College of ENGINEERING
UNIVERSITY OF HAWAI'I

System Wide Engineering Meeting
September 23rd 2009
Remarks by Dean Peter E. Crouch

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Driver

Need to provide the engineering technology workforce for the current and future needs of Hawai'i on all islands

- Renewable energy (energy sustainability)
- Water/refuge (water sustainability)
- Recycling- remanufacturing (material sustainability)
- High tech start-ups (leveraging the military presence and JABSOM)
- Shipyard (for how long?)
- Bio-tech (including food sustainability, and bio-security)
- Health care (including health informatics)
- Aerospace?
- Transportation?
- Optics? (leveraging the IfA and telescopes)
- Security (including IT cyber security)
- Green Construction (sustainability)
- IT!

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Principal Objectives

- Promote contemporary engineering in Hawai'i and UH, while continuing to support the College's historical role of providing the workforce and leadership in the building and maintaining of Hawai'i's built infrastructure.

- Leverage high profile science and medical research and infrastructure at UH Manoa (e.g. SOEST, IfA, JABSOM,..) to build an engineering & technology research enterprise at UH, promoting collaboration with engineering and technology faculty across UH.

- Build academic programs that will provide a pipeline of engineering graduates to help populate and grow the High–Tech industry in Hawai'i.

- Leverage UH Mānoa's cultural academic links with Asia to develop links to Asian institutions in engineering that will help enrich the growth of UH and Hawai'i in High-Tech arenas.

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Collaboration

- Need a collaborative relationship across all technology focused units in the UH systems to offer the necessary higher education in technology and engineering, because:
  - We cannot logically expect to do it on our own fiscally
  - Finding relevant instructors in Hawai'i is challenging
  - The overwhelming diversity of current and future engineering and technology needs of Hawai'i
- College of Engineering at UHM wishes to be central to this collaborative relationship

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Articulation/Curriculum

- Articulation of courses is important – but an ongoing activity since our shared curriculum does and should be evolving
- While not all College of Engineering faculty would agree to the issues implied by articulation the College leadership is committed to successful articulation
- However ABET accreditation is a fact and must be accommodated (Next visit is Nov 2009!)
- College is going to revise its curriculum relative to a number of ideas…
- Need representatives from the CCs involved with process and College faculty

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Models

- Good model for coordination between UHM Engineering at Kapiolani CC and Leeward CC – would be good to replicate this relationship
- Main obstacle is offering prerequisites/lower division at sites with less than an economic number of students in physical attendance – implies distance learning is a necessity – need to work toward the vision of a shared network of providers for this distance learning
- Should include computer science in the discussion – since integrally linked to engineering and work force demand

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Capacity

- Student/Faculty ratio is currently ~ 17:1
- Many large engineering colleges at State Universities have student/faculty ratios ~30:1
- Thus intrinsic capacity of professoriate at UH Manoa ~50 faculty (after cuts) is 1500 (today ~ 950)
- Capacity is limited by infrastructure (labs. and staff) – need to work together to get this infrastructure in place.

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Undergraduate Degrees

	02-03	03-04	04-05	05-06	06-07	07-08	08-09
CEE	29	30	30	33	32	57	59
EE	35	57	41	62	45	49	54
ME	15	19	18	23	24	38	42
Total	79	106	89	118	101	144	155

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Enrollment

	09	08	07	08-09 Change	08-09 change %
FR	165	152	137	13	8.6%
SO	135	136	140	-1	-0.7%
JR	149	152	185	-3	-2.0%
SR	274	290	308	-16	-5.5%
2nd	23	21	N/A	2	9.5%
Total UG	746	751	770	-5	-0.7%
GR	179	166	177	13	7.8%
Total CoE	925	917	947	8	0.9%

College of ENGINEERING
UNIVERSITY OF HAWAI'I

More Enrollment

	09	08	07	08-09 Change	08-09 change %
New FR	153	132	116	21	15.9%
New Transfers	106	75	102	31	41.3%
New UG Total	259	207	218	52	25.1%
New GR	55	45	60	10	22.2%
New Total	314	252	278	62	24.6%
UG Women	138	129	135	9	7.0%
Hawaiians	93	104	83	-11	-10.6%
Pre-Engr	203	116		87	75.0%

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Questions?

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Proposed Curriculum Redesign

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Curriculum Redesign

- Must include articulation for lower division courses (must give CCs advance notice of our intent and involve relevant CC faculty)
- Ensure that lower division courses are designed for distance learning capability for UH CCs and UH Hilo, UH West O‘ahu
- Give consideration to potential to attract international students
- Relation to New Certificate Programs?

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Curriculum Redesign

Dean's List of Draft Design Considerations

- Compatible with similar programs at top 50 institutions
- Reflective of the College Strategic Plan
- Structured so that the curriculum is not overly constrained by faculty expertise
- Structured so that all lower division courses can be taught be regular faculty

College of ENGINEERING
UNIVERSITY OF HAWAI'I

Curriculum Redesign

Dean's List of Draft Design Considerations

- Common "Introduction to Engineering"
- As few credit hours as possible
- Develop as many courses that are common to more than one program as possible – develop efficiency so that faculty can do more research
- Ability for students to participate in "real world design" experiences…in house or as interns.

Curriculum Redesign

Dean's Suggestions for Common Components of all Engineering Programs in UHM Engineering

- Biology for every student (need for Biological Engineering?)
- Exposure to sustainability fundamentals
- Business acumen
- Entrepreneurship/Innovation exposure
- Manufacturing exposure
- Improved communications skills