

9/24/09

Systemwide Engineering Meeting
 September 23, 2009
 830 – 12 noon
 UHM Campus Center 220

Meeting Summary

Participants

UHM	Peter Crouch, Bruce Liebert, Tep Dobry, Joshua Kaakua, Loren Gautz
Kap CC	John Rand, Maria Bautista, Dennis Kawaharada
Kaua'i CC	Matthew Cochran
Mau CC	Mark Hoffman, Suzette Robinson, Clyde Sakamoto
Hon CC	Erika Lacro
Haw CC	Harvey Motomura
Lee CC	Ron Flegal
Win CC	Richard Fulton, Inge White, Joe Ciotti
UH System	Linda Johnsrud, Peter Quigley, Joanne Taira, Joanne Itano

Welcome

Linda Johnsrud welcomed all participants and discussed the focus of the UH system in academic planning. In this situation, how can the UH system increase the number of CC transfers to the UHM College of Engineering to fill a state workforce need? Internally, can we develop a pathway to the bachelor's degree in engineering? Transfer data and statewide need for engineers reviewed. See attached ppt. presentation.

College of Engineering

Peter Crouch also welcomed the group and stated that the COE is very supportive of the need to work together and would like CC faculty to be involved in curricular discussion at the COE. It may be that a more common set of lower division engineering courses are needed for all programs to prepare graduates for "contemporary" engineering. It is important for the state that computer science and engineering also talk together to meet state workforce needs. Currently, COE could absorb an increase in undergraduate students based on number of faculty. Capacity is limited by need to increase infrastructure, labs and staff. See attached ppt presentation.

What Works:

LeeCC and KapCC have transferred about 50 students each between 2005-09 Ron Flegal from LCC and John Rand from Kap CC provided their observations on what works.

- All prerequisite courses for COE are offered on a regular basis (support for low enrolled courses)
- There is a dedicated faculty advisor for engineering (high touch)
- There is systematic outreach to high schools (outreach counselor) for pre engineering

- There is systematic outreach to UHM regarding prerequisite courses to ensure ongoing articulation of courses
- A clear academic goal is needed such as the AS in Natural Science, an ASC, a clear pathway
 - Kap CC developed AS in Natural Science, a transfer AS degree; 94 students are declared majors, 22 of which are Native Hawaiians.
- Sense of place on campus.....some physical location for students to work together on projects, for peer tutoring, to hang out; A place where there is opportunity for student to student, student to faculty and faculty to faculty interaction
- Student funding for peer tutoring (besides help with homework, may call student if does not come to class and scholarship support)
- Project based learning (research projects; national competitions which provide coaching from the national organization)

Math

Math is an issue as students are commonly not prepared to start with calculus I. Some ideas related to improving math preparation:

- Have a summer math program prior to start of fall semester to refresh math skills; encourage students to take a math course in the summer at their high school or at a community college
 - Summer bridge program at KapCC.

HS students take the Compass test pre and post in the 3 week program and while building computers, also participates in 2 hours/day with ALEKS. About 70% of the students showed an increase in Compass math scores on post test.

The Assessment and LEarning in Knowledge Spaces (ALEKS) is a web-based, artificially intelligent assessment and learning system. ALEKS uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. ALEKS then instructs the student on the topics she is most ready to learn. As a student works through a course, ALEKS periodically reassesses the student to ensure that topics learned are also retained. ALEKS courses are very complete in their topic coverage and ALEKS avoids multiple choice questions. A student who shows a high level of mastery of an ALEKS course will be successful in the actual course she is taking.
- Online offering of Calculus I to IV; Maui CC already offers these courses online (math 205, 206, 231, 232).
- Consider a calculus for engineering students. Data on who is enrolled in calculus courses by majors will be obtained (Joanne)
- Consider a student enrolled in only math for one semester to move from Math 24 to Calculus I

- Modular approach to math courses so students can complete what is needed rather than the whole course.

PreEngineering Courses

Tep Dobry provided an overview and that in general, all comparable courses at other UH campuses are accepted by COE. See attached ppt presentation.

There are some courses which transfer as elective, for example Math 205/206 from Haw CC are transferred to UHM as an elective but COE will accept them as meeting Math 241/242.

Critical bottlenecks:

- To enroll in CEE 270/271 and ME 211, need to complete Phys 170 and Calculus III.
- Students who complete calculus IV and then transfer are in a better position since calculus IV is prerequisite to engineering courses. If students have not completed the calculus series, they may enroll in unneeded courses to fill their schedule before they can proceed to engineering courses. It may be advantageous for CC students to complete calculus courses rather than general ed diversification courses before transfer.

Distance Delivery of Pre engineering Courses

Differences of opinion if pre engineering students will be successful with DE courses.

Distance delivery will help campuses with smaller enrollments to offer the calculus series, physics, chemistry etc.

Pre engineering courses currently offered by distance methods:

Kap CC	CE 270
	Phys 170 Spring 2010 for first time
	Chem 161
	Math 135
Maui	Math 135, 140, 205, 206, 231, 232

To Do List

All campuses present are interested in participating in ongoing discussions.

Long term goal – possible NSF grant focused on system approach for a preengineering pathway, diversity

Draft a pre engineering curriculum that will be offered regularly, by distance and what support is needed.

Maui CC faculty who offers Calculus series online and Tep Dobry “talk” so that the courses may be more widely publicized.

Identify what kinds of labs are needed to support this program.

Alignment and role of math in engineering

develop programs to move students into calculus I more quickly

Calculus- traditional or contextualized?

Recruitment in high school for pre engineering

Take high school math in senior year; promote Running Start or Early Admit

Develop an Engineering Consortium at the Chancellor level.

Curricular issues

Identify CC faculty to participate with COE curricular discussions

Revisit prerequisites for courses such as calculus II for Physics 170.