SECOND QUARTERLY REPORT

April 1 - June 30, 2006

CURRICULUM IMPROVEMENT
PARTNERSHIP AWARD II PROGRAM

Hartnell College
Name of Institution

Dr. Pimol Moth and Mr. Lin Sten
Principal Investigators

CIPA II Program

Year 1

2nd Quarterly Report --April 1 - June 30, 2006

1.0 Name of Institution: Hartnell College

2.0 Names of Co-Principal Investigators: Dr. Pimol Moth and Mr. Lin Sten

3.0 Name of CIPA II Project: Engineering Program Upgrade with Project Management

4.0 Project Activities

Engineering Curriculum Upgrade

In the first quarter the new course curriculum document was prepared for Engineering 45--Special Projects, which will focus on engineering projects of interest to NASA and the aerospace industry and which will include project management. As previously reported, on March 3 this document was presented to the Technical Review Board, which offered their useful comments to the co-principal investigators. After revision, the Engineering 45 Special Projects curriculum document was filed with the Curriculum Committee secretary on April 14.

Partnerships

See the first two items under Meetings and Trips below.

Meetings and Trips

On April 4 our CIPA II team visited two of our partners at University of California at Santa Cruz (UCSC). Firstly, Dr. Charlene Frontiera and Mr. Andy Newton met with Dr. Michael Isaacson, Dean of Jack Baskin School of Engineering, regarding the involvement of Hartnell College in the existing National Science Foundation (NSF) supported project DEEP (Developing Effective Engineering Pathways) and the possibility of establishing a Hartnell Engineering Academy at the Jack Baskin School of Engineering.

Secondly, on the same day at the Center for Adaptive Optics (CfAO), graduate student Mark Ammons gave the CIPA II team and Tito Polo a demonstration of the adaptive optics demonstrator. "Adaptive optics" refers to optical systems that adapt to compensate for optical distortion introduced by the medium through which light travels from the object to the image plane. One idea for an Engineering 45 special project would be to have students work as a team and use principles of project management to design projects for an adaptive optics demonstrator.

The follow-up activity has included discussion with personnel at Maui Community College about how they will integrate their adaptive optics demonstrator into their engineering curriculum. The cost-benefit analysis will be completed during the third quarter. (Also, as an alternative to the adaptive optics demonstrator, we are considering the purchase of a research quality optics table with components--laser(s), etc.--that could be used in a more general purpose mode with our engineering students. The acquisition of this equipment would in itself be a great project management exercise.)

On May 3 a trip was taken to NASA-Ames, in Silicon Valley. The trip was arranged by Joe Welch, a Hartnell College computer science instructor who has personal contacts within NASA. Approximately 15 STEM students, Joe, Carol Thole (a Hartnell College business instructor), and Lin Sten attended. Lin's purpose in attending on behalf of CIPA II was to develop contacts at NASA-Ames and to become more aware of possibilities for internships there for Hartnell College students. Regarding the importance of project management in successful engineering activity, this trip probably made an immediate significant impact on the students.

On May 5 a trip was taken to Fremont Peak Observatory (FPO), near San Juan Bautista. The trip was arranged by Pimol Moth, in conjunction with her astronomy class. It was attended by Lin Sten so that he also (along with Pimol) could experience the FPO public observing program and meet the FPO Association (FPOA) board members, who themselves volunteer to conduct the program and who will be mentors for the FPO internships that have been created under the CIPA II grant for Hartnell students.

On June 3 the FPOA internship training session was held at FPO. It was attended by Andy Newton, Jim Riley, the six interns, and five FPOA board members. (Pimol Moth and Lin Sten sent their apologies for their absences due to their pending trip to the CIPA Training Session II in Wisconsin.) After introductions, the interns received training on program planning and execution as well as training on the operation of the various observing instruments.

From June 5 through June 8, Pimol Moth and Lin Sten attended the combined CIPA Training Session II and Forum in Lake Geneva, Wisconsin. On the first day Robert Knecht, instructor at the Colorado School of Mines, was introduced to us. Robert suggested ways in which to introduce project management concepts into the undergraduate curriculum. Dr. Trong Bui, a NAFP fellow, was assigned to meet with the Hartnell team, and he offered his support and advice. On the second and third days, we continued with our project management training under the excellent leadership of Cynthia Gibbs, President of Sage Horizons Consulting.

This was a well-planned and productive event, which offered many opportunities to network with our fellow grantees. Pimol and Lin gave a copy of the FPOA project plan guidelines for interns to the Santa Monica Community College team along with the suggestion that they contact Griffith Observatory.

This Wisconsin trip gained extra value when Pimol and Lin added two more meetings to their agenda upon discovering that Yerkes Observatory was located ten minutes away from the resort. This observatory was dedicated in 1897, and is world-famous for having the largest refracting telescope (40" objective) ever built. They met with Vivian Hoette, the Coordinator of Outreach and Education on Thursday night, and with Jim Gee, (1) Director of

Space and Astrophysics Engineering and (2) Observatory Director, on Friday morning. Clarence Brown and Maria Hittle attended the meeting on Thursday night. The engineering staff at Yerkes Observatory is building one of the instruments (HAWC) for the Stratospheric Observatory For Infrared Astronomy (SOFIA).

At Hartnell College, the CIPA II team meets approximately every other week to discuss the grant, review progress, and plan the pertinent activities.

The Advisory Board plans to meet in the 3rd quarter after the advisors review the first two quarterly reports.

Feasibility Study for a Hartnell Engineering Academy at UCSC.

Hartnell College's CIPA team will coordinate with the UCSC Jack Baskin School of Engineering to determine how to create a Hartnell Engineering Academy on-site at UCSC. The dean and faculty of the Jack Baskin School of Engineering have enthusiastically endorsed this concept. The model, as it is currently being discussed, includes sending selected Hartnell students to work in laboratory settings side-by-side with Jack Baskin School faculty, post-doctoral students, graduate students, and undergraduate students. The feasibility study will be completed this fall.

Internships in progress or promised, and research opportunities

NASA-Ames

A Hartnell College student was selected for a NASA-Ames internship this summer. She will receive $5,000 plus expenses from NASA. Her internship is sponsored by the NASA Science and Technology Institute for Minority Serving Institutions at NASA-Ames.

Townsend Management, Incorporated (TMI)

As reported in the 1st quarterly report, Dr. Stan Crane, who is the TMI liaison at Hartnell College and who is the assistant to the Hartnell College president for construction, promised that there would be at least one internship at TMI for a STEM student in the near-future construction contract. TMI manages all the construction projects on campus and has its own specially designed project management software; Dr. Crane uses Microsoft Project. The internship has not yet been implemented.

Stratospheric Observatory For Infrared Astronomy (SOFIA)

Mr. Andy Newton is investigating the possibility of Hartnell College collaborating with its research partners to design a project that could be flown on the SOFIA aircraft based at NASA-Ames. Dr. Dana Backman, SOFIA Education and Public Outreach Director, has expressed interest in working with Hartnell College to "alpha test" their on-board educational program—possibly in the summer of 2008, depending on funding.

FPOA

Six Hartnell STEM students are working as summer interns for the FPOA. Using the FPOA project guidelines, written by the CIPA team, the selected interns were required to write a project plan to assist the association in planning and conducting their Saturday night public observing program. Responsibilities include operating the 30-inch telescope and the smaller instruments, interpreting the night sky for visitors, and delivering the pre-observing lecture. Each student receives $100 from the CIPA II grant for each supported program, with three

students scheduled to support each program. The FPOA board president recently praised their work.

Center for Adaptive Optics (CfAO)

In a spin-off from CIPA I, on June 12 two minority Hartnell student engineering majors began their seven-week summer internships with the CfAO at UCSC. The students are working directly with CfAO research scientists on projects in adaptive optics engineering and instrumentation. Each student's $3,000 stipend and expenses are paid by CfAO.

Naval Postgraduate School

Four Hartnell STEM student interns are working on the Computer Science/Artificial Intelligence project at NPS. They began work on June 5 and will continue until approximately August 20. They are paid $500 each by the CIPA II grant.

Documents

Under the work package "Write Quarterly Reports . . .," the 1st Quarterly Report was completed and sent by e-mail to CIPA management before the April 14 due date.

Under the work package "Analyze Data Quality," a draft of the document titled "Quantitative Data to Use for Evaluation" was completed on April 16. With regard to tracking STEM students at Hartnell College, this document explores some of the issues of statistical significance associated with changes in enrollment, retention, and success over the coming years. This document has not yet been reviewed by the CIPA team.

The document titled "Fremont Peak Observatory Internship Project Plan Guidelines for Summer 2006 Interns" was completed on May 28. This document serves as a guide for the FPOA interns to create a project plan for the summer observing program at FPO, and was structured to maximize internship learning of project management skills and vocabulary in their internship.

Under the work package "Develop Project Plan," a new draft of the Hartnell College CIPA II Project Management Plan was completed on June 2. A copy was delivered on the due date (June 6) to Mr. Clarence Brown at the CIPA Training Session II in Wisconsin.

Under the control account "Marketing PM to STEM Courses," the first work package calls for a document. The first draft of "Market Project Management to STEM Courses" was completed on June 26. This document has not yet been reviewed by the CIPA team.

5.0 Personnel Changes

At the end of June, Dr. Charlene Frontiera left Hartnell College to assume a new job elsewhere. While her expertise, energy, and enthusiasm will be missed, it is expected that the new dean of Math, Science, and Health Science, Dr. Kathleen Schrader, who assumes that role on July 1 and who becomes the responsible administrator for CIPA II, will be equally committed to the success of the CIPA project at Hartnell.

Dr. Jesse Cude decided to retire after a long and notably successful career in teaching physics at Hartnell College. He intends to remain involved with the students, and it is anticipated that he will retain his current position on the CIPA team until at least the end of December.

6.0 Expenditures

Direct labor

$3,000	Dr. Pimol Moth	co-principal investigator
$3,000	Mr. Lin Sten	co-principal investigator
$3,600	Mr. Andy Newton	partnership liaison
$1,500	Dr. Jesse Cude	curriculum advisor and budget manager
$1,500	Mr. Jim Riley	project management advisor
$2,000	4 Internships	NPS
$800	6 Internships	FPOA
$0	2 Internships	CfAO
$0	1 Internship	NASA-Ames

Travel

$2,600	CIPA II Training Session II and Forum attended by both principal investigators
$700	Observation and consultation at MMT observatory—Mt. Hopkins, AZ

Equipment

$0

TOTAL in second quarter: $18,700

TOTAL in first quarter: $25,950 (detailed in the 1st Quarterly Report)

7.0 Additional Remarks

Due to the current labor dispute between faculty and administration, there was not a quorum for the April 20 Curriculum Committee meeting, nor for the one that followed on May 21. The May 21 meeting was the last one scheduled for the spring term, and the Curriculum Committee does not meet during the summer. Despite this challenge the co-principal investigators will make revisions to Engineering 45, as suggested by those members who were present, and thus prepare the course for resubmission to the Curriculum Committee in the fall.

In the first quarter, Jesse Cude traveled to Mt. Hopkins, Arizona, to meet with former student and now Hubble Space Telescope Fellowship recipient Dr. Joe Hennawi who gave the talk at the Physics Olympics on "Weighing Dark Matter by the use of Gravitational Lenses." Joe is a valuable resource for us as an inspiration for our students as well as a potential source of science outreach funding, which is a part of his fellowship requirements.