College of Engineering Response to the Chancellor’s Initiatives.

College of Engineering held a mini-retreat for chairs and selected faculty to consider responses to the Chancellor’s initiatives. The discussion was summarized and circulated to the faculty for comment. The current document reflects this discussion. Many of these actions require few additional resources and are readily implementable. Some proposed actions do require additional resources but they are included since they seem to be important actions for the College to continue consider and continue discussing possible implementation.

Retention and Graduation Rates

- **Rationalizing the curriculum in the lower division:** The College has been rationalizing the lower division curriculum to assist the transfer of students from the Community Colleges. It is believed that this will make it easier for all students to navigate especially the first three semesters of the Engineering Curriculum and decrease the need to retake courses if they change from one discipline of engineering to another.

- **Helping freshman and sophomores meet and interact with upper classmen:** One of the main issues that our upperclassmen report as being helpful to them be successful is connecting early to upperclassmen. This is especially complicated since many of the courses taken by lower division students are outside the College. The College of Engineering hosts many student chapters of professional organizations and clubs that organize College participation in various national contests. While the College has an overarching student organization, assisting this organization further assists the connection of upper division and lower division students in a strategically important use of resources.

- **Moving Engineering 101 into the curriculum:** Engineering 101 is the course “Introduction to Engineering” that is offered as an elective to a small number of students and students in the NH retention program. Moving this course to center stage in the College curriculum would ensure all students received additional insight into engineering and the choice of discipline they can take. This would take a commitment by the faculty to offer instructors for the many sections that this would require.

- **Develop a voluntary mechanism for faculty to report (mid semester) on the failing students in their class to the advisor and faculty advisor:** While the Faculty Senate decided not to adopt mid term grade reporting, in other universities voluntary failing grade reporting has been documented and in our case we have a faculty member who brings this knowledge to our College. The faculty would voluntarily report students with failing grades to the College Advisor.

- **Hired a STEM Coordinator:** The College recently hired a STEM coordinator (Myhraliza Aala, from UH Hilo), principally to manage the STEM outreach activities for the College. However Ms. Aala has experience in lower division retention and will also be advising the College on its activities.
The College will be hiring an additional College Advisor. This position will be principally focused on advising pre-engineering students, but additional advising capacity in the College will also assist students make better decision on their courses.

Native Hawaiian Emphasis

Continue emphasis on learning communities: One of the principal techniques used in the College’s Native Hawaiian (NH) retention program is developing learning communities with specific mentors. This is deemed very successful. As such the College should work with the NH Retention program to continue and expend this program. The NH Retention program continues to reach out to students in other Colleges (SOEST, CTAHR and Natural Sciences), and maintaining the learning community success will require considerable effort and expense.

Increase faculty advisors/mentors. The College’s NH Retention program continues to attract significant funding for student projects that engage the students in applications and help the students understand the relevance of engineering to their lives and the lives of their communities. The continuing problem is finding professors that will sponsor and lead these student projects. The College must stress the importance of this program with the faculty.

Continue to develop the REIS – IKE project base: The IKE program led by KCC aims to assist in the transfer and retention of NH students in engineering specifically and STEM more generally. One focus of IKE as a subject is Renewable Energy. IKE has teamed up with REIS, the program based in Engineering, but with a campus wide forging curriculum and research in Renewable Energy. One of the programs in this REIS-IKE alliance has been the summer bridge program run for the first time this year. It was a tremendous success in terms of garnering over 40 student participants and culminating in a community involved showcase of the project work. Continuing to build upon this success will require continued energy and resources.

Develop a Student Space for the College NH Retention program: One of the most powerful mechanisms for retention of students is interaction of lower division and upper division students. A defined space on campus is deemed especially important for this activity. Historically some of the well established engineering student clubs have received space in the College, but this has not happened for the NH retention program. Now that the NH Retention program is reaching out to other disciplines, in SOEST, Natural Sciences and CTAHR, it is suggested that the deans of these four Colleges team up to work out how to carve out space for this set of students.

Develop better College level relations with NH organizations: The College has developed an excellent network with the local business and industry community, but its relationships with the NH owned businesses and industry is much less well developed. While the College has reached out to a number of NH owners and leaders the connection has remained week. This is especially important in terms of developing an additional resource base and employer base for the NH students in the College.
• Forming an advisory council for the College NH Retention Program: In synergy with the College, this year, the College NH retention program will develop an external advisory council to help it in its mission.

• Reinforce with the faculty the importance of local applications embedded into the curriculum: NH students can be assisted in seeing the relevance of engineering, by stressing applications that are local to Hawai‘i. These don’t necessarily have to be especially of NH character as long as they are local in nature. The College can stress the importance of these local applications in the curriculum with the faculty.

Graduate Program Excellence

• Leverage the first graduate program review for the College in 9 years: The College is undergoing its first external review of its graduate programs this year. This is a perfect opportunity for the College to consider the state, future, and excellence of its graduate programs.

• Continue to offer the REU program with CTAHR – help attract good undergraduate students into the Graduate program: The College introduced its first Research Experiences for Students (REU) program last year. It put aside some portion of funding for each REU project team and faculty advisor. The college worked with CTAHR to fold in the demonstration of the REU projects into CTAHR’s REU annual competition. This was a great success even though it was started only in the mid year. This year the program has been started at the beginning of the academic year. Ultimately this program aims to attract many more home grown UH undergraduate students into its graduate programs.

• Encourage the other units in engineering to undertake the graduate program reforms that the Electrical Engineering (EE) department is currently undertaking: the EE department has made some major structural changes to the graduate program in order to become more competitive with mainland and international schools:
  o Emphasizing the PhD program as opposed to the MS program.
  o The PhD qualifying exam will be taken for the first time by students in their first year; each exam will be tailored to meet needs (focus) of the student and their ability to conduct research, in order to identify those students who are not suitable for the program. They will be offered the opportunity to finish studies with an MS degree.
  o Ensuring MS plan B has no thesis, stressing course work and completion in 12 months: Emphasis for this track to be placed on terminal/professional degree seeking students
  o MS Plan A continues to exist at faculty expense.
  o Students paired early with advisor: In order for students to complete their qualifying exam and, if necessary, move from TA support to Research contract
support, the department will stress that PhD students are paired early in their first year with an advisor.

- TA ship limited to one year only: The EE department is ensuring that the TA ships that it controls are not used as life lines for students. Students need to be placed on research contracts after a year.

- Introduce more “socialization” for graduate students: There is very little attention paid in the College to graduate students as a body. Some graduate students do participate in events held by the dean to discuss issues with the student body and some faculties do embrace graduate students as community members within their extensive programs. However, the range of socialization activities that the College engages in for its undergraduate students, which is primarily built around the student clubs, does not exist for graduate students. The College needs to develop a more robust system of socialization for its graduate students.

- Introduce career counseling for graduate students: The College does have a program for its undergraduate students in which it assists undergraduate students in preparing CV’s and stages a career day in the fall and spring semesters for its students. The College should develop a program to similarly assist graduate students.