Year 3	10,000
Year 4: Student Success Research conducted by external evaluator (\$10,000)	Year 4	10,000
Year 5: Student Success Research conducted by external evaluator (\$10,000)	<u>Year 5</u>	<u>10,000</u>
	Total	50,000
Total Contractual		50,000
G. Construction	<u>Year 1-5</u>	<u>0</u>
	Total	0
Total Construction		0
H. Other (consultants, equipment rental, computer use costs)		
Year 1: Internship (\$67,200), Research Mentor (\$31,950), Staff/Faculty for conducting major-specific college tours (\$5,000), Faculty for Lectures at Hartnell (\$1,000), Articulation brochures (\$10,000), Grad School and GRE workshops (\$1,500), Speaker series (\$5,000), Faculty mentoring training (\$10,000)	Year 1	131,650
Year 2: Internship (\$67,200), Research Mentor (\$31,549), Staff/Faculty for conducting major-specific college tours (\$5,000), Faculty for Lectures at Hartnell (\$1,000), Articulation brochures (\$10,000), Grad School and GRE workshops (\$1,500), Speaker series (\$5,000), Faculty mentoring training (\$10,000)	Year 2	131,249
Year 3: Internship (\$67,200), Research Mentor (\$31,137), Staff/Faculty for conducting major-specific college tours (\$5,000), Faculty for Lectures at Hartnell (\$1,000), Articulation brochures (\$10,000), Grad School and GRE workshops (\$1,500), Speaker series (\$5,000), Faculty mentoring training (\$10,000)	Year 3	130,837
Year 4: Internship (\$67,200), Research Mentor (\$30,713), Staff/Faculty for conducting major-specific college tours (\$5,000), Faculty for Lectures at Hartnell (\$1,000), Articulation brochures (\$10,000), Grad School and GRE workshops (\$1,500), Speaker series (\$5,000), Faculty mentoring training (\$10,000)	Year 4	130,413
Year 5: Internship (\$67,200), Research Mentor (\$30,275), Staff/Faculty for conducting major-specific college tours (\$5,000), Faculty for Lectures at Hartnell (\$1,000), Articulation brochures (\$10,000), Grad School and GRE workshops (\$1,500), Speaker series (\$5,000), Faculty mentoring training (\$10,000)	<u>Year 5</u>	<u>129,975</u>
All internships and faculty time amounts include benefits.	Total	654,124
Total Other		654,124
Total California University - Monterey Bay Direct Charges		
Year 1 Year 2 Year 3 Year 4 Year 5		
Total \$250,480 \$252,294 \$254,164 \$256,089 \$258,072	Total	1,271,099

INSTRUCTIONS: ALL applicants must complete and submit this form. You may copy or recreate this form, but do not amend or modify the required information or format. Upon completion, attach this document as a .doc, .rtf or .pdf into Part III of the "Other Attachments Form" of the Grants.gov application package.

5. Explain in detail how you arrived at the total amount requested in each object class in each year of the activity. If you fail to provide sufficient details, we may disallow costs.

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

BUDGET JUSTIFICATION INFORMATION

A. PERSONNEL: All salaries and wages as per UCSC salary schedules for individuals named below (if no individual is named a mid-range cost on the salary schedule is shown); all new full-time hires will be retained at the end of the grant. 3% COLA included in Years 2-5.			
Activity 3 Activity Director 25% load- Base Salary \$92,000 University of California, Santa Cruz is designating, Dr. M Isaacson as the Activity 3 Director. Dr. Isaacson will coordinate program articulation with Hartnell; organize and implement student and academic support services; deliver faculty training; assign guest lecturers; and coordinate student research internship placements. He will also coordinate implementation of the Alternative Energy Micro-grid laboratory at Hartnell's Alisal campus.	Year 1		23,000
	Year 2		23,690
	Year 3		24,401
	Year 4		25,133
	Year 5		25,887
	Total		122,111
Program Coordinator 50% load: Base Salary \$50,000 Lydia Zendejas, Coordinator will oversee Hartnell outreach and identify, place, and prepare students for science, math, and technology-based internships and research experiences. The coordinator will also serve as the primary point person for the external evaluator and Student Success Research.	Year 1		25,000
	Year 2		25,750
	Year 3		26,523
	Year 4		27,318
	Year 5		28,138
	Total		132,729
Renewable Energy Microgrid Expert Consultant 9% load: Base Salary \$161,397 UC Faculty To be appointed. Coordinator will establish micro-grid project at Hartnell College and act as liaison between graduate students at UCSC and Hartnell faculty and students working on the micro-grid project.	Year 1		17,933
	Year 2		18,453
	Year 3		19,023
	Year 4		19,594
	Year 5		20,182
	Total		95,185
Total Personnel			350,025
B. Benefits			
Includes full share of college responsibility for medical, dental, life and disability insurance, workers' compensation, FICA and retirement. 26% rate for faculty and professional staff, 14% for part-time hourly students.		Year 1	14,991
		Year 2	15,437
		Year 3	15,903
		Year 4	16,381
		Year 5	16,872
		Total	79,584
Total Benefits			79,584
Total Personnel (A & B)			429,609

<p>C. Travel.</p> <p>Year 1:</p> <p>Two people to American Society for Engineering Education Conference (ASEE), San Antonio, Texas: Travel: \$600, Hotel (4 nights): \$600; per diem (\$400), Conference Fee (\$350): Total, \$1750 x 2 = \$3900.</p> <p>Two people to American Association for the Advancement of Science Conference(AAAS), Vancouver: Travel: \$600, Hotel (4 nights): \$800; per diem (\$500), Conference Fee (\$300): Total: \$2200 x 2 = \$4400.</p> <p>One person to SACNAS Conference, Seattle: Travel: \$210, Hotel (3 nights): \$450, per diem (\$350), Conference Fee , \$600,): Total: \$1610.</p> <p>Year 2:</p> <p>Two people to ASEE Conference, Atlanta: Travel, hotel, per diem and conference registration: \$3900.</p> <p>Two people to AAAS Conference, Boston: Travel, hotel, per diem and conference fee: \$4200.</p> <p>One person to SACNAS Conference: \$1900.</p> <p>Year 3:</p> <p>Two people to ASEE Conference, Indianapolis: Travel, hotel, per diem and conference registration: \$4000.</p> <p>Two people to AAAS Conference, Chicago: Travel, hotel, per diem and conference fee: \$4200</p> <p>One person to SACNAS Conference: \$1708.</p> <p>Year 4:</p> <p>Three people to AAAS Conference, San Jose: Travel, hotel, per diem and conference registration, \$3000</p> <p>Two people to Frontiers in Education Conference: Travel, hotel, per diem and conference fee: \$3882.</p> <p>Two people to SACNAS Conference: Travel, hotel, per diem and conference fee: \$2907</p> <p>Year 5:</p> <p>Two people to ASEE Conference: Travel, hotel, per diem and conference fee: \$4000</p> <p>Three people to SACNAS Conference: Travel, hotel, per diem and conference registration: \$5902</p>		<p>Year 1</p> <p>Year 2</p> <p>Year 3</p> <p>Year 4</p> <p>Year 5</p> <p>Total</p>	<p>9,910</p> <p>9,908</p> <p>9,907</p> <p>9,882</p> <p><u>9,902</u></p> <p>49,509</p>
	Total Travel		50,000

<p>D. Equipment (Value \$5,000 or more)</p> <p>Year 1: We are requesting equipment to set up a renewable energy micro grid laboratory which will give students hands-on experience with renewable energy resources. In the first year we request a total of \$79, 646 which includes:</p> <p>MatLab license (\$8,000)</p> <p>2, vertical axis 1 KW wind turbines (\$10,600)</p> <p>2, horizontal axis 1 KW wind turbines (\$6,600)</p> <p>3 KW Solar Panel Array (\$5,000)</p> <p>Hampden Engineering Solar PV Trainer, H-SPT-AC1 (\$13,844)</p> <p>Homer Energy Microgrid Simulator license(\$15,000)</p> <p>Mounting/inverters for wind turbines (\$12,500)</p> <p>Computer control panel for renewable energy lab (\$8,102)</p> <p>Year 2: We are requesting \$ 24,000 for additional equipment for the operation of the renewable energy microgrid laboratory:</p> <p>3 KW Solar Panel Array (\$5,000)</p> <p>MatLab license (\$8,000)</p> <p>Micro grid Simulator license (\$11,000)</p> <p>Year 3: We are requesting \$21,000 for the renewable energy microgrid laboratory.</p> <p>MatLab license (\$9,000)</p> <p>Micro grid simulator license (\$7,000)</p> <p>3KW Solar Panel Array (\$5,000)</p> <p>Year 4: We are requesting \$32,000 for the software licenses for the microgrid laboratory and to purchase a 3rd wind turbine of different design.</p> <p>MatLab license (\$10,000)</p> <p>Microgrid Simulator license (\$11,000)</p> <p>1 KW vertical axis wind turbine and mounting (\$11,000)</p> <p>Year 5: We are requesting \$21,000 for software license for the renewable energy laboratory.</p> <p>MatLab license \$10,000</p> <p>Microgrid simulator (\$11,000)</p>	<p>Year 1</p> <p>Year 2</p> <p>Year 3</p> <p>Year 4</p> <p>Year 5</p> <p>Total</p>	<p>79,646</p> <p>24,000</p> <p>21,000</p> <p>32,000</p> <p>21,000</p> <p>177,646</p>
<p>Total Equipment</p>		<p>177,646</p>
<p>E. Supplies</p> <p>Year 1: (\$11,000),</p> <p>Administration supplies (\$5,000) including printing</p> <p>Computers (\$6,000)</p> <p>Year 2: (\$21,000)</p>	<p>Year 1</p> <p>Year 2</p> <p>Year 3</p> <p>Year 4</p> <p>Year 5</p> <p>Total</p>	<p>11,000</p> <p>21,000</p> <p>20,000</p> <p>25,000</p> <p>25,000</p> <p>102,000</p>

Administration supplies (\$5,000) Computers (\$5,000) Printing costs, brochures and posters (\$7,000) Dissemination/publication costs (\$4,000) Year 3: (\$20,000) Administration supplies (\$6,000) Printing costs (\$8,000) Misc. software for intern program (\$6,000) Year 4: (\$25,000) Administration supplies (\$6,000) Career Development supplies/kits (\$5,000) Printing (\$8,000) Publication costs (\$6,000) Year 5: (\$25,000) Administration supplies (\$7,000) Poster printing for research symposia (\$6,000) General printing (\$5,000) Dissemination supplies (\$7,000)		
Total Supplies		102,000
F. Contractual	Year 1-5	0
Total Contractual		0
G. Construction	Year 1-5	0
Total Construction		0
H. Other (consultants, equipment rental, computer use costs) Year 1: Arduino boards for instrument to web interface for micro grid lab (\$2,000) 4, anemometers, 3 axis . for microgrid lab(\$9,652) 8, Li-200SC50, Pyrometer sensors for micro grid lab (\$1,140) 8, mounts for pyrometers (\$208) misc. FPGA chips for electronics, sensors, for student projects (\$1,000) Internships (\$30,000). Student Success Research stipends (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000) Year 2: Research materials for interns (\$18,000 @ \$3,000 per student) Simulation software for microgrid lab (\$8,056) Web	Year 1 Year 2 Year 3 Year 4 Year 5 Total	69,000 114,056 117,407 100,781 111,091 512,335

site development (\$3,000) Career development course and modules for instructional laboratories (\$18,000) Misc. components for instructional labs(\$3,000)\ Graduate student instruction for mentoring (\$5,000) Dissemination/outreach (\$4,000) Internships (\$30,000). Student Success Research stipends (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000) Year 3: Research materials for Interns (\$18,000) Misc. components for instructional labs(\$3,000) Graduate student instruction for mentoring (\$5,000) 5, laptops for field micro grid work (\$5,000) Expansion of career development program (\$16,357) Expansion of academic excellence program (\$15,050) Internships (\$30,000). Student Success Research stipends (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000) H. Continued (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000) Year 4: Research materials for interns (\$18,000) Simulation software licenses (\$9,000) Graduate student instruction for mentoring (\$5,000) 2, Field oscilloscopes (\$8,000) Electronic components for sensor interfaces (\$5,781) Internships (\$30,000). Student Success Research stipends (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000) Year 5: Research materials for interns (\$20,000) 30, 100W Solar Panels (\$5,000) Publication costs (\$4,000) Misc. electronics/ chemicals for instructional labs (\$5,091) Career development program (\$8,000) 2, Field oscilloscopes (\$8,000) expansion of tutorials (\$6,000) Internships (\$30,000). Student Success Research stipends (\$10,000), Speaker Series stipends (\$5,000) Faculty Mentor Training stipends (\$10,000)												
Total Other		512,335										
Total University of California Direct Charges <table><tr><td>Year 1</td><td>Year 2</td><td>Year 3</td><td>Year 4</td><td>Year 5</td></tr><tr><td>Total \$250,480</td><td>\$252,294</td><td>\$254,164</td><td>\$256,089</td><td>\$258,072</td></tr></table>	Year 1	Year 2	Year 3	Year 4	Year 5	Total \$250,480	\$252,294	\$254,164	\$256,089	\$258,072	Total	\$1,271,099
Year 1	Year 2	Year 3	Year 4	Year 5								
Total \$250,480	\$252,294	\$254,164	\$256,089	\$258,072								

Abstract

The abstract narrative must not exceed one page and should use language that will be understood by a range of audiences. For all projects, include the project title (if applicable), goals, expected outcomes and contributions for research, policy, practice, etc. Include population to be served, as appropriate. For research applications, also include the following:

- Theoretical and conceptual background of the study (i.e., prior research that this investigation builds upon and that provides a compelling rationale for this study)
- Research issues, hypotheses and questions being addressed
- Study design including a brief description of the sample including sample size, methods, principals dependent, independent, and control variables, and the approach to data analysis.

[Note: For a non-electronic submission, include the name and address of your organization and the name, phone number and e-mail address of the contact person for this project.]

You may now Close the Form

You have attached 1 file to this page, no more files may be added. To add a different file, you must first delete the existing file.

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ABSTRACT

Hartnell College's cooperative application for a grant under the U.S. Department of Education Hispanic-Serving Institutions Science, Technology, Engineering, and Mathematics (STEM) Articulation Program will create the STEM Regional Community College-to-University Success Program. The project will address both the Absolute and Competitive Preference Priorities as established by the Department. The project design overview includes:

Overall Goals – to improve enrollment and transfer in STEM; implement seamless pathways.

Goal 1: increase number of Hispanic and low income students attaining STEM degrees by 50%.

Goal 2: increase transfer rates through articulation agreements between Hartnell, California State University Monterey Bay and the University of California Santa Cruz in five STEM fields.

Goal 3: enable more data-based decision-making by collecting or obtaining, analyzing, and using high-quality and timely data, including data on program participant outcomes.

How – Create a seamless, articulated pipeline with activities and an integrated support structure among three educational levels to increase the number of Hispanic and low income students transferring and attaining degrees in high growth STEM majors.

Methods (services) – Five articulated STEM pathways in Biology, Marine Science, Engineering, Computer Science, and Physics; model transfer agreements; collaborative research opportunities for faculty and students; regional research symposium; supplemental instruction; tutoring services; living/residential learning communities; paid internships; faculty and staff training; teacher externships; high school student engagement; improved data collection; and evaluation.

Support – updated laboratory infrastructure to support learning and success; leveraging existing personnel, programs, and infrastructure; technicians to support programming and data analysis; collegial faculty and staff training.

Project Narrative File(s)

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PART III APPLICATION NARRATIVE

STEM Regional Community College-to-University Success Program (CUSP)

A Cooperative Application under the U.S. Department of Education Hispanic-Serving Institutions Science, Technology, Engineering, and Mathematics (STEM) Articulation Program (84.031C)

Cusp: from the Latin cuspis meaning a point of transition, a turning point

Introduction

Hartnell College is pleased to present this cooperative application for a grant under the U.S. Department of Education Hispanic-Serving Institutions Science, Technology, Engineering, and Mathematics (STEM) Articulation Program. Hartnell's proposal, the STEM Regional Community College-to-University Success Program, will address both the Absolute and Competitive Preference Priorities as established by the Department.

Absolute Priority 1 – the project will increase the number of Hispanic and low income students attaining degrees in the fields of science, technology, engineering, or mathematics by 50 percent.

Absolute Priority 2 – the project will develop model transfer and articulation agreements between Hartnell, a Hispanic-serving institution, and two 4-year universities in STEM fields.

Competitive preference priority – the project will enable more data-based decision-making by collecting or obtaining, analyzing, and using high-quality and timely data, including data on program participant outcomes, in accordance with privacy requirements.

Additional point for 2011 – This cooperative project will also address the following: (1) Faculty development: Hartnell and its university partners will implement integrated faculty/teacher development. (2) Funds and administrative management. Upper Level and Core Management of this project is co-funded by the college general fund as shown in the budget. (3) Development and improvement of academic programs: Program improvements will focus on five articulated STEM pathways. (4) Acquisition of equipment for use in strengthening management and

academic programs: New equipment and software will upgrade three STEM laboratories, collaborative learning spaces, and other equipment will support long-term tracking mechanisms to guide management in future decision making. (5) Joint use of facilities: UCSC will construct a new lab on a Hartnell campus. (6) Student services: STEM-eligible students will have access to a designated STEM counselor who will guide students through lower division STEM requirements resulting in matriculating to a partner four year school.

About Hartnell College and its students. Hartnell College is a Hispanic Serving Institution and the only public institution of higher education exclusively serving Salinas and the Salinas Valley, in Monterey County, CA. It is open to any student 18 years or older and currently enrolls over 10,000 students (Fall, 2010). Hartnell College offers more than 40 quality academic, technical, vocational, job training, and other Associate degree and certificate programs. As a community college, it offers a full array of STEM programs. Hartnell is the only affordable postsecondary option for a growing population of underserved, underrepresented and disadvantaged students in the region.

Hartnell College's nontraditional student population has grown quickly. The student body is 74 percent minority and 55 percent female. Latinos comprise 63 percent of the student body and 82 percent are first generation college students. Nearly 41 percent of the College's students are non-native English speakers. Over 65 percent of all Hartnell College students receive some form of financial aid (Hartnell College data, 2009-10). The Hartnell Community College District serves a population that is mostly minority, low income, with limited educational attainment, high rates of poverty and unemployment.

About California State University, Monterey Bay (CSUMB). CSUMB is an accredited California State University and Hispanic Serving Institution located on Monterey Bay, Monterey

County, CA. Founded only 17 years ago, the university offers a growing number of science, technology, mathematics, business, social studies and arts Bachelor's and Master's degree programs for a student body of nearly 5,000 students. The institution seeks to distinguish itself through "outcomes-based education," with undergraduates required to conduct a capstone research project, and compile a portfolio demonstrating competency in their concentration, with a faculty member as advisor. CSUMB's size and philosophy give it the flexibility to create and implement programs and services that meet changes in technology and the needs of California's increasingly diverse population.

About the University of California, Santa Cruz (UCSC). UCSC is an accredited campus of the University of California system located in Santa Cruz, CA on the north side of Monterey Bay. The university offers 63 undergraduate majors and 35 minors, with graduate programs in 33 fields. Over the last 15 years, UCSC has developed an impressive STEM education and research focus. Its faculty includes 11 members of the National Academy of Sciences, and the university is now home to the Baskin School of Engineering, the Center for Biomolecular Science and Engineering, and the National Science Foundation-funded Center for Adaptive Optics. Other recognized STEM programs include space sciences, physics, astrophysics, astronomy, and marine science, among others.

1. Need for the project (20 Points)

(i) The magnitude of the needs for the services to be provided or the activities to be carried out by the proposed project. Hartnell College has successfully recruited and enrolled increasing numbers of Latino students. The proportion of Latino students enrolled at Hartnell is 63 percent, approaching the proportion of Latino residents in Hartnell's district overall. This

success, however, has not translated into higher Latino enrollments, graduation, or transfer in the College's science, technology, engineering, and mathematics (STEM) programs.

In assessing the magnitude of the need for this project and identifying services and activities to meet that need, the College formed a STEM Cooperative Planning Team in Fall 2010. Members included representatives from administration, counseling, and STEM faculty from Hartnell and two university partners, CSUMB and UCSC. Planning and needs assessment activities included: linking and coordinating with Hartnell's Cooperative STEM team; reviewing major institutional planning documents (accreditation self study; master plans; employee, student, and community surveys); reviewing all current articulated pathways and course articulation status from Hartnell to the two universities; analyzing STEM enrollment, persistence, retention, and success data; soliciting input from STEM faculty and student services staff; and identifying key gateway points necessary for students to persist to STEM degrees and/or transfer to a four-year institution. This extensive process included over two dozen meetings and hundreds of hours of document/data review. It resulted in the identification of seven critical findings that pose obstacles to improved Hispanic and low income student **enrollment, performance, transfer, and graduation** in STEM majors.

The magnitude of the problem – low levels of enrollment, success, and transfer by Hispanic students in STEM majors is severe, as documented by eight factors:

(i)a Inadequate preparation of incoming high school graduates. Overwhelmingly, Hispanic and low income students are arriving at Hartnell without the skills to succeed in math and science. For example, Alisal High School, in the Salinas Union High School District (Hartnell's largest feeder district), is 98 percent Hispanic; 81 percent socio-economically disadvantaged; and 52 percent English language learners. The percentage of high school juniors who are proficient

or advanced in key STEM subject areas and the percentage of juniors who were enrolled and tested in each subject area:¹

Percentage of Hispanic high school juniors proficient/advanced in key STEM subjects (Based on number of students tested, n = 1,808. Source: California Dept. of Education, 2011)					
Subject	% Tested	% Prof/Adv	Subject	% Tested	% Prof/Adv
Algebra I	19%	23%	Biology	24%	39%
Algebra II	33%	7%	Chemistry	9%	27%
Earth Science	12%	15%	Physics	32%	20%

As documented, no more than a third of students are enrolled in key STEM courses, and, of those, only a small percentage achieve proficient or advanced scores. Unless and until feeder high schools are able to adequately prepare Hispanic and low income students for college-level math and science, it will be Hartnell's responsibility to implement strategies and activities that will result in success, graduation and/or transfer for these students.

(i)b Poor student performance in gateway math and science courses. Hartnell's students are increasingly traditional freshmen from the local area schools, including Alisal High School referenced above. In general, incoming students are not academically prepared for college-level work in STEM subjects. For example, 36 percent of incoming students are English language learners. Ninety percent (90%) of all incoming students place at a pre-collegiate level in mathematics (Accuplacer baseline data, May, 2008 – June, 2009). Students also demonstrate inadequate preparation in: (1) technological readiness; (2) English usage (written and oral); and (3) basic information competency (inability to use computers to access data, do research, write essays); (4) mathematics including basic addition and subtraction; and (5) have virtually no knowledge of any science.

¹ California Department of Education testing data. 2011. Available: <http://www.cde.edu>

Before these students can enroll in college-level mathematics, they must successfully complete Mathematics 201, Pre-Algebra. Unfortunately, barely half of Hispanic students who enroll in Math 201 successfully complete the course and move on into college-level math. Data gathered on cohorts of students who enrolled in Mathematics 201 revealed that only 52 percent of Hispanic students successfully completed the course. The success rate for white students was 69 percent. They require a solid foundation in whole number math before moving into more complex fractions and algebraic problem-solving found in pre-algebra.

However, Hispanic students who do successfully complete Math 201 have high rates of success in college-level mathematics. The same review of student cohorts referenced above showed that Hispanic students who completed Mathematics 121 (Algebra I) enjoyed an 83 percent success rate. And, Hispanic students who completed Mathematics 123 (Algebra II) enjoyed an even higher, 94 percent success rate (Hartnell Data, 2009). Improving student success in Math 201 will lead to success in higher level courses.

College-level and advanced mathematics are required courses in several STEM majors, including mathematics, biology, computer science, marine science, engineering, and physics. Low income and Hispanic students who enter Hartnell must have college-level math skills to succeed in many STEM programs. Mathematics 123 is a key gateway to their success.

Likewise, Hartnell students have lower success rates in college-level science courses. In fact, the more advanced a science course is, the lower the success rate: Biology, 66 percent; Physical Sciences, 55 percent; Physics 1A, 18 percent; Physics 1B, 17 percent.

The poor student performance and obstacles to advancement in STEM course sequences discussed here pose a major impediment to completion of STEM degrees and university transfer by Hispanic and other students as detailed in the next section.

(i)c Small numbers of Hispanic graduates and transfers in STEM majors. Hartnell is achieving some success in attracting Hispanic students to STEM majors. However, as a result of the academic obstacles discussed above, the number of Latino and other students graduating and transferring with STEM degrees is small, as shown below (Hartnell College data, 2011).

2009-2010 Hartnell College STEM Major Degrees and Transfer by Ethnicity

STEM Subject	Total Majors	Hispanic Students			Non-Hispanic Students		
		Hispanic Majors	Hispanic Degrees	Hispanic Transfers	Non-His Majors	Non-His Degrees	Non-His Transfers
Physics	14	8	6	0	6	2	1
Chemistry	28	17	1	0	11	4	1
Computer Sci.	156	84	1	0	72	1	1
Engineering	140	92	1	0	48	1	1
Biology	142	84	1	0	58	3	1
Mathematics	65	41	7	0	24	2	1
Totals	545	326	17	0	219	13	6

Despite the fact that Hartnell College is located in close proximity to two universities – California State University, Monterey Bay (CSUMB), and the University of California, Santa Cruz (UCSC) – it does not send either institution very many STEM transfers, or, in the case of UCSC, very few transfers of any kind. CSUMB reports that only six percent (6%) of transfer students from Hartnell are in STEM majors. At UCSC, Hartnell not only doesn't rank in the top 15 community college transfer origins, it sends less than 10 transfers there per year of any kind, in STEM or any other major.

(i)d Limited access to academic and student support services. A contributing factor to poor Latino and low income student performance in STEM courses is the limited access to academic support services, including counseling, tutoring, supplemental instruction (SI), and other academic support. As documented by a symposium on best practices in STEM for Hispanic

Serving community colleges, academic support, effective pedagogy, and supportive pathways are key to Latino success in college.² The limitations and inadequacies of the academic support system impacting low income and Hispanic students include:

- **Availability of counselors** – the counselor-to-student ratio is approximately 1:1,000. There are counselors for specialized programs, such as for the Economic Opportunity Programs and Services (EOPS) but these programs can only serve approximately 10% of Hispanic students.
- **Budget cuts to Academic Learning Center (ALC)** – the ALC provided instructional support programs including a Reading and Writing Lab, Mathematics Lab, Tutorial Center, Language Lab, and Computer Labs. In 2006, student usage had increased 37 percent to 10,338 hours per year. Demand for supervised tutoring increased 35 percent during the same period. However, budget cuts in California have virtually eliminated all services provided by the ALC. Today, services are restricted to basic skills for a limited number of students.
- **Limited supplemental instruction (SI)** – Due to fiscal constraints, SI is offered only sporadically at Hartnell. Currently, there are no gateway STEM courses paired with SI.
- **Limited bridge and other transition activities.** There are few bridges or other transition programs for students moving from high school to college, or college to university. Such bridge programs, when they exist, are successful, but usually only occur in the term (typically summer) between completing one level and enrolling in the next.

(i) Incomplete student placement and tracking in STEM subjects. Hartnell College uses Accuplacer, an electronic placement assessment instrument, to place students in mathematics, English, and English as a Second Language courses. However, inadequate coding, limited technical staff, and no validation techniques prevent the system from functioning properly. This

² A National Symposium on Best Practices for Student Achievement in STEM in Two-Year Hispanic Serving Institutions. 2002. National Science Foundation. ERIC Identifier: ED466277.

has resulted in assessment technicians manually uploading scores which delays student registration. Delayed placement and registration often results in students dropping out. Lack of validation calls into question the accuracy of a system designed to ensure accurate placement in critical courses. Altogether, this undermines the ability of the College to support student success in STEM majors and make data-driven decisions that can improve student performance.

(i)f Longer-time-to-degree completion rates. Inadequate student preparation and support structures combined with the pressures low income students have to work, results in extending the time-to-degree for Hartnell students. According to a review of time-to-degree transfer rates, only three percent of Hispanic students were transfer-ready in two years. Research strongly indicates that students, particularly low income students, who need longer time to complete a degree, also tend to have higher drop-out rates.³

(i)g Student finances inhibit internship participation. Related to the above, low intern stipends make it difficult for low income students to accept internship placements. As in the need to reduce time-to-degree, internships can be an effective method to support degree completion.⁴

(i)h No STEM-specific faculty training or interactive/collaborative faculty opportunities. The California Community Colleges no longer support faculty development. At Hartnell, only two training days are set aside each semester for faculty training. No time is set aside for STEM-specific training. Any STEM-related training – to revise/update curricula and instructional delivery to meet the needs of at risk, low income, or Hispanic students – occurs only with specific, grant-funded programs. In addition, while articulation and transfer agreements are

³ Bound, J., Lovenheim, M., Turner, S. 2007. *Understanding the Decrease in College Completion Rates and the Increased Time to the Baccalaureate Degree*. University of Michigan, Institute for Social Research. Report 07-626, 2007. Available: www.psc.isr.umich.edu/pubs

⁴ Fashola, Olatokunbo S.; Slavin, Robert E. 1998. Effective Dropout Prevention and College Attendance Programs for Students Placed at Risk. *Journal of Education for Students Placed at Risk (JESPAR)*. Volume 3, Issue 2 1998, Pages 159 - 183

drafted on paper, there are few or no opportunities for collegial interaction between teachers and faculty at various regional secondary and postsecondary institutions. In other words, the STEM teachers from feeder high schools do not interact regularly with Hartnell's STEM faculty, and Hartnell's STEM faculty do not regularly interact with local university faculty. Such interaction, through research projects, externships, or other collaboration, could improve teaching as well as faculty understanding of the challenges students face to succeed in STEM.

(i) Inadequate STEM pathways – transfer and articulation agreements. Hartnell's STEM pathways with local university partners, California State University, Monterey Bay and the University of California, Santa Cruz, are inconsistent and, in several cases, non-existent. For example, Hartnell and CSUMB have outlined several pathways, but very few students actually transfer in STEM. In addition, CSUMB is expanding their cutting-edge marine science program but Hartnell does not have the resources to develop a comparable lower division entry-way. At UCSC, Hartnell has no articulated STEM pathways whatsoever which helps explain the extremely low number of transfers of any kind. In addition, existing articulation agreements in STEM areas are inadequate and out-of-date. So, even when a student is well-prepared for college-level STEM work, he/she is left with limited alternatives for university transfer.

Summary. Too much of the instructional delivery in STEM pathways in this region, from high school to community college, and community college to university, occurs in something akin to a vacuum; each level operates independently. This situation would be analogous to workers not communicating during the construction of a building – each individual might do a good job, but the chances of the building being structurally sound and functional will be slim. So, too, in preparation of at-risk students for success in STEM – each successive educational level must be in-synch so that the “product,” *the student*, is prepared and successful.

This must start with articulated programs, but go beyond a consistent paper trail only. Solutions must provide students with a supportive structure that transcends institutional boundaries.

Why this is important. California is a leader in, and is projected to continue leading in several high growth STEM fields, including advanced manufacturing, medical research, biotechnology, marine science, and high tech, according to California Labor Market Projections.⁵ In the Salinas Valley, for example, food safety and precision agriculture are two STEM fields that require highly skilled scientists, engineers, and technicians. And, the Monterey County coast provides the eastern border for the Monterey Bay National Marine Sanctuary, home to a vibrant and diverse ecosystems and which provides opportunities for regional, national, and international research. A sampling of high growth STEM jobs, both in California and the Salinas Valley/Monterey Bay region, are shown below.

Selected STEM Occupational Growth Projections through 2018⁶					
STEM Occupation	CA	Region	STEM Occupation	CA	Region
Life Scientists	+37%	+20%	Computer Scientists	+21%	+10%
Physical Scientists	+15%	+5%	Mathematical Scientists	+18%	+15%
Biological Scientists	+18%	+17%	Biomedical Engineers	+81%	+20%
Environmental Scientist	+21%	+20%	Mechanical Engineers	+3%	+20%

The Hispanic/Latino population is the largest and fastest growing minority group in California and the U.S.⁷ Without action to improve enrollment, performance, transfer, and

⁵ California Employment Development Department. Labor Market Information Unit Available: <http://www.labormarketinfo.edd.ca.gov/>

⁶ *Ibid.* California Employment Development Department. Labor Market Projections.

⁷ California Department of Finance. 2010. Population Estimates and Projections Web Page. Available: <http://www.dof.ca.gov/research/demographic/reports/view.ph>

graduation in STEM programs, Latinos will be left out of some of the most high growth and high wage careers of the 21st Century.

(ii) The extent to which specific gaps or weaknesses in services, infrastructure, or opportunities have been identified and will be addressed by the proposed project. As documented under ‘a’ above, *the magnitude of the problem* – low levels of enrollment and success by Hispanic students in STEM majors – is severe. Students arrive at Hartnell unprepared or under-prepared for college-level math and science courses; perform poorly in key STEM gateway courses; and have low rates of STEM transfer and degree completion. Based on the data presented earlier, Hartnell College has identified six opportunities (gaps or weaknesses in services, instruction, and support) that, if addressed, will improve the STEM pipeline for low income and Hispanic student:

(ii)a Inconsistent or undeveloped articulated STEM pathways.

Indicators: Low, very low STEM transfer rates from Hartnell to four-year universities.

Causes: Institutional habit or neglect; budget constraints; limited faculty and staff time; limited opportunities to interact/collaborate.

Opportunities: develop five articulated STEM pathways in Biology, Marine Science, Engineering, Computer Science, and Physics with two regional universities; implement model transfer agreements; implement collaborative research opportunities for faculty and students.

(ii)b Under-prepared entering freshmen.

Indicators: high rates of basic skills course enrollment; low math and English assessment scores.

Causes: over crowded high schools; overwhelmed teachers; limited high school teacher STEM training; limited access to high quality STEM laboratories and equipment.

Opportunities: implement high school teacher externships; use new facilities, like Hartnell's NASA Aeronautics Academy Lab for hands-on, interactive student outreach to high schools.

(ii)c Limited student internship and hands-on STEM research opportunities.

Indicators: difficulty matching STEM students to intern placements that support their program of study; need for low income students to work in order to pay for school and living expenses.

Causes: inconsistent funding from grants or industry; Fast food jobs pay more than internships.

Opportunities: leverage university and other partner resources to create research opportunities and placements at Naval Post Graduate School Cebrowski Institute, USDA Research Center, others; create a \$1 million endowment to sustain the STEM internship program long-term.

(ii)d Limited access to academic support services.

Indicators: inadequate college preparation; student performance in gateway STEM courses.

Causes: lack of funding for student support staff; high counselor/staffing-to-student ratios.

Opportunities: develop supplemental instruction to be paired with key, gateway math and science courses; expand and redesign STEM-specific tutoring; assign a STEM-specific counselor.

(ii)e Limited student support structures.

Indicators: low degree completion rates; longer time-to-completion rates;

Causes: limited cooperation across institutional "boundaries;" stand-alone services.

Opportunities: diversify support methods with living learning communities for transfer students.

(ii)f Outdated or inadequate STEM laboratory facilities.

Indicators: laboratory equipment that does not support instructional goals, needs; facilities that do not have the infrastructure (wiring, cables) to support new or updated equipment.

Causes: poor program integration between postsecondary institutions; aging facilities; cost of keeping pace with emerging technology; cutting-edge programs that need up-to-date equipment.

Opportunities: upgrade the engineering and physics laboratory at Hartnell; develop a cooperative alternative energy/micro-grid laboratory with UCSC on Hartnell's Alisal campus; implement an upgraded marine science laboratory at CSUMB; upgrade existing collaborative learning spaces;

(ii)g Incomplete student data and tracking in STEM subjects.

Indicators: limited data available for decision-making.

Causes: no funds or personnel to expand/adapt existing programming infrastructure; no technical support personnel to provide programming support; incomplete validation methodologies.

Opportunities: develop the coding needed to fully implement Accuplacer; assign a technician to support programming and training in system use; gain support to validate placements/ outcomes.

(ii)h No access to STEM-specific faculty training.

Indicators: number of STEM faculty training events; student performance data in STEM courses; no opportunities for collegial interaction.

Causes: no funds for STEM-specific training that can be integrated into ongoing faculty training; no leveraging of resources and personnel between postsecondary institutions; no outreach and collaboration with STEM teachers at feeder high schools;

Opportunities: develop STEM-specific faculty training on successful STEM methodologies for Hispanic and at-risk students; create interactive and hands-on collaborative research projects; Use university faculty to train college and high school faculty; train faculty as student mentors.

(ii)i Inadequate articulation agreements.

Indicators: low transfer rates for Hispanic and low income students from Hartnell to CSUMB and UCSC;

Cause: articulation agreements for STEM subjects are out-of-date or inconsistent; inadequate faculty and staff time to create articulated pathways and accompanying support structures.

Opportunities: Update STEM articulation agreements with two, four year colleges in five STEM pathways; institute a process for ongoing updating of articulation and transfer agreements.

(iii) The extent to which the proposed project will provide services or otherwise address the needs of students at risk of educational failure. The activities, services, and programs implemented through this project will be targeted toward Hartnell's current student body, as well as prospective students from the District Hartnell serves. Hartnell's students as a whole, unfortunately, possess many of the characteristics that lead to academic failure⁸ (characteristics are listed below, paired with Hartnell student data cited earlier):

- Academic unpreparedness – Ninety percent (90%) of all incoming students place at a pre-collegiate level in mathematics;
- Limited English proficiency – Nearly 41 percent of students are non-native English speakers;
- First generation student – Eighty-two percent (82%) are first generation college students;
- Finances – Over 65 percent of all Hartnell College students receive some form of financial aid and even more come from low income families.
- No guidance; lack of mentors or counseling – there is no regular, ongoing mentor program and the ratio of counselors to students is 1,000:1.
- Time-to-degree – Most Hartnell students require four-six years to complete a degree.

The survey and study by the Pew Hispanic Center (cited above) also indicated that, despite the obstacles, students at-risk of academic failure *want to learn*. At Hartnell College, students who enroll despite not being prepared for college want to succeed. Hartnell feels an obligation to support the achievement of these modest ambitions.

⁸ Lopez, Mark Hugo. "Latinos and Education: Explaining the Attainment Gap." Pew Hispanic Center, Washington, D.C. October, 2009. Available: <http://pewhispanic.org/files/reports/115.pdf>

To overcome academic obstacles, the project will: implement seamless, articulated pathways in five STEM programs that will enable transfer and success; deliver tutoring and supplemental instruction; provide faculty mentors; enable interaction between undergraduate and graduate student role models; provide hands-on experience through research and internships.

(iv) The extent to which the proposed project will focus on serving or otherwise addressing the needs of disadvantaged individuals. The proposed project will focus on serving the needs of disadvantaged individuals – *such individuals represent the majority of Hartnell College’s student and district populations.* The Hartnell Community College District is 70 percent Hispanic, 50 percent low income, with 45 percent of residents having less than a high school diploma, and 66 percent of Hispanics.⁹ Monterey County is home to the third highest number of migrant and seasonal farm workers and families *in the nation*.¹⁰ Nearly 20 percent of all residents are under the poverty line, with 25 percent of children under 18 under the poverty line. Up to 90 percent of local high school students participate in the federal school lunch program.¹¹

The March, 2011 unemployment rate stood at 16.5 percent for Monterey County, significantly higher than California, 12 percent, or the nation 8.8 percent. Unemployment in the Salinas Valley can exceed 25 percent, depending on which crops are being harvested.¹²

To overcome socio-economic obstacles, the project will: link to financial aid, fee waiver, and scholarship programs; provide paid internship opportunities; deliver no-cost services, such as counseling and tutoring; provide access to on campus housing (at university partners); and deliver education in high-growth, high wage STEM career pathways.

⁹ U.S. Census, American Community Survey, 2009. Available: www.census.gov/acs/

¹⁰ Larsen, A. *Migrant and Seasonal Farmworker Enumeration Profiles Study*, 2000, updated. Available: <http://www.ncfh.org/enumeration/PDF2%20California.pdf>

¹¹ California Department of Education Demographic Data. 2011. Available: <http://www.cde.edu>

¹² *Op. Cit.* California Employment Development Department. Labor Market Information Unit

2. Quality of the project design (15 Points)

(i) **The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.** Through the STEM Regional Community College-to-University Success Program (CUSP), Hartnell College, CSUMB and UCSC are proposing to achieve seven objectives by implementing a series of activities which will lead to broad institutional change resulting in improved Hispanic student enrollment, performance, graduation, and transfer in five targeted STEM pathways. The goals and objectives are based on the needs assessment data and **seven significant gaps/opportunities** effecting academic programs and student success at the partner institutions. These gaps/opportunities, consolidated from above, are summarized here:

- 1) Inadequate and inconsistent pathways in STEM majors must be replaced with articulated, streamlined pathways that prepare students for the next level and ensure successful transfer.
- 2) Articulation and transfer agreements must be concluded and/or updated to support each targeted program and a process initiated to ensure ongoing support for program development.
- 3) Serious academic/structural obstacles to persistence, retention, transfer and successful student performance outcomes through academic support services and hands-on learning.
- 4) Student support services must be improved, integrated across institutional borders and made widely accessible for STEM students to overcome obstacles and reduce dropouts.
- 5) Faculty and staff training must be collegial, centered on student performance in STEM courses, and include high school teachers to improve college readiness of first-time freshmen.
- 6) Technical support for Accuplacer, key data collection and analysis must be made available.
- 7) The partner institutions must advance sustainability and capacity building for key hands-on learning and support activities that support student success both in and outside the laboratory.

These represent more than simply *significant* problems, they are *systemic* problems. To specifically address these problems, the project's design is summarized here:

Project Design Overview

Overall Goals – to improve enrollment and transfer in STEM; implement seamless pathways.

Goal 1 – increase the number of Hispanic and low income students attaining degrees in STEM;

Goal 2 – to develop model transfer and articulation agreements between Hartnell and two 4-year universities in targeted STEM fields.

Goal 3 – to enable more data-based decision-making by collecting or obtaining, analyzing, and using high-quality and timely data, including data on program participant outcomes, in accordance with privacy requirements.

Target – Identified, key STEM programs; academic/student support structures; faculty training.

How – Create a seamless, articulated pipeline with activities and a support structure integrated among three educational levels to increase the number of Hispanic and low income students transferring and attaining degrees in STEM

Methods (activities) – Five articulated STEM pathways in Biology, Marine Science, Engineering, Computer Science, and Physics; model transfer agreements; collaborative research opportunities for faculty and students; regional research symposium; university tours; supplemental instruction; expanded tutoring services; living/residential learning communities; paid internships; faculty and staff training; teacher externships; high school student engagement; improved data collection; and evaluation.

Support – updated laboratory infrastructure to support learning and success; leveraging existing personnel and infrastructure; technicians to support programming and data analysis; collegial faculty and staff training.

The **measurable objectives** and **outcomes** to improve Hispanic and low income student enrollment, persistence, retention, transfer, graduation, performance, and success in STEM are:

Objective 1: To increase the number of Hispanic and low-income students graduating with degrees in the fields of science, technology, engineering or mathematics by developing five articulated STEM pathways in Biology, Computer Science, Engineering, Marine Science, and Physics that will result in a 25% increase in STEM majors and a 50 percent increase in the number of students receiving STEM degrees over 3 years, based on an established baseline.

Objective 1 Outcome: Using current number of STEM majors and degrees awarded, the project will increase STEM majors by 135 students, and STEM degrees to 45 awarded by year three of the project.

Objective 2: To increase the number of Hispanic and low-income students who are transfer-ready from Hartnell College to four-year institutions by 50 percent over 3 years in the targeted areas of Biology, Computer Science, Engineering, Marine Science, and Physics based on an established baseline.

Objective 2 Outcome: At least 15 students from the initial cohort will transfer to CSUMB and UCSC in the targeted STEM fields within the first three years.

Objective 3: To increase success of Hispanic and low-income students in key gateway math and science courses (Math 201, Arithmetic; Math 121, Elementary Algebra; Biology 1, Fundamental Biological Concepts; Chemistry 1A, 1B, General Chemistry). Success rates (measured by a grade of “C” or above) will be increased by 25 percent based on an established baseline.

Objective 3 Outcome: Success rates in basic skills mathematics will increase from 55 percent to 70 percent; Biology from 46 to 58 percent; and in Chemistry from 46 to 58 percent.

Objective 4: To develop model transfer and articulation agreements between Hartnell College and its university partners, Cal State University Monterey Bay and University of California, Santa Cruz, in the fields of Biology, Computer Science, Engineering, Marine Science, Physics.

Objective 4 Outcome: Model articulation and transfer agreements in the five targeted pathways will be in place by the end of project year two.

Objective 5: To implement training for 40 STEM teachers and faculty who will complete at least two training courses, and one research project or externship. Ninety percent of participating faculty will integrate one or more new methodologies into their courses.

Objective 5 Outcome: 40 STEM teachers and faculty will have completed requisite training, and 36 will have implemented at least one new or updated methodology into their STEM course(s).

Objective 6: To implement technical support and improve the accuracy of assessment and placement by fully programming Accuplacer and implementing validation methodologies with a minimum 90 percent confidence level.

Objective 6 Outcome: Data will be collected and assessed on 100 percent of participating student, faculty, and teachers.

The achievement of these measurable objectives and outcomes will produce the following **deliverables**:

- Five articulated pathways and course sequences in Biology, Computer Science, Engineering, Marine Science, and Physics;
- Model articulation and transfer agreements between Hartnell College, CSUMB and UCSC;
- Data on student enrollment, performance, transfer, and success;
- Faculty training materials; faculty training classroom application samples;

- Student-Faculty Research Symposium results;
- Student research projects and results;
- Faculty mentor program design;

(ii) **The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.** The design of Hartnell College's proposed project is directly based on the needs assessment data presented earlier, including the identified gaps in STEM curricula and structural weaknesses in programs supporting student success in STEM courses. Based on this institutional analysis, Hartnell's proposed project will meet these identified needs to improve student enrollment, performance, transfer, graduation, and success in STEM courses and majors per the table below:

How the CUSP Project Design will address the needs of targeted students	
Need	How addressed
The need to increase enrollment, transfer, and graduation in STEM majors	<i>Articulated pathways in five high growth STEM programs; Streamlined transfer.</i>
The need for more Hispanic and low income students to successfully complete gateway mathematics and science courses	<i>Supplemental instruction; tutoring; faculty training; links to academic support programs like MESA.</i>
The need to provide academic support structures that address the needs of Hispanic and low income students in STEM courses	<i>Supplemental instruction; tutoring; faculty mentors; aligned and articulated curriculum; STEM Research Symposium.</i>
The need to ensure effective and current program content delivering learning outcomes	<i>Updated and upgraded STEM laboratories; improved STEM study spaces.</i>
The need for internships that provide adequate support, career awareness, and an effective learning experience	<i>Internships will be developed with industry and STEM research institute partners</i>
The need for improved student services support structures	<i>Learning communities; living learning communities at the universities; counseling;</i>

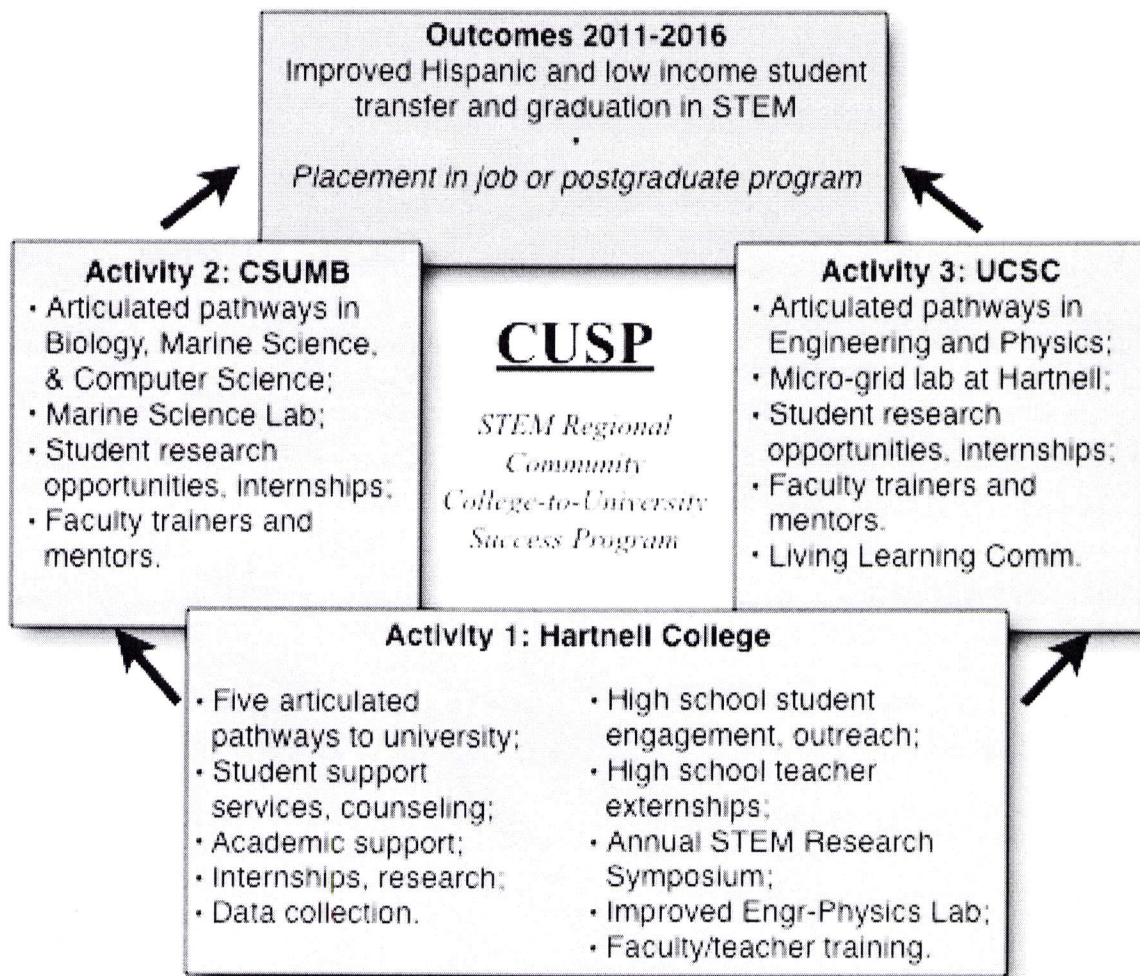
The need for better-prepared high school students in STEM subjects	<i>High school teacher externships; high school engagement at Hartnell's NASA Aeronautics lab.</i>
The need to develop STEM-specific faculty training	<i>Participation in STEM professional conferences; collaborative research;</i>
The need to fully implement Accuplacer and develop reliable validation methodologies	<i>Technician support, improved assessment, placement; improved data and evaluation</i>

Basis of success. Hartnell College has developed objectives, strategies, activities and implementation plans that are informed by research so as to ensure success for Hispanic and low income students in targeted STEM programs. For example, the project team carefully examined the work of the National Survey of Student Engagement (NSSE, 2010)¹³, a national project to better understand the factors that affect student success and failure; and the Building Engagement and Attainment of Minority Students (BEAMS, 2008)¹⁴ project – a multiyear joint initiative that recommends student success initiatives be effectively *integrated* with each other and must relate directly to mission and goals. A more complete discussion of the knowledge used to support this project based on research and effective practice is presented under section 3(iii).

Project design model. The graphic below depicts the Regional STEM Community College to University Success Program:

¹³ National Survey of Student Engagement. 2010. *Major differences: Examining student engagement by field of study—annual results 2010*. Bloomington, IN: Indiana University Center for Postsecondary Research. Available: <http://nsse.iub.edu/>

¹⁴ Del Rios, Melissa, and Leegwater, Lacey. 2008. *Increasing Student Success at Minority-Serving Institutions: Findings from the BEAMS Project*. Institute for Higher Education Policy. 2008. Available: <http://www.ihep.org/Publications/publications-detail.cfm?id=96>



3. Quality of project services (15 Points)

Reader's note: in the application instructions, the first two sub items from 2. *Quality of Project Design*, were repeated verbatim here:

- (i) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.
- (ii) The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

Instead of repeating responses from above, we have selected an appropriate sub item that was in the same spot in a previous application package that we feel supports this item more effectively.

(i) The quality and sufficiency of strategies for ensuring equal access and treatment for eligible project participants who are members of groups that traditionally been underrepresented based on race, color, national origin, gender, age, or disability.

As a Hispanic Serving Institution, Hartnell College is extremely experienced at reaching out to, enrolling, and supporting members of special and protected groups. A compelling reason for developing this application, in fact, is to ensure equal access for students who are members of special populations. Hartnell College will ensure that individuals who are members of special populations will not be discriminated against in this HSI STEM Articulation Program project based on their status by:

- Reviewing and updating, as needed, the College's non-discrimination policies;
- Reviewing and updating College hiring practices and equal employment guidelines;
- Integrating non-discrimination training into faculty professional development activities;
- Linking with programs that promote access and success of special populations, including EOPS, MESA, Disabled Students Programs and Services (DSPS), and others;
- Encouraging input and feedback from all campus stakeholders;
- The hiring of project staff who are bilingual and/or experienced in working with underrepresented, low income students and their families;
- Encouraging broad participation and an open and welcoming campus community.

According to data generated by the Hartnell College 2005 Accreditation Student Opinion Survey, students report that the Hartnell is generally effective in promoting student diversity and in maintaining a positive campus climate/environment for students.

Number of students impacted. This project will have a far reaching impact across three postsecondary institutions and a large high school district. The potential number of students – 63 percent of whom are Hispanic and 65 percent low income at Hartnell – impacted by the proposed project are summarized in the table below. Students at Hartnell's feeder high schools are 60-90 percent Hispanic and 60-98 percent low income (California Department of Education, 2011).

Program Activity/Strategy	Students Impacted
High school students via engagement activities (SEMAA, other outreach)	625 per year
Hartnell College STEM majors (545 + 25% increase)	680 STEM majors
Hartnell students enrolled in STEM courses upgraded in this project	1,000 per year
CSUMB students enrolled in targeted STEM pathway majors	380 STEM majors
UCSC students enrolled in targeted STEM pathway majors	908 STEM majors
<i>Total students impacted by this project, annually</i>	<i>3,593</i>

(ii) The extent to which the services provided by the proposed project are appropriate to the needs of the intended recipients or beneficiaries of those services.

Based on the needs assessment presented earlier, including the identified gaps in STEM programs and structural weaknesses in programs supporting student enrollment and transfer in STEM majors, Hartnell College will develop, implement, and institutionalize the services detailed below. These services will be divided into six specific areas supporting Hispanic and low income student enrollment, transfer, and success in STEM courses and majors (details follow this overview):

STEM Regional Community College-to-University Success Program An HSI STEM Articulation Program <i>Overview of Program Services</i>	
<i>(ii)a. Articulated STEM pathways – sample pathways.</i> <ul style="list-style-type: none"> - Biology - Marine Science - Engineering - Computer Science - Physics 	<i>(ii)b. Engaging and integrating students into college-university STEM –</i> <ul style="list-style-type: none"> - Engagement with HS students through SEMAA NASA Aerospace Academy Lab - High school teacher externships - Regional Research Symposium - Student research internships

<p>(ii)c. Enhanced academic support –</p> <ul style="list-style-type: none"> - Supplemental Instruction - Tutors - Faculty mentor training - Faculty-student mentors - Faculty training 	<p>(ii)d. Enhanced student support –</p> <ul style="list-style-type: none"> - Living learning communities - Counseling - Improved, streamlined transfer
<p>(ii)e. Upgrading and updating STEM collaborative learning spaces</p> <ul style="list-style-type: none"> - Hartnell laboratory improvements in Engineering-Physics laboratory - STEM support labs and study lounges - CSUMB Marine Science Laboratory - UCSC Micro-grid and Alternative Energy Laboratory at Hartnell's Alisal Campus 	<p>(ii)f. Capacity building –</p> <ul style="list-style-type: none"> - Endowment to sustain internships and other STEM services - Data collection and evaluation

While labeled “services,” these represent structural changes that will support improved STEM enrollment and success far beyond the grant-funded period. **Project services detail.** The services/structural changes proposed in this HSI STEM Articulation Project are:

(ii)a. Articulated STEM pathways – the project will finalize and implement articulated pathways in five STEM majors tied to high growth, high wage careers. Samples of these pathways, one for each targeted major linked to the transfer destination from Hartnell College, are shown below:

Biology Bachelor of Science Degree Program

(General Biology shown. Additional options will include Pre-Med, Teacher Preparation)

Freshman Year – Hartnell College	
<u>Over Two Semesters:</u>	
• BIO 1 Fundamental Biological Concepts	• BIO 2 General Zoology
• BIO 3 General Botany	• CHM 1A General Chemistry I
• CHM 1B General Chemistry II	• MAT 13 Elementary Statistics

Sophomore Year – Hartnell College

Over Two Semesters:

- MAT 3A Analytic Geometry and Calculus I • CHM 12B Organic Chemistry II
- CHM 12A Organic Chemistry I • PHY 2B College Physics II
- PHY 2A College Physics I OR
- OR • PHY 4B General Physics/Electricity, Magnetism
- PHY 4A General Physics/Mechanics
- Summer Internship

Junior Year – California State University Monterey Bay

Over Two Semesters:

- BIO 300 Issues in Biology • BIO 311 Genetics
- BIO 340/L Ecology with Lab • BIO 345/L Marine Biology with Lab
- ENVS 349S Natural History Interpretation Service Learning • Upper-Division Electives

Senior Year – California State University Monterey Bay

Over Two Semesters:

- BIO 490 Biology Capstone • BIO 497 Capstone Independent Study
- ENVS 355/L Environmental Monitoring with Lab • ENVS 332/L Intro to GIS/GPS with Lab
- ENVS 470 Marine Conservation Biology • Upper-Division Electives

Computer Science Bachelor of Science Degree Program

(Core major requirements shown. Emphasis options will include Visual Design, Interactive Media and Game Design, Web Design and Development, and Digital Animation)

Freshman Year – Hartnell College

Over Two Semesters:

- CSS 43 Computer Systems and Info Tech OR CSS90/LBT Internet Literacy
- CSS 25 Multimedia Integration
- CSS 29 Programming for Multimedia OR CSS 1 Intro to Computer Science and Programming
- CSS 2A Object Oriented Planning OR CSS 6 Programming in Visual Basic

Sophomore Year – Hartnell College

Over Two Semesters:

- CSS 3 Computer Architecture and Assembly Language
- MAT 16 Finite Mathematics OR MAT 2 Calculus for Managerial Life and Social Science
- MAT 24 Trigonometry
- MAT 25 Pre-Calculus
- Summer Internship

Junior Year –California State University Monterey Bay

Over Two Semesters:

- CST 201/L Media Tools Lecture and Lab
- CST 236 Computing for Digital Artists
- CST 300/L Major ProSeminar Lecture and Writing Lab
- CST 400 Technology and Information
- Major emphasis courses/electives (4-8 units)

Senior Year – California State University Monterey Bay

Over Two Semesters:

- CST 361S Technology Tutors Service Learning
- CST 373 Ethics in Communication and Tech
- CST 400 Senior Capstone Project Planning
- CST 401 Capstone Lab
- CST 496 Senior Capstone Project Advising
- Major emphasis courses/electives (4-8 units)

Sustainable Energy and Power Engineering Bachelor of Science Degree Program

(Note: courses numbered with “XX” are being developed)

Freshman Year – Hartnell College

1st Semester:

- MAT 3A Analytic Geometry & Calculus
- CHM 1A General Chemistry 1
- EGN 1 Intro to Engineering
- EGN XX Sustainability Engineering Practice
- EGN 2 Engineering Graphics / CAD

2nd Semester:

- MAT 3B Analytic Geometry & Calculus II
- EGN XX Renewable Energy Sources + Lab
- PHY 4A General Physics/Mechanics
- EGN XX Engineering Project & Systems Management

- Summer Internship: Naval Post Graduate School, NASA Ames Research Center, Monterey Bay National Marine Sanctuary, or Big Sur Land Trust, UCSC

Sophomore Year – Hartnell College

<u>3rd Semester:</u> <ul style="list-style-type: none"> • EGN 8 Engineering Statics • MAT 3C Analytic Geometry, Calculus 3 • PHY 4B General Physics, Electricity & Magnetism • EGN 45 Special Project in Power Engineering 	<u>4th Semester:</u> <ul style="list-style-type: none"> • EGN 6 Circuit Analysis & Sustainable Power Engineering • CSS 4 Intro to Scientific Engineering Programming • MAT 5 Differential Equations • PHY 4C General Physics/Waves, Heat, Light & Modern Physics
<ul style="list-style-type: none"> • Summer Internship: Sustainable Living Center & Laboratory (UCSC) 	

Junior Year – University of California, Santa Cruz

<u>Over 3 Quarters:</u> <ul style="list-style-type: none"> • EE101 Introduction to Electronic Circuits • EE81C Tech. Innovation & Environ. Challenges • EE175 Energy Generation & Control • EE181J Renewable Energy Sources in Practice (Micro-grid Lab) 	
<ul style="list-style-type: none"> • EE1011 Introduction to Electronic Circuits Lab • EE103 Signals & Systems • EE175L Energy Generation & Control Lab 	
<ul style="list-style-type: none"> • Summer Internship: Naval Post Graduate School, NASA Ames Research Center or UCSC SEED program laboratories 	

Senior Year – University of California, Santa Cruz

<u>Over 3 Quarters:</u> <ul style="list-style-type: none"> • EE176 Energy Conversion & Control • EE177 Power Electronics • EE123A Power Engineering Design Project I 	
<ul style="list-style-type: none"> • EE176L Energy Conversion & Control Lab • EE177L Power Electronics Lab • EE123B Power Engineering Design Project II 	

Marine Science Bachelor of Science Degree Program

Hartnell College to California State University Monterey Bay

CSUMB is currently developing the core and major courses for this new major. Hartnell will assemble, adapt, and/or create articulated lower division courses as part of the project.

CSUMB's BS in Marine Science will be a well-rounded and multi-disciplinary program carefully designed to take full advantage of the unique variety of marine environments available for study in the Monterey Bay National Marine Sanctuary. Introductory lecture and laboratory courses at Hartnell in general oceanography and marine biology will be followed, after transfer, by intermediate-level courses in marine ecology, marine monitoring techniques, and statistical applications in marine science. The most advanced level of the program will be composed of specialized courses in geological, chemical, physical, and biological oceanography. The program will culminate in a student's choice among several capstone sequences.

Physics Bachelor of Science Degree Program

(General Physics shown. Additional options: Applied Physics, Astrophysics, Teaching)

Freshman Year – Hartnell College

Over Two Semesters:

- PHY-4A General Physics/Mechanics • PHY-4B General Physics/Electricity and Magnetism
- CHM-1A General Chemistry I • MAT-3A Analytic Geometry and Calculus I
- MAT-3B Analytic Geometry and Calculus II

Sophomore Year – Hartnell College

Over Two Semesters:

- PHY-4C General Physics/Modern Physics • MAT-3C Analytic Geometry and Calculus III
- MAT-5 Differential Equations • CHM-1B General Chemistry II
- CSS-4 Intro to Scientific Programming
- Summer Internship

Junior Year – University of California, Santa Cruz

Over 3 Quarters:

- Physics 105 Mechanics
- Physics 116C Mathematical Methods Physics
- Physics 134 Physics Advanced Laboratory
- Physics 110A Electricity, Magnetism, Optics
- Physics 112 Thermodynamics and Stat. Mech.
- Physics 110B Electricity, Magnetism, Optics
- Physics 11 The Physicist in Industry

Senior Year – University of California, Santa Cruz

Over 3 Quarters:

- Physics 195A Senior Thesis Research
- Applied Physics Elective
- Physics 195B Senior Thesis Research
- Applied Physics Elective

Model transfer and articulation agreements – Hartnell will develop model STEM transfer and articulation agreements with both of its four-year institution partners on this cooperative proposal: California State University, Monterey Bay and the University of California, Santa Cruz. These agreements will align curricula in all five targeted STEM majors, discussed above. As can be seen in the draft presentation of the five pathways, basic work on articulation has already been initiated by the partner institutions. In addition, Hartnell has limited articulation and transfer agreements in place and enjoys a solid working relationship with both universities. Hartnell College and its partners understand the limitations of articulation and transfer agreements (Roska, 2008).¹⁵ Findings from a major articulation and transfer study in Florida (Stewart, 2009) lend support to the effectiveness of community colleges in preparing students for upper-division undergraduate coursework, but that transition for some is not

¹⁵ Roska, J., Keith, B. 2008. Credits, Time and Attainment: Articulation Policies and Success After Transfer. Educational Evaluation and Policy Analysis. September 2008 vol. 30 no. 3, p 236-254.

seamless, suggesting the need for collaboration among universities and community colleges.¹⁶

While articulation and transfer agreements are essential starting points, quality programs and a system of support will ensure student success to the maximum extent possible.

(ii)b. Engaging and integrating students into college/university STEM – Based on the literature references supporting the idea of integrating STEM support services, the project will implement integrated services that will facilitate students moving from high school to community college, and community college to university. These services include:

⑨ **Engaging high school students by linking to Hartnell's NASA Aerospace Academy and**

Lab: The NASA SEMAA Project (Science, Engineering, Mathematics, Aerospace Academy) is an innovative K-12 educational endeavor that captures the interest of underserved and underrepresented youth in STEM. Highly qualified program staff rigorously implement SEMAA Curriculum Enhancement Activities, as well as implement other NASA educational content materials, Extended Learning Activities, field trips, and family services. An integral part of the SEMAA project is the Aerospace Education Laboratory (AEL). The AEL is a state-of-the-art classroom with 10 workstations. The AEL and classroom space are based at Hartnell's new Center for Advanced Technology located in the heart of the target population. The program will serve 625 K-12 students per year and will strengthen the STEM pipeline for Latino, female, and other low income youth throughout the community. Links to the AEL and SEMAA program will also support high school STEM teacher training.

⑨ **High school teacher externships:** High school STEM teachers will be able to participate in summer externships. These placements will offer teachers the opportunity to work in challenging and exciting work placements appropriate to their curriculum and professional

¹⁶ Stewart, Elizabeth Steinhart. "A course-based model of transfer effectiveness of community college students transferring to a large, urban university" (2009). *Theses and Dissertations*. Paper 35. Available: <http://scholarcommons.usf.edu/etd/35>

interest for a 5-8 week period during the summer. Placement sites will include research laboratories at CSUMB and UCSC, NASA Ames Research Center, Naval Postgraduate School, USDA Research Center, and industry sites. Through externships, teachers will –

- See math and science principles applied in laboratory and everyday industry settings;
- Be exposed to cutting edge technology and state-of-the-art equipment and practice;
- Experience the culture of today's workplace or university lab, one that emphasizes collaborative teamwork, critical thinking, global perspectives, and multimedia skills.

Externships will be another tool in the integration of STEM academic and support services that will improve classroom instruction and assist teachers in encouraging their students in the pursuit of higher education in STEM.

- ⑨ **Regional Research Symposium:** Hartnell and university students and faculty will present an annual STEM Regional Research Symposium. Students selected will be assigned to work under the supervision of a faculty and/or graduate student mentor on a research project over two semesters. Students will be provided tutoring, opportunities to attend professional conferences and STEM-related events, and obtain information about STEM careers. At the symposium, students and faculty will present the results of their research. Students will use 36"x48" posters to present their work. The Symposium will have a different theme each year and will rotate locations between the three participating postsecondary institutions. The event will feature guest speakers, STEM demonstrations, and recognition in addition to student presentations. The Symposium will enable Hartnell students, in particular, to work with university STEM faculty and upper division or graduate students.
- ⑨ **Student research internships:** all students enrolled in articulated pathways will have access to paid STEM student research internships. Students will work with scientists or engineers on

projects related to the research programs at UCSC or industry partner sites, such as long time STEM partners NASA Ames Research Center, the Naval Postgraduate School (NPS), USDA Research Center, or Monterey Bay National Marine Sanctuary. Hartnell has placed STEM interns at NPS's Cebrowski Institute for the last five years. Internships will be structured and students will be evaluated on their performance to earn credit in their chosen STEM major.

The project's proposed endowment will institutionalize and grow this program long-term.

(ii)c. Enhanced academic support – Classroom instruction will improve and academic support services will be seamlessly integrated. According to data collected by Hartnell's academic support personnel, the greater the disconnect between the two, the less likely services will be used by students, be viewed as beneficial, or produce desired results. The key, according to the literature, is to link classroom instruction to application.¹⁷ These services will support that goal:

⑨ **Supplemental Instruction:** Key gateway math courses will be paired with supplemental instruction. Supplemental instruction (SI) is the internationally recognized academic support program offering free, regularly scheduled study sessions for traditionally difficult courses. Three to five 50-minute sessions using collaborative learning methods will be held each week in conjunction with the targeted courses. SI sessions will initially focus on pre-college math and Pre-Calculus (to increase transfer) bilingual Hispanic SI leaders (where needed) as role models who are majoring in math or science and have a low income background.

⑨ **Tutors:** Tutors (including bilingual tutors) will be hired to work exclusively with students in key, gateway math and science courses. Math and science tutors will be placed in targeted classes, not simply in centers or labs isolated from course content and instructional methods.

This will allow the tutors to work closely with the instructors, review course concepts, and

¹⁷ Wiseley, W. Charles, "Effective Basic Skills Instruction: The Case for Contextualized Math." Policy Brief, School of Education, Stanford University, January, 2011. Available: <http://www.edpolicyinca.org>

constantly advertise their hours and availability throughout the semester. Tutors will be hired, trained, and placed through Hartnell's Academic Learning Center.

- ⑨ **Faculty mentor training workshop:** Grounded in the mentoring literature and results of Cal State University Monterey Bay's extensive evaluation work, the Mentor Training Workshop will cover a range of topics, including good mentoring practices, 'teaching research,' setting benchmarks, developing learning outcomes, and working with underrepresented students. The workshop will give participants practical information they can use to enhance their mentoring and will emphasize hands-on, interactive sessions. This annual full-day workshop will help build and strengthen relationships amongst faculty and regional research partners.
- ⑨ **Faculty-student mentors:** Faculty and STEM graduate students, who complete the training outlined above, will serve as mentors paired with Hartnell STEM students. Mentors will help students engage with the coursework; provide professional development through networking and internships; explore future employment opportunities; collaborate on student-faculty research projects; and prepare for continuing education. The mentoring component is part of the project's effort to create as many opportunities as possible to bring STEM students together with faculty and STEM professionals
- ⑨ **Faculty training:** to support improved instructional outcomes, the project will enable faculty from all three postsecondary institutions, as well as upper division students, to attend training and workshops at a number of professional development events. Events targeted for participation will be those focused on improved learning in a STEM topic germane to one of the five majors; on improved Hispanic and low income student success in STEM; or both. Faculty at all partner institutions who attend workshops and conferences will bring new information, methodologies, and practices back to their respective campuses and deliver this

information through local STEM faculty development activities. Conferences and workshops that participating faculty will attend over the term of the grant are noted below, by institution.

Hartnell – Faculty will attend professional development events aimed at teaching and learning; advances in the field; and/or that support Hispanic success in STEM. Faculty will bring training back to campus using a “train the trainer” approach to support STEM reform education. Training events will include those sponsored by:

- American Association of Physics Teachers Conference;
- American Astronomical Society;
- California Association of Chemistry Teachers Conference;
- California Engineering Liaison Council;
- California Science Teachers Association Conference;
- Conference on Student Assessment;
- Curriculum Institute Conference;
- American Assc. of Physics Teachers;
- Math Institute of California Community College League;
- National Association of Biology Teachers Conference;
- National Association of Math Teachers Conference;
- Society for Advancement of Chicanos/Latinos and Native Americans in Science;
- Society for Hispanic Professional Engineers;
- Western Society of Naturalists;

CSUMB – Faculty will attend conferences and training workshops aimed at increasing the number of underrepresented students in STEM disciplines, including:

- Society for the Advancement of Chicanos and Native Americans in Science;
- Council on Undergraduate Research Annual Meeting;
- Northern California Forum for Diversity in Graduate Education;

- American Association of Hispanics in Higher Education;
- Hispanic Association of Colleges and Universities Conference;

UCSC – Faculty and students will attend regional conferences as well as annual, national professional society meetings that will allow students to present results of their work:

- American Society for Engineering Education Annual Meeting;
- American Association for the Advancement of Science;
- Society for the Advancement of Chicanos and Native Americans in Science;

(ii)d. Enhanced student support – A key component of changing the transfer system structure and culture will be the integration of support services for transfer students. The goal is a seamless process as a student moves from one institution to the next; similar to a relay race where, before the baton is passed, the two runners are perfectly in synch. Services that will support such a seamless process, to enable institutions to be in synch, will include:

- ⑨ **Living learning communities:** The project will use learning communities as a way to provide additional support for targeted Hispanic and low income STEM majors. These learning communities will, as much as possible, be sustained after transfer. However, the project will go beyond the traditional learning community concept. For example, at UCSC, Hartnell transfer students will enroll as a cohort and live together in one of the campus science residential colleges and participate in a living-learning science and engineering community. This will give the students not only an academic support structure but also the social and cultural support enabling the smooth transition from community college to university. It is widely accepted that students are more likely to succeed if they have a strong sense of community. This arrangement, plus additional activities provided through existing programs at UCSC, will provide that sense of community.

- ⑨ **Counseling:** A half-time dedicated counselor will work with STEM students at Hartnell College. He/She will support educational and transfer planning, scheduling, and identifying any other issue that may pose an obstacle to success.
- ⑨ **Improved, streamlined transfer:** New transfer agreements will be developed to enable a smooth and quick transfer process. In addition, a concerted effort will be made to help students overcome “transfer shock,” which can result in academic failure. For example, at CSUMB, transfer students will receive an extensive transfer orientation program and be quickly integrated into two key support programs: Undergraduate Research Opportunities Center, a cross-campus center that trains, supports and engages students in STEM research; and MBACE, which provides student-centered support services to attract a diverse group of students into computer science. Together, these programs can provide academic and social support that are essential to academic success.¹⁸
- ⑨ **Leveraging existing programs:** To further support STEM student transfer, this project will link with and leverage activities under the College’s other Hispanic and low income student support and college success programs, including Hartnell’s award-winning Mathematics, Engineering, and Science Achievement (MESA) program, the Academy for College Excellence (ACE) program, and the Extended Opportunity Program Services (EOPS). Tight coordination will ensure that the project will leverage funds, support all project objectives, and reduce any duplication of services.

(ii)e. Upgrading and updating STEM collaborative learning spaces – Science faculty at Hartnell College state that courses with laboratory sections increase enrolment, retention, and success. As a result, labs increase overall success for STEM courses. It has been corroborated in

¹⁸ Rhine, Tammy; Milligan, Dawna; Nelson, Lynne. *Alleviating Transfer Shock: Creating an Environment for More Successful Transfer Students*. Community College Journal of Research and Practice. Volume 24, Issue 6. 2000. Pages 443-453.

the literature (Freedman, 1996), that hands-on laboratory programs lead to improving student attitudes toward science and increasing student achievement levels in STEM, especially for students from diverse backgrounds.¹⁹ As cited under gaps and weaknesses section earlier, the STEM programs targeted through this proposal need updated or upgraded laboratory equipment as summarized here and detailed below: At Hartnell, the Engineering-Physics laboratory equipment needs to be upgraded as much of it is over 20 years old. The Hartnell College 2005 Student Opinion Survey validated this need; at CSUMB, the Marine Science program is new and thus needs a laboratory to support student instruction; and at UCSC, the Micro-Grid and Alternative Energy Laboratory is both new and cutting edge.

Faculty believe upgrading laboratory equipment will have a positive impact on attracting and retaining new students and in retaining current STEM majors. The list of equipment and materials in this proposal complements existing supplies as well as further helps to modernize and enhance instruction (see Budget Narrative). The rapid changes in technology and the nature of STEM fields of study require continual improvement. This means acquiring equipment that will support effective teaching and learning and result in students with skills qualifying them to work in industry, education, or research.

- ⑨ **Hartnell laboratory improvements in Engineering-Physics laboratory:** improvement and upgrades to equipment in the Engineering-Physics Laboratory will support lower division courses and student preparation for transfer in targeted pathways with UCSC, Power Engineering. Requested equipment includes: Teaching tensile testing system; Solar Wind Turbine; X-Ray Diffraction System; and an Inverted Materials Science Microscope.

¹⁹ Freedman, Michael P. Relationship among laboratory instruction, attitude toward science, and achievement in science knowledge. *Journal of Research in Science Teaching*. Volume 34, Issue 4 Pages 343-357. April, 1997.

- ⑨ **STEM learning support labs and study lounges:** several collaborative learning spaces in Hartnell's Merrill Hall need upgraded infrastructure, including wiring, cables, partitions, study carrels, electrical and data drops, paint, and carpeting. These spaces are utilized by STEM students completing assignments or research as well as by programs, like MESA.
- ⑨ **STEM library and learning support materials:** will support student transfer preparation in all five targeted majors. Support materials will include: hard copy and software library and reference materials; software lab materials; online STEM databases; small laboratory equipment (computers, power kits, testing equipment, and assorted lab kits).
- ⑨ **CSUMB Marine Science Laboratory:** No major equipment is needed, but the project will support internship and undergraduate research supplies for the Marine Science Lab at CSUMB. These research supplies will include: computer boards with Field Programmable Array (FPGA) capability; pipetmen; land surveying equipment; bird identification software; field gear; GIS handheld systems; lab coats; safety equipment; high-resolution imaging software; digital camera; total station; water baths; respirometry chambers; habitat modeling software; Powerlab software; and Autoclave.
- ⑨ **UCSC Micro-grid and Alternative Energy Laboratory:** Hartnell and UCSC have entered into a unique and exciting partnership in which Hartnell is providing land at its Alisal campus in Salinas, CA for UCSC to construct an Alternative Energy Laboratory featuring a micro-grid and test bed facility. This lab supports the Engineering major targeted for articulation through this proposal. The Alternative Energy Lab will provide a real-world student training center on new experimental energy technologies. This facility will be a combination training center for students to install and maintain technology systems as well as participating in research to develop new energy generation systems. The project's laboratory

courses will be integrated into the test-bed and the courses articulated at Hartnell and UCSC.

The facility will support undergraduate learning as well as faculty/teacher training. The classroom, lab, and data center for the facility will be housed in Hartnell's new Center for Advanced Technology; a 40,000 square foot building that will house all technology and green programs at Hartnell. This building is also home to the NASA Aeronautics and Aerospace Academy Lab. The equipment needed to fully support the program, student learning, and transfer includes:

- 2, vertical axis 1 KW wind turbines
- 2, horizontal axis 1 KW wind turbines
- 1 KW vertical axis wind turbine and mounting
- 3 KW Solar Panel Array
- Hampden Engineering Solar PV Trainer, H-SPT-AC1
- Homer Energy Microgrid Simulator license
- Computer control panel for renewable energy lab
- 3 KW Solar Panel Array
- MatLab license (five years)
- Microgrid Simulator license (five years)
- 3KW Solar Panel Array
- Mounting/inverters for wind turbines

(ii)f. Capacity building – The project will enable capacity building through: an endowment created by matching and grant funds; and data collection and evaluation to enable data-driven decision making, quicker response times to identifying obstacles, and improved outcomes.

⑨ **Endowment to sustain internships:** The Hartnell College Foundation will raise the matching funds required to create a \$1 million STEM endowment fund. Anticipating an average return of 10 percent, the Foundation will be able to expend 50 percent of earnings for

an amount of \$50,000 per year for student internships. The Foundation has a current endowment of \$5.2 million and received a return of 14.7 percent in the last fiscal year. A strong investment committee works with the Foundation's investment advisor, Smith Barney, to insure compliance with our Investment Policy and to review investment fund manager results on a quarterly basis. The Foundation has an annual audit and for the 2009-10 fiscal year, there were *no findings* reported. The Hartnell Foundation has entered considerable information on GuideStar regarding its operations and finances. An exemplary fund accounting system allows the Foundation to track individual funds and insure that donor restrictions are followed. Hartnell will work toward exceeding the \$1 million goal and anticipate this is just the beginning for a STEM endowment fund to benefit additional students and other STEM activities. The Foundation has a long and strong track record of success. For example, it recently and successfully completed a four year comprehensive campaign in which \$12.2 million was raised for Hartnell College. This has created a strong base of support upon which to build STEM-related endowment funds.

- ⑨ **Data collection and evaluation:** A technician will support ongoing implementation and programming of Accuplacer (discussed earlier). A Data Analyst will support data collection and validation for placement scores. In addition, an external evaluator will conduct ongoing formative evaluation during the project, and a summative evaluation at the conclusion of the project (see 7. *Quality of Project Evaluation Plan*).

Project activity summary by college/university. The services detailed throughout this section will be organized and implemented at each of the project's cooperating partners – Hartnell College, Cal State University Monterey Bay, and UC Santa Cruz – as summarized here:

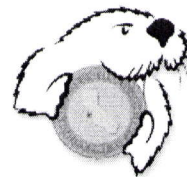
Activity 1: *Improving Hispanic and low income student enrollment, transfer, and success in targeted STEM programs at Hartnell College.*

- Five articulated pathways to university – Biology, Computer Science; Engineering; Marine Science; and Physics;
- Student support services, counseling;
- Academic support – Supplemental Instruction, tutors
- Internships, research opportunities;
- Data collection;
- High school student engagement, outreach;
- High school teacher externships;
- Annual STEM Research Symposium;
- Improved Engineering-Physics Lab;
- Faculty/teacher training.



Activity 2: *Improving Hispanic and low income transfer student success in targeted STEM programs at California State University, Monterey Bay (CSUMB).*

- Articulated pathways in Biology, Computer Science; Marine Science,
- Marine Science Laboratory;
- Student research opportunities, internships;
- Faculty trainers and mentors;
- Guest speakers and lecturers
- Integrate students into STEM activities, like UROC



Activity 3: *Improving Hispanic and low income transfer student success in targeted STEM programs at the University of California, Santa Cruz (UCSC)*

- Articulated pathways in Engineering and Physics;
- Alternative Energy Micro-grid Lab at Hartnell's Alisal campus;
- Student research opportunities, internships;
- Faculty trainers and mentors;
- Guest speakers and lecturers;
- Living Learning Communities.



(iii) The extent to which the services to be provided by the proposed project reflect up-to-date knowledge from research and effective practice. Hartnell's STEM planning team conducted an extensive review of best practices and recent research on effective practice in designing this project. The Team carefully reviewed the recommendations and results of a symposium documenting *Best Practices for Student Achievement in Science, Mathematics, Engineering, and Technology in Two-Year Hispanic Serving Institutions* (2002), a project supported by the National Science Foundation (NSF).²⁰ A review of subsequent literature indicated these recommendations are still valid (see below). Key recommendations that guided the design of this project, based on best practices from two-year HSI colleges from throughout the nation, included:

- ❑ *Improving student confidence by providing networks with peers, faculty, and staff;*
- ❑ *Improving counseling and advising;*
- ❑ *Providing role models/mentors to interact with students;*

²⁰ A National Symposium on Best Practices for Student Achievement in STEM in Two-Year Hispanic Serving Institutions. 2002. National Science Foundation. ERIC Identifier: ED466277. Available: <http://www.eric.ed.gov:80/PDFS/ED466277.pdf>

- ❑ *Ensuring all students have the basic skills to succeed in college math and science courses;*
- ❑ *Offering appropriate STEM pedagogies for student success (i.e. small, interactive classes);*
- ❑ *Providing professional development for STEM faculty;*
- ❑ *Ongoing analysis and evaluation;*
- ❑ *Ensuring availability of appropriate instructional technology;*
- ❑ *Developing strong transfer links to, and instructional linkages with, universities;*

In addition, the project was informed and guided by other research on methods to improve postsecondary Hispanic and low income student achievement in STEM:

- The overall design of the project was influenced by reports from National Survey of Student Engagement (NSSE, 2010)²¹ and the Building Engagement and Attainment of Minority Students (Del Rios and Leegwater, 2008)²² that recommend student success initiatives be effectively *integrated* with each other and must relate directly to mission and goals of the institution. This report updated and reinforced findings from the 2002 NSF Report.
- The design of basic skills courses and support that have application to STEM courses was built on recommendations to link classroom instruction to application (Wisely, 2011)²³
- The idea to integrate student support that includes services outside the traditional academic realm came from a study showing improved academic success of students who receive integrated services (Rhine, Milligan, Nelson, 2000).²⁴ More recent research corroborates the idea that students are more likely to succeed if they have a strong sense of community.²⁵

²¹ *Op. Cit.* NSSE, 2010.

²² *Op. Cit.* Del Rios and Leegwater, 2008

²³ *Op. Cit.* Wisely, 2011

²⁴ *Op. Cit.* Rhine, Milligan, Nelson, 2000

²⁵ Daily, S.B., et.al, *Development of Social Capital to Improve Student Retention*. Proc. ASEE Southwest Section Conference (2007).

- Support for upgrading and updating laboratory equipment in the targeted STEM articulated pathways came from work showing how laboratory instruction can have a positive impact on STEM achievement (Freedman, 1997).²⁶
- The decision to include mentoring, internships, and research projects was based on work (Summers and Hrabowski, 2006)²⁷ that indicates these types of measures improve participation of underrepresented minorities in science. This work also recommended a model that integrates academic and social factors in a successful STEM program.
- Research also documents that internships can help students acquire important skills, including writing; putting abstract concepts into context; improving critical thinking; overcoming perceived shortcomings such as the lack of specific preparation, socialization and acculturation; improving career decision making and perceptions of self-efficacy and reducing reality shock. These benefits can be particularly helpful to Hispanic and other underrepresented college students.²⁸

4. Quality of project personnel (10 Points)

Hartnell College encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability. Hartnell is an equal opportunity employer and is in strong compliance with all state and federal fair employment regulations. As an HSI, Hartnell encourages applications from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, and disability.

²⁶ *Op. Cit.* Freedman, 1997.

²⁷ Summers, Michael F., Hrabowski III, Freeman A., *Preparing Minority Scientists and Engineers*. Science Magazine, 31 March 2006: Vol. 311, no. 5769, pages 1870-1871. Available: http://www.umbc.edu/Meyerhoff/20/pdfs/hrabowski_summers.pdf

²⁸ V.K. Narayanan and Paul M. Olk, "Determinants of Internship Effectiveness: An Exploratory Model," *Academy of Management Learning and Education*, vol. 9, no. 1, 2010, pp. 61-80.

(i) The qualifications, including relevant training and experience, of the project director or principal investigator. The Principal Investigator (PI) for this grant will be Gary Hughes, Associate Vice President for Educational Technology and Library Service at Hartnell College. Mr. Hughes led and coordinated the development of this proposal. His extensive project management experience includes serving as Director and Co-Director on two previous Title V projects, a CCRAA project, and before that as the Director of a Title III grant. Mr. Hughes reports directly to Hartnell College's President, Dr. Phoebe Helm. As PI, Mr. Hughes will supervise manage the work of the Activity Directors on all three partnering campuses. He will manage the budget in coordination with the lead institution, Hartnell College. Mr. Hughes will work closely with the external evaluator in the design and implementation of evaluation activities throughout the project and he will be responsible for meeting all U.S. Department of Education reporting requirements. This position will be 40% full-time equivalent.

Mr. Hughes has 25 years of experience in postsecondary education as a STEM faculty member, department chair, library director, and as an associate vice president. His past experience and current responsibilities directly relate to the stated activity objectives of this cooperative Title V proposal. These include: managing all academic and administrative technology systems; supporting academic program review; compiling persistence and retention data in math, ESL and English; managing library, faculty resource center and technology staff; managing multiple budgets, including several multi-million dollar grants; leading all campus technology planning. Mr. Hughes has successfully developed, implemented and institutionalized programs and services to increase the retention, persistence, and success of Hispanic and low income students. He is a member of the Hispanic Association for Colleges and Universities (HACU); and League for Innovation. Mr. Hughes holds a Bachelor of Arts degree from Pacific University and a Master of Science in Information Systems from the Naval Postgraduate School.

(ii) The qualifications, including relevant training and experience, of key project personnel.

The project and PI will be supported by activity directors at each of the cooperating post-secondary institutions, Hartnell College, Cal State University Monterey Bay, and UC Santa Cruz.

Activity 1 Director, Hartnell College: Dr. Brooke Haag will serve as the Activity Director for Hartnell College's project activities. She is a tenured Physics professor at Hartnell College. Dr. Haag holds a Bachelor of Science degree in Physics from Sonoma State University and a Master's and Ph.D. in Physics from the University of California, Davis. She has been published in the American Physics Society Journals, Monthly Notices of the Royal Astronomical Society, and in Proceedings of the 24th Winter Workshop on Nuclear Dynamics, April 5-12, 2008, South Padre Island, Texas. Dr. Haag's grants management experience includes work on Hartnell's Curriculum Improvement Partnership Award (CIPA II) funded by NASA. The project's purpose was to upgrade curriculum in the College's engineering program. She also serves as the advisor for Hartnell's Physics Club which strives to improve participation of groups underrepresented in science, mathematics, engineering and technology programs.

As Activity Director, Dr. Haag will be responsible for day-to-day management of the services implemented at Hartnell College and with partner high schools. She will coordinate program articulation with partner universities; organize and implement student and academic support services; faculty training; student research internship placement; and laboratory improvements. Dr. Haag will report to Mr. Hughes and will coordinate activities with her counterparts at CSUMB and UCSC. This position will be .6 FTE.

Activity 2 Director, CSUMB: Dr. William Head will serve as Activity Director at CSUMB. He is the founding Director and a Professor in CSUMB's Division of Science and Environmental Policy. He also founded CSUMB's Undergraduate Research Opportunities Center, a program which will provide critical student and academic support through this proposal. Dr. Head is the

Principal Investigator on grants from the National Science Foundation and the U.S. Department of Education targeting low-income, first generation, and underrepresented students. He has over fourteen years of leadership experience in developing higher education programs to serve Hispanic and low-income populations in STEM education. Dr. Head received his Ph.D. in Fisheries/Oceanography from Oregon State University in 1983.

As Activity Director, Dr. Head will be responsible for day-to-day management of the services implemented at CSUMB. He will coordinate articulation with Hartnell; organize and implement student and academic support services; deliver faculty mentor training; assign guest lecturers; coordinate student research internship placements; and laboratory improvements. Dr. Head will work with Mr. Hughes on project activities, and will coordinate implementation of services with his counterparts at Hartnell and UCSC. This position will be .25 FTE.

Activity 3 Director, UCSC: Dr. Michael Isaacson, Professor of Engineering will serve as Activity Director (AD) for UCSC. As Activity Director, he will be responsible for day-to-day management of the services implemented at UC Santa Cruz. He will coordinate program articulation with Hartnell; organize and implement student and academic support services; deliver faculty training; assign guest lecturers; and coordinate student research internship placements. He will also coordinate implementation of the Alternative Energy Micro-grid laboratory at Hartnell's Alisal campus. Dr. Isaacson will work with Mr. Hughes on project activities, and will coordinate implementation of services with his counterparts at Hartnell and CSUMB. This position will be .25 FTE. He will be supported by a project coordinator at UCSC.

Dr. Isaacson is the Narinder Singh Kapany Professor and Co-Director of the Center for Sustainable Energy and Power Systems in the Baskin School of Engineering at UCSC. He received his B.S. in Engineering Physics with highest honors from the University of Illinois at Urbana-Champaign and his M.S. and Ph.D. in Physics from the University of Chicago. He has

served: on the scientific staff in the Biology Division of Brookhaven National Laboratory; as a member of the faculty in the Department of Physics at the Enrico Fermi Institute, University of Chicago; and as a Professor of Applied and Engineering Physics at Cornell University.

Dr. Isaacson has published over 150 peer reviewed articles and book chapters on topics ranging from electron, ion and photon microscopy to nanofabrication of materials. He is a Fellow of the AAAS and was a Sloan Foundation Faculty Fellow. Among numerous awards are the Burton Medal and the Distinguished Scientist (Physical Sciences) Award from the Microscopy Society of America, the Rank Prize in Optoelectronics and the Alexander von Humboldt Senior Scientist Award. He has been the President of the Microscopy Society of America and on the Executive Board of the Engineering Research Council of the ASEE.

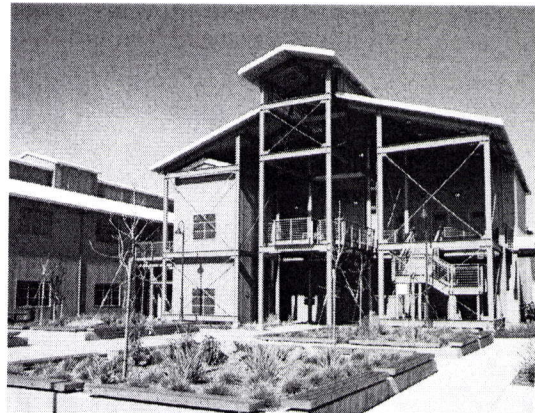
5. Adequacy of resources (10 Points)

(i) The adequacy of support, including facilities, equipment, supplies, and other resources, from the applicant organization or the lead applicant organization.

Hartnell College, Cal State University Monterey Bay, and UC Santa Cruz have extensive facilities and equipment infrastructure in-place to support this project.

Hartnell College facilities, equipment, and resources:

- Center for Advanced Technology (photo) – a new, 40,000 square foot facility at the Alisal campus and home to computer science and engineering programs; smart classrooms, studio classroom, and laboratories; computer laboratories; and student study spaces.



- Merrill Hall – the College’s main campus science center with classrooms, smart classrooms, science and computer laboratories, and office support space; laboratories for chemistry, biology, physics, and engineering.
- Computer Science Laboratories – equipped with student workstations for programming, design, and instruction.
- Multimedia Center –multimedia laboratory equipped with workstations capable of 2D/3D animation; graphic design and computer graphics; 3D modeling, digital video
- Planetarium – equipped with Konica Minolta Mediaglobe.
- Library and Learning Resource Center – a new, 68,000 square foot facility with student study centers; electronic resources; distance learning center; information competency center.
- Learning Skills Center – offers one-on-one instruction in a self-paced learning environment to maximize individual growth. Will support student success in gateway basic skills courses.
- Alternative Energy Micro-grid Laboratory – Hartnell is donating 10 acres of land for UCSC to construct this facility on the Alisal campus.

Cal State University Monterey Bay will utilize the following facilities:

- Chapman Science Center (photo) – home to the University’s Biology, Marine Science, and other science programs it contains classrooms, smart classrooms, and laboratories capable of supporting all program activities.



- Media Learning Center – contains updated computer laboratories with dual-boot iMac computers;
- Undergraduate Research Opportunities Center (UROC) – will provide offices and support space. UROC

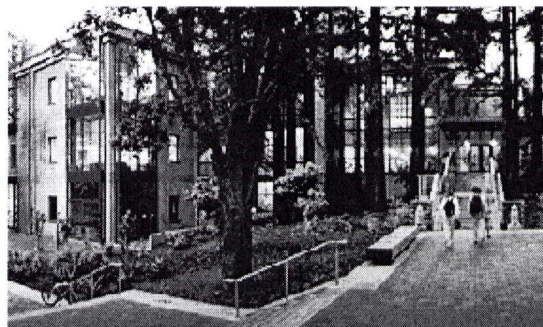
- Tanimura & Antle Family Memorial Library – a 161,000 square foot facility that provides space for support staff, classrooms and auditoria, tutorial space, and group study rooms.

In addition CSUMB will commit faculty research laboratories including:

- Molecular Ecology Lab
- Watershed Institute
- Seafloor Mapping Lab
- Marine Landscape Ecology Lab
- Institute for Applied Marine Ecology
- Scientific Diving Program
- Computer Science and Information Technology research facilities

UC Santa Cruz STEM instructional and research facilities:

- Science and Engineering Library (photo) – offers extensive hard copy and electronic and data base resources to support all STEM academic learning and research activities.



- Center for Biomolecular Science and Engineering Classroom and Laboratory Facilities – including microarray facility; computing clusters; embryonic stem cell and transgenic facility; flow cytometry facility; chemical screening center; genome sequencing center; and mass spectrometry facility.
- Center for Sustainable Energy and Power Systems Classroom and Laboratory Facilities – equipped with laboratories to enable students to explore the societal implications of new renewable energy technologies as well as prepares a new generation of 21st century engineers and scientists to address the problem of more efficient energy use with minimal carbon footprint.
- Center for Thermionic Energy Conversion Facilities – features laboratories and equipment to design, fabricate and characterize direct energy conversion systems that meet certain requirements for efficiency and energy output. It will support the engineering pathway.

- Center for Adaptive Optics Facilities – a National Science Foundation-funded Science and Technology Center focusing on advancing and disseminating the technology of adaptive optics to science, health care, industry, and education.
- Center for Interactive Games and Playable Media Facilities – an off-shoot of the computer science pathway, the center’s computer laboratory supports research on new media applications for games and recreational devices.
- Sustainable Living Center – the primary academic mission is to engage students with sustainability ideas and research through practical experience and the sharing of community based knowledge. This center will provide one of the methods for implementing the living learning community concept discussed earlier.
- Renewable Energy Microgrid (NASA Ames Laboratory) – renewable energy test bed at project partner site in the nearby Silicon Valley, CA.

(ii) The relevance and demonstrated commitment of each partner in the proposed project to the implementation and success of the project. The Regional STEM Community College-to-University Support Program has the strong support of the Presidents of Hartnell College and Cal State University Monterey Bay, and the Chancellor of UC Santa Cruz. This support is evidenced by the commitment of time, faculty, and resources in the development of this proposal. This project speaks directly to the mission of each of the three cooperating postsecondary institutions involved – particularly as it relates to the advancement of science, technology, engineering and mathematics, as well as service to a growing, diverse student population:

- **At UC Santa Cruz**, the mission of the Jack Baskin School of Engineering is to, *“develop and sustain first-rate education and research programs that integrate the fundamental principles and sound practice of science and engineering.”* UC Santa Cruz also advocates for

diversity and inclusion, by creating, *“a climate which consistently advocates an equitable, hospitable, appreciative, safe and inclusive environment, embracing the full spectrum of community members’ contributions.”*²⁹

- **At Cal State University Monterey Bay**, the commitment is clear, *“The campus will be distinctive in serving the diverse people of California, especially the working class and historically undereducated and low income populations.”* The University is also committed to innovation and to building cutting edge STEM programs.³⁰
- **Hartnell College** is committed to providing, *“its diverse communities and student population with equal opportunities for educational access and success.”* Hartnell’s commitment to STEM is to, *“encourage, and support the next generation of scientists and engineers... and provide the kind of environment our students need to succeed as they attend our college and move toward their goal of becoming contributing members of the technological workforce.”*³¹

Beyond these statements of purpose, the three institutions have spent the last six months carefully crafting a proposal that not only reflects their shared vision, but that will improve Hispanic and low income student enrollment, transfer-readiness, transfer, and graduation in an articulated STEM program. The commitment of staff and resources, in addition to support requested in the grant, is further testament to their shared commitment.

(iii) The extent to which the budget is adequate to support the proposed project. All identified budget costs are allowable and necessary to support the grant implementation. The grant activities were determined through the needs assessment planning process to be both necessary and appropriate to resolve identified, critical problems, gaps and weaknesses in STEM

²⁹ UC Santa Cruz, Baskin School of Engineering Mission. Available: <http://www.soe.ucsc.edu/>

³⁰ Cal State University Monterey Bay Ideals. Available: <http://ideals.csumb.edu/vision>

³¹ Hartnell College and Science and Math Institute Mission Statements: www.hartnell.edu/

programs and services at Hartnell College, CSUMB, and UCSC. The budget request is based on the cooperating postsecondary partners' existing facilities and personnel infrastructure as well as on leveraging support from other grants and programs so that every dollar requested will exert maximum value. Funds requested are for items for which there is no other available source of support. With the support of requested grant funds, Hartnell, CSUMB, and UCSC will be able to accomplish the goals and objectives of this project to improve Hispanic and low income student enrollment, performance, transfer, graduation, and career success in STEM.

(iv) The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project. All associated budget costs are reasonable in that they are based on normal costs for Hartnell, its university partners, central California, and the local economy and standard of living. All equipment, supplies and consultants will be purchased using state discounts and/or through a competitive bid process in accordance with procurement policies and procedures. Staff travel costs are based on Hartnell and university partners' travel policies and procedures; all air travel is coach class. Proposed salaries are based on Hartnell and university partners' salary schedules, which are revised periodically to reflect area trends and salaries at comparable colleges and universities. The budget has been designed to leverage existing resources at all three institutions and only request grant funds for services, equipment, and supplies for which no other source is available.

(v) The extent to which the costs are reasonable in relation to the number of persons to be served and to the anticipated results and benefit. Hartnell and its university partners are proposing the development and implementation of services that will deliver systemic change to all three campuses by: improving STEM enrollment, transfer, and graduation for Hispanic and low income students by 50 percent; and significantly enhancing program and support service integration among all three institutions and regional feeder high schools.

The number of students that will be served or otherwise impacted by the project, based on the table presented earlier, is summarized here (figures are for current estimate enrollments):

Type of participating/impacted student	Number impacted
High school students participating in NASA SEMAA lab	625 per year
Hartnell College STEM majors (after year two of project)	680 STEM majors
Hartnell students enrolled in STEM courses upgraded in this project	1,000 per year
CSUMB students enrolled in targeted STEM pathway majors	380 STEM majors
UCSC students enrolled in targeted STEM pathway majors	908 STEM majors
<i>Total students served/impacted by this project</i>	3,593

Using a conservative figure of 3,000 students served or impacted by this project over five years, the total cost per person will be \$2,000, based on a cooperative project budget of \$6 million. This per person cost is *less than the fee for one semester* at CSUMB, which is \$2,442 for 2011-12.³²

The benefits of this project, relative to its cost, could be significant to both individuals and society. Based on information compiled by the U.S. Bureau of Labor Statistics (2010), Georgetown University Center on Education and the Workforce (2010), and the University of Washington (2010),³³ a person earning a Bachelor's Degree can expect: lifetime earnings nearly *twice* as much as a high school graduate; lower rates of unemployment; Improved physical health; much lower rates of poverty.

In addition, college graduates having higher voting rates, increased volunteerism in their communities, and contribute more in taxes to their state and local governments. How likely are graduates from this project to secure the benefits and advantages described? Over the next decade, STEM occupations will provide the sixth largest share of job openings in the economy.

³² Cal State University Monterey Bay Catalog 2011-2012. Available:

<http://catalog.csumb.edu/general-information/tuition/fees/schedule-fees/fall-2011>.

³³ University of Washington. 2010. *What is a college education worth...* Available: <http://www.washington.edu/discover/externalaffairs/pdfs/college-education>

In 2008, STEM occupations accounted for 7.3 million jobs representing 5 percent of all jobs in the U.S. economy.³⁴ These individual and collective benefits do not account for the contribution program graduates will have on filling job openings for STEM professionals and results of work or research in their chosen field.

6. Quality of the management plan (15 Points)

(i) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

Hartnell College will provide the office and service delivery space, administrative and fiscal infrastructure to ensure that the project meets all federal and institutional requirements of prudent management. Hartnell has significant management experience with the Department of Education, and Title V in particular. Hartnell has received Title V program staff site visits and personnel are well-versed in collecting data and managing projects to meet Department requirements and achieve stated objectives.

The project's implementation sequence is clearly laid out in the timeline shown later in this section. The program is designed so that the first two months are set-aside to establish the program and procedures; identify and hire or appoint personnel; and prepare for implementation. The Principal Investigator (PI) will establish monthly joint meetings of the three Activity Directors (Ads), faculty, institutional research staff and technical staff to assure the momentum of the project is maintained. The PI and ADs will make certain that faculty are involved and that staff are full participants. They will ensure participants are notified of meetings and are aware of travel and training opportunities. The project management plan summary follows:

³⁴ U.S. Bureau of Labor Statistics. Occupational Outlook Handbook, 2011. Available: www.bls.gov/oco

Desired Management Outcomes	Strategies to Achieve Management Outcomes
1. Personnel will be managed so there will be team spirit and collaboration in developing internal expertise for the desired synergistic effect. External and internal expertise will be tapped to create and sustain momentum.	Principal Investigator Mr. Hughes will direct dissemination of information about opportunities for participation; assist in developing and improving leadership skills of lead faculty; and assist program staff in the engagement and coordination of external resource personnel and additional participants.
2. Project implementation plans will be adjusted when necessary to achieve greatest impact on, and ensure the project remains fully consistent with, institutional priorities and project objectives. In-course corrections will be managed and progress maintained.	The PI and ADs will ensure effective planning throughout the project by: coordinating and facilitating the managements needs of the project; coordinating with management and planning at the three institutions; convening Advisory meetings; ensuring results of the project evaluation process are reflected in continued operation of the project and institutions.
3. All project staff and participants will be fully and clearly informed on project management policies and procedures. All college personnel and stakeholders, auditors and/or the Department will be provided with policies and procedures upon request.	The PI and ADs will develop comprehensive project guidelines, modifying as needed, in conjunction with administration and staff. The guidelines will specify all policies, procedures, responsibilities, lines of authority, reporting procedures and forms. The guidelines will be distributed to lead faculty, project staff, and key participants.
4. Information about the project will be widely disseminated throughout the	The PI and ADs will develop a cooperative project web site with hyperlinks to share information with and

campus and effective communication will maintain participation and support.	disseminate documents and articles to all participants. Email list-serves will also be employed.
5. The project will be informed by best practices in other, similar HSI projects.	The PI, ADs, and college presidents/chancellor will attend at least one Dept. of Ed. workshop annually.
6. Project management will be closely integrated with meeting Measurable Objectives as well as oversight and administrative responsibilities.	The PI and ADs will work closely with all partner college/university project teams and staff to achieve all Measurable Objectives.
7. The project will stay within budget and Federal funds will be managed according to regulations.	The PI and ADs will manage and monitor the project budget working closely with the Hartnell Business Office. The president has signed assurances that Federal fiscal policies will be followed.
8. The project will be managed so that institutionalization is completed on schedule and there is smooth transition without burden on the college budget	The PI and ADs will oversee implementation of the institutionalization plan and share responsibility for achieving planned outcomes with lead faculty and other key staff, and the Advisory Committee.
9. The project will be integrated within the regular administrative governance and committee structure from inception to institutionalization at each college.	Mr. Hughes will serve as the chief liaison for the project, already understanding fully the project planning process, the relationship of the project to the need, and the structures that facilitate integration
10. The presidents/chancellor and other administrators at Hartnell, CSUMB, & UCSC will stay directly involved and	The PI will regularly participate in leadership council meetings to maintain strong links with top administrators, provide continuous information, and

continuously informed. This is due to the project's planned impact and key role in institutional development.	sustain project support. He will effectively communicate the project's goals, objectives, and achievements to the executive team at each institution.
11. All administrators will support the PI and ADs, recognizing their authority and assisting to mainstream the project for, long-term, impact.	PI and ADs will establish and maintain effective and broad two-way communication channels with all project participants exercising appropriate authority and ensuring continuous monitoring.

The timeline for accomplishing major project tasks and activities is shown below. The project timeline is based on an October 1, 2011 project start date. However, this will be adjusted based on the Department's award notification process.

<u>Timelines for Accomplishing Project Tasks 2008-2010 (Based on a 10/01/11 start date)</u>		
Activities	Who	Timeline (Mo/Yr)
Articulate Biology, Engineering, Physics, and Comp. Sci. pathways	PI, Activity Directors, STEM Faculty, STEM Counselor	Oct/2011-Jun/2012
Articulate Marine Sci. pathway	Activity Directors, STEM Faculty	May-Oct/2012
Begin high school engagement	SEMAA Director, Hartnell AD	Oct/2011
Implement faculty training	PI, Activity Directors	Jan/12-Sep/16
Implement faculty mentor training	CSUMB Activity Director	Jan/12-Ongoing
Deliver counseling and support	STEM Counselor, Hartnell AD	Jan/12-Ongoing
Pair SI with gateway courses	Activity Directors/Science, Faculty	Jun/2012
Install new laboratory equipment	Activity Directors, Mr. Hughes	Jun-Aug/2012
Implement transfer/articulation	PI, Articulation Officers, All Staff	Aug/2012

Begin HS teacher externships	Activity Directors/Science, Faculty	Jun-Aug/2013-16
Convene STEM Symposium	Activity Directors/Science	May/2012-16
Implement research internships	Activity Directors	Jun/2012-2016
Assign guest lecturers, speakers	Activity Directors, Faculty	Aug/2012-2016
Hire, train, place STEM tutors	Academic Learning Director	Jun/2012
Apply Accuplacer, data analysis	Technician, Counseling Director	Jan/2012
Begin formative evaluation	PI, Evaluator, Evaluation Team	Jan/2012

(ii) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project. Hartnell College has extensive experience providing for accountability of expected results and implementing processes for monitoring progress of complex, grant-funded projects. The PI will be responsible for preparing and submitting all reports on the project's progress to the Department. He will work closely with the **project advisory committee** and ADs in gathering information and feedback relevant to gauging project success. The PI, ADs, STEM faculty, the outside evaluator, along with representatives from the advisory board will serve as the **evaluation team** for this project. They will regularly review formative data as well as the summative data used to complete all required reports. They will recommend changes in project implementation, as needed, to achieve all stated outcomes.

(iii) The adequacy of mechanisms for ensuring high-quality products and services from the proposed project. As discussed, the project will be managed by a PI with support from three ADs. These professionals will also be part of an evaluation team consisting of at least seven members. The evaluation team will **use performance information** to improve management and outcomes by: regularly reviewing feedback information from all project activities; updating needs assessment data; reviewing student performance data; reviewing best practices and skills

standards; and other formative and summative data. This information will be used to adjust, expand, update and/or adapt program implementation to better meet the needs of STEM students.

(iv) The extent to which the time commitments of the project director and principal investigator and other key project personnel are appropriate and adequate to meet the objectives of the proposed project.

The three cooperating institutions in this proposal each have extensive experience implementing complex, cooperative, multi-year grants. Successfully managed STEM-related grants include those funded by the U.S. Department of Education (Titles III, V), National Science Foundation, and NASA, among other federal agencies. The partners understand that staffing for a STEM program grant is different from a straight student services grant due to the technical nature of the subject; the requirement for updated technology-equipped laboratories to support instruction; and the need to involve a number of faculty from several STEM disciplines.

The staffing pattern and time commitments supporting this project were based on assessment of the following factors and project needs: coordinating activities at three partnering postsecondary institutions; the current state of STEM program at the three institutions (needs assessment); articulating five STEM programs; achieving stated project outcomes for enrollment, transfer, and graduation of targeted students; the laboratory equipment installation requirements; the staff, faculty, and facility resources already in-place to support the project; the timeline for finalizing, implementing, and measuring project success (60 months); and the services needed by project participants to achieve desired outcomes. The fact the Hartnell College, CSUMB, and UCSC are all within a one hour drive from each other will enhance management efficiency.

After concluding this review, the STEM planning team determined the staffing pattern and time commitments detailed earlier and deemed them are commensurate with the project design, expected outcomes, resources available, and timelines.

(v) A diversity of perspectives will be brought to bear in the operation of the project, including those of parents, teachers, the business community, a variety of disciplinary and professional fields, recipients or beneficiaries of services, or others, as appropriate.

Hartnell, CSUMB, and UCSC will engage a diversity of perspectives on this project through:

- ❖ Assembling a diverse project advisory board representing stakeholders throughout the region;
- ❖ The evaluation process by collecting qualitative formative data will include soliciting input and feedback from stakeholders including students, business/industry, parents, community;
- ❖ The Academic Senates and curriculum committees at each institution who will provide interdisciplinary feedback and counsel. They will be consulted and their input will be required for approval of the articulated pathways and transfer agreements.
- ❖ High school teachers who will be integrally involved through Hartnell's engagement and outreach, the NASA SEMAA program for students, and by participating in externships;
- ❖ Industry and research institution partnerships through internship development, and through input by the industry advisory boards for the targeted STEM programs at Hartnell.
- ❖ Parent outreach and orientation programs and transfer orientation programs. The close proximity of all three institutions to prospective students and families will facilitate parent participation in orientation activities.

7. Quality of the project evaluation. (15 Points)

(i) The extent to which the methods of evaluation are thorough, feasible and appropriate to the goals, objectives and outcomes of the proposed project. The STEM planning team, representing all three cooperating postsecondary institutions have drafted the following evaluation narrative. The project intends to engage an external evaluator by the project start date who will finalize these components.

The evaluation design for this HSI STEM project includes both formative (quarterly process) and summative (annual impact) appraisal of the following to assess effectiveness:

1. Institutional Strategic Plans and the Title V Needs Assessment: Goals, Objectives, Strategies and Performance Measures Developed, Evaluation Plan Design, and Resources Allocated.
2. Implementation of Activities against Objectives and Performance Measures.
3. Evaluation of Project impact against Internal and External campus factors through: a) Data elements and collection procedures from performance measures; b) Formative and summative analyses of project impact on project objectives.
4. Institutionalization of Activity Components: a) Personnel; b) Facilities; c) Articulation; d) Equipment; e) Training/Professional Development; f) Governance; g) Budget processes.

The PI and ADs, under the direction of the Presidents of Hartnell and CSUMB, and the Chancellor of UCSC, and working with the Data Analyst, will refine, implement and supervise internal project evaluation during the five-year project period. The evaluation process will thoroughly measure the progress toward reaching the objectives of the project and the colleges'/university's missions. The evaluation process is designed to make specific recommendations on tasks that need to be adjusted to attain total achievement of goals and objectives of the project.

Measurement of Attainment of Activity Objectives: Hartnell and its cooperating universities have established measurable objectives, identified measurable results, and clearly defined baseline measures. The annual implementation strategy for the project includes specific tasks for collecting data to measure against the baseline data, as well as evaluating tasks for individual strategies and their cumulative impact on the achievement of the objectives.

Quarterly Formative Evaluations: These will occur automatically throughout the project and will provide periodic assurance that objectives are being met and budgets are being properly allocated. In quarterly evaluations, each objective will be measured by the performance

indicators established in the activity narrative. The Narrative provides indicators of cumulative evidence of progress toward project outcomes and impacts on the mission of the college/universities. In determining needed modifications in process objectives and strategies, the PI and the Presidents/Chancellor will consider input from the Advisory Committee (AC) and the external evaluator. Any changes will be documented and discussed with staff, the AC, and as required, the Department.

Annual Summative Evaluations. The annual summative evaluations are formulated to provide cumulative evidence that the project is moving toward the accomplishment of its mission and self-sufficiency. The evaluator, the PI, and evaluation team will work with the Data Analyst to review all evaluations of the project and to insure results are used to improve the operation of the project. The ADs are responsible for monitoring progress toward the individual objectives, and for providing data to appropriate recipients at sequential intervals. Timelines are established in this proposal for sequential tasks and accomplishment of the Measurable Objectives.

External/Internal Evaluation: The PD is responsible for implementing the evaluation plan. The internal evaluation will be conducted under the guidance of the PI. The PI will oversee the Data Analyst in identification and collection of common baselines, determination of appropriate methodology regarding data collection, analysis and interpretation of data. Evaluation data will be reviewed quarterly against objectives by the PI, the AC and external evaluator. The AC will recommend indicated changes or modifications to appropriate committees and the college/universities leadership for action.

As referenced, the cooperating partners will select an external evaluator to manage the evaluation process and plan. The selected evaluator will have experience participating in Title V Cooperatives. The evaluator will report to the PI and the President of Hartnell College, as the lead institution. The evaluator will appraise activity accomplishments, achievement of

objectives and goals, progress towards institutionalization, and grant management performance. In the first year, the evaluator will review and verify baseline measures. Thereafter, the evaluator will provide validation of internal findings and analyses and review project management and the Government Performance and Results Act (GPRA) performance concerns.

Qualifications: The external evaluator selected will have experience with Strengthening Institutions Programs and have been associated with Title V projects. The evaluator will have worked as Evaluators, Program Directors, Activity Directors, and/or project designers/planners/writers. They will have demonstrated knowledge of Federal rules and regulations, evaluation processes and procedures, regional accreditation, articulation, outcomes based curriculum, and training of faculty/staff. The evaluator selected will have extensive experience and knowledge of institutional effectiveness programs.

External Evaluator Responsibilities: The evaluator will make one or more annual site visits to evaluate the progress of the project, meet with key personnel, and attend a meeting of the Advisory Committee. They will also provide extensive help implementing the evaluation plan; analyze progress; make recommendations based review of written records, budgets; provide specific recommendations for improvement; and submit written reports to the PI. They will be continuously available via phone, fax, and email.

(ii) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes. Measurement of Success and Achievement of Goals and Objectives:

The evaluation plan is linked with the College/University Strategic Plans, General Education Outcomes Measures, and the HSI STEM objectives related to the project activities. The impact of the project will be evaluated based on the stated relevant institutional goals and mission of the College/Universities. The data collection and measurement procedures, data elements, and formative and summative evaluations will include both qualitative and quantitative measures.

Data Elements, Collection and Measurement Processes: PI, ADs, faculty, staff and Data Analyst will collect all data and measure success of articulations completed, new programs developed, student services and employee professional development including impact on student learning outcomes, as well as satisfaction of constituencies impacted. Data collection and measurement processes will be reviewed by the project staff, the AC, presidents and evaluator.

Academic Improvement and Student Services Goals: Measurements of enrollments, course and fall-to-fall retention, persistence to graduation, grades, attainment of transfer and other measures of student success goals will be compared to baselines established. Success of cohorts will be measured against success of non-participating student cohorts regarding enrollment, retention, grades, progress toward graduation, transfer, and completion of degrees.

Academic Support and Faculty Training: PI, ADs, faculty, staff and the Data Analyst will collect all data and measure success of increased student enrollment, improved student retention, transfer, and graduation. The evaluator will compare headcount, FTE, and average course load with baselines, fall 2010, or as stated in the objective performance measure.

Formative Evaluation: Quarterly and annual reports and evaluations of measurable objectives and process strategies for each year of the five-year grant period.

Summative Evaluation. Summative evaluations provided by the external evaluator will include final reports to the PI, ADs including objective analyses and conclusions regarding five-year project impact on college/universities missions and institutional Master Plans. Hartnell will comply with the Government Performance and Results Act (GPRA) per the Hispanic-Serving Institutions Science Technology Engineering & Mathematics and Articulation Programs (CDFA No. 84.031C) and U.S. Department of Education indicators.

(iii) The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.

The following chart provides an overview of the data elements, data collection and final measures of project outcomes related to activities and objectives of the proposed project.

Overview of Final Evaluation Process and Components				
Data Element(s)	Data Source	Responsible Person(s)	Final Measure of Attainment	Objectives/ Activities
Number of articulated pathways created from Hartnell to CSUMB and UCSC	Articulation agreements; college/ university catalogs; outreach materials; enrollment numbers; course syllabi.	PI, ADs, Faculty, Counselors, Evaluator	Five articulation agreements will be in-place in Biology, Computer Science, Engineering, Marine Science and Physics; lab equipment installed	Objectives: 1, 2, 4 Activities: <i>(ii)a, (ii)e</i>
Number Hispanic, low income students enrolled in STEM majors; number transfers	Enrollment records; student performance data; transfer records; basic skills and gateway course success rates	PI, ADs, Faculty,	STEM majors will increase by 25% and degrees awarded will increase by 50%; SI, tutoring, and support implemented	Objectives: 1, 2, 3 Activities: <i>(ii)b, (ii)c, (ii)d, (ii)e</i>

Overview of Final Evaluation Process and Components				
Data Element(s)	Data Source	Responsible Person(s)	Final Measure of Attainment	Objectives/ Activities
Number of STEM faculty trained; Training provided	Class rosters; class; syllabi/schedules pre-/post-tests	ADs, Faculty, PI, Advisory Committee, Evaluator	40 Faculty trained 90% of faculty show integration of one or more new methodologies	Objectives: 1, 2, 3, 5 Activities: <i>(ii)b, (ii)c</i>
Number of laboratory facilities supporting STEM programs updated/ improved	Equipment purchased and installed; catalog listings; student enrollment figures	PI, ADs, Faculty	One new laboratory implemented – Alternative Energy/ Micro-grid; two laboratories updated, Marine Science, Engineering-Physics	Objectives: 2, 3 Activities: <i>(ii)e</i>
The application of data collection methodologies and Accuplacer	Enrollment records; student performance data; tracking data; course success rates and outcomes data	PI, Evaluator, Data Technician/ Researcher	Accuplacer and validation methodologies will be implemented with a minimum 90 percent confidence level.	Objective: 1, 2, 3, 6 Activities: <i>(ii)f</i>