MEMORANDUM

TO:  Reed Dasenbrock  
Vice Chancellor for Academic Affairs  
/1047  
Patricia Cooper  
Dean, Graduate Division

FROM:  Peter E. Crouch  
Dean

SUBJECT:  Graduate Program Review for College of Engineering

In response to the “Review of the Graduate Programs in the College of Engineering, University of Hawai‘i at Mānoa,” which was prepared by the Graduate Program Review Committee (Marc Donohue, Professor, Department of Chemical and Biomolecular Engineering, Johns Hopkins University; Pui Lam, Professor and Chair, Department of Physics and Astronomy, University of Hawai‘i, Mānoa; and Sheryl Nojima, President of Gray, Hong, Nojima and Associates, Inc., Honolulu, Hawai‘i) and dated July 18, 2012, I am herewith transmitting the attached:

- College of Engineering Dean’s formal response and
- Summary of actions required of the Dean, Chairs, Graduate Chairs, and the Dean’s Office.

In general, I am pleased with the overall result of the review of our college’s graduate programs and will continuously strive to facilitate and advance graduate-level education in the College of Engineering.

Enclosures
Response to the Graduate Program Review for the College of Engineering

9/25/12

Overall the Dean is very pleased with the overall result, tone and insight of the Program Review. On behalf of the College the Dean would like to thank the Graduate College for managing the Program Review and playing such an important interface role with the Review Committee. The College would especially like to thank Kenneth Tokuno for all his valuable assistance.

This report is authored by the Dean’s Office of the College of Engineering with the direct input from the department chairs and graduate chairs of each of the College’s departments.

Graduate Programs
In general the Dean agrees that the College should increase the percentage of doctoral students amongst the graduate student population. However this requires a lot of elements to be in place, including funding for the students and good applicants who want to come to the College to study. It should be mentioned, however, that given that there are no other institutions in the state granting engineering Master’s degrees, UH Mānoa has a responsibility to service the overall need for Master’s education in the state, which is certainly not an issue for some of UH Manoa’s peers. The EE and ME departments are moving toward this goal, and the ration of MS/PhD students in ME has already jumped from 4:1 to 2.6:1 since the departments wrote their self study. In the case of CEE, the industry demand for MS graduates will dictate that the ratio is always higher than the other two departments.

The Dean will continue to encourage enhancing the ratio of Doctoral Students to Masters Students in the program.

The Report clearly identified a need for the College to differentiate more between Plan A, Plan B, and part-time Master’s programs and while the requirements for Plan A and Plan B are clearly stated in the catalog, they are clearly not apparent to the students themselves.

The Dean’s Office will work with the Graduate Chairs and the Graduate Division to identify the characteristics of the full time cohort of Master’s students within the total pool of Master’s Students. Once this is accomplished, further mechanisms to differentiate full time and part time Master’s Students will be identified and implemented. This will include consideration of more occasions in which the graduate student bodies are engaged by the Graduate Chairs and mechanisms to record graduate student progress semester to semester in order to promote intervention where necessary. The Graduate Chairs will work on updating the Graduate Handbook for their students.

Advertising the graduate programs and creating collateral materials for the programs is important for recruitment. The Dean has already begun working with the graduate Chairs on preparation of collateral materials.
The Dean with the assistance of the Graduate Chairs will develop materials for their respective programs and the Dean’s office will assist in producing these materials. The Graduate Chairs will work with the Graduate Division to formulate a publicity strategy with coupled recruitment efforts.

The Program Review indicates that faculty members in general must view the future career of their graduate students as a much more important issue than they do now. Mentoring in general and specifically, career mentoring, are spelled out as important functions of faculty advisors. The College has initiated programs to create a graduate culture in the College such as lunch time seminars with pizza provided. While a few graduate students attend these events they are not as widely supported in the College as they could be.

Graduate Chairs will be active proponents for mentoring of graduate students in their respective departments as well as leading the mentoring process, and helping create a graduate student culture in the College as part of their duties. The Dean’s Office will work with the Graduate Division to bring their Faculty Mentoring Program to the College once a semester for some period to give faculty an opportunity to understand best practices. The Dean’s office will work to give graduate students a more prominent role in the College Career Fairs that take place each semester and work with the Graduate Division to provide dedicated career guidance opportunities.

The Program Review prompts the Departments to view several suggestions for reducing the time to degree for the Master’s Students:

a. Dual list some senior and first year graduate courses (allowing departments to offer more courses)

b. Introduce a Core Curricula requirement for each department that all Master’s students must take (reducing the number of different courses the departments must offer at the graduate level), and offering these courses regularly so they can always be available for students to take any semester.

c. Carefully differentiate the standards required by the thesis and report components of the Plan A and Plan B requirements.

Graduate Chairs will lead a review and appropriate modifications of the Master’s curriculum for their respective departments to ensure that they can be completed by full-time students in 2 years.

Graduate Student Stipends
The College definitely believes that increasing graduate stipends is an important one for the health of the graduate programs. However it is not trivial to implement. Currently, the College funds ~17, 9-month, step-five TA’s at $15,552 each. One element of increasing the stipends would be for the College to unilaterally increase these TA awards to, say the number proposed by EE of $21,000, which would be equivalent to a $26,000, 11-month RA salary. (The number $22,000 was mistakenly quoted in the Report.) This would cost the College approximately an additional ~$94,000. Clearly, once this was instituted, the College could insist that all grant proposals use this salary as a base for funded graduate students. This later step could be implemented now, but would cause further friction and inequality between TAs and RAs. Both the EE and ME departments are currently attempting to implement an increase of TA funding but clearly face funding challenges. The College does not have the financial capacity at present to increase stipends but is always monitoring the situation.
Workload
Departments revised their workload documents in the 2010-2011 academic year. The results of these revisions may not have had time to have an effect during the Program Review. The argument presented in the Program Review is that even given the revised workload documents there does not appear to be sufficient differentiation in teaching load corresponding to individual faculty workload, at least in some departments. It is agreed that the non-research productive faculty members should teach more and the more research productive faculty should concentrate on enhancing research funding in the College. This is especially true given the additional comments in the Program Review about the need for the College as a whole to generate higher research funding levels on a par with national norms.

The principal consequences of increasing the teaching load of some faculty to ensure an overall fair workload distribution would be the enhanced frequency of offerings of graduate courses so that in particular MS students could graduate on a timelier schedule. This need will continue to be weighed with the competing needs to 1) ensure that graduate courses are only offered with sufficiently large class sizes (again sometimes hard to achieve with the size of the individual departments) and 2) offer undergraduate courses on a regular schedule to ensure that the undergraduate students can complete their programs on a timely schedule.

The ABET accreditation review in 2009-2010 pointed to the delicately balanced institutional support for the College’s programs when the undergraduate enrollment was 18% less than it is today. This enhanced student enrollment has placed additional pressure on departments to offer sufficient course sections to meet the increasing load and so some teaching relief of the more research intensive faculty has been curtailed while the teaching load of some less research intensive faculty has been increased.

The Chairs will report in the Spring of 2013 the quantitative results of their revised workload documents and in particular the resulting differentiation of teaching load amongst differing faculty profiles.

Faculty Hiring
The College has done remarkably well in hiring faculty given the fact that start-up packages have been at around $100K, excluding the summer salary and relocation components. This is also partially explained by the fact that the College has been hiring assistant professors. The Dean agrees with the Program Review that to secure national-class faculty the College would need to routinely offer start-up packages much closer to $300K, or more. This and the need to hire some mid-level faculty to help add faculty leadership in a few selected areas would require much more additional start-up funding. An issue missed by the review team is the more problematic issue today of retaining excellent junior faculty who see the greater benefits of belonging to a more sizable engineering college with more substantial infrastructure, but of course with enhanced pressure to perform.

Research
The lack of research funding relative to other schools, is partially due to the lack of focus on research in the College in recent decades, with an overall focus on teaching. This has occurred since
the formation of SOEST, which clearly was a big blow to the research focus of the College. This has been changing with the current Dean’s leadership in particular.

Expenditures of external grant and contract awards to the College have increased from an average of $4.3 Million in the years 2004-2006 to $7.4 Million in the years 2011-2012. The number of grant proposals submitted has doubled. All funding obtained with congressional assistance (approximately 40% of the funding in 2004) has been now replaced by regularly competed proposals.

Virtually all of the College’s Peer Schools enjoy much greater faculty mass and research tradition, including a full-time associate dean for research that the College does not have.

The Dean is pleased with the Program Review’s reaction to the College cluster areas as a mechanism to stimulate and focus the research and multidisciplinary work of the faculty. This was a significant effort on behalf of the faculty and College.

*The Dean will continue to work with the Chairs to mold the faculty profile to address the College clusters through hiring and helping identify opportunities for research.*

*Funding issues surrounding the UARC need to be addressed by the UH administration.*

**Communication Issues**

Clearly the Program Review team points to a general lack of communication in the College. The Dean claims much enhanced communication in the College and in particular increased communication amongst the faculty since he arrived in 2006. The Dean holds Administrative Councils each week while he is in town, with a written agenda for 1.5 hours. All chairs, directors and principals are invited to attend, along with the Chair of the College Senate. All the relevant issues facing the College are regularly discussed at these meetings, including budgetary issues. The Dean does hold College-wide faculty meetings when there are critically important issues, but rarely are they well attended. He recently held a “State of the College” event which was better attended, and so he intends to make this an annual event.

*The Chairs and Dean will seek additional mechanisms to communicate with the faculty.*

**Administrative and Technical Support.**

The Program Review pointed to a shortage in administrative and technical support and suggested that more support should be provided by the University. In addition the earlier ABET accreditation review in 2009-2010 pointed to the delicately balanced institutional support for the College’s programs when the undergraduate enrollment was 18% less than it is today. Some reductions in administrative and technical support were made as a result of the budget cuts. These cuts have not been alleviated and clearly the enhanced undergraduate student numbers are placing increasing pressure on the unit and College resources.

The department chairs have been given the option on several occasions to forgo additional / replacement faculty for additional / replacement staff but believe that to date their top priority has been to increase the numbers of faculty to the level in 2006. The Dean views its ability to date to
provide overall better administrative service to the College as a whole with its limited resources, is to provide these from the Dean’s office as opposed to distributed amongst the departments. Clearly if budget was not a constraint, then the College would indeed add administrative support to the units, but at present when funding for one additional staff member becomes available, it is difficult to rationalize sending this to one department as opposed to deploying the staff member as a common resource as has been done.

The undergraduate student fees that have been available to the departments since 2010 can be used to ameliorate the cost of technician support that is focused on undergraduate education and this option has not yet been fully utilized. However this revenue cannot be used to support graduate education/research. The departments have begun offsetting some of the graduate education/research through research grants, but the program review points to the need for additional university financed technician/staff support.

The Chairs will employ student fees to offset reasonable technician time directed at undergraduate education. The Dean will continue to seek additional resources for staff support and technician support for the Graduate Programs from the university administration.

Space
The College does share with the chairs a spreadsheet of space in the College, by department, against which is listed the research funding. In most instances the Chairs are well aware that they control the space assigned to them. In some instances where additional space is required, the Dean has stepped in to reassign space, usually guided by the spreadsheet and low performing space.

It is acknowledged that there is a lack of space, especially in the high bay laboratories on the ground floor of Holmes Hall. However it is also true that there is underused space primarily in Holmes Hall, but also POST. The problem with space in Holmes Hall is the quality of the space, given that the building is over 40 years old and pretty much has not been renovated. While attempts have been made to renovate, it is costly and it is never a priority of University Facilities to assist in renovating space at the individual laboratory level. The College has worked on proposals to gain more space in Holmes Hall through grant proposals but these have failed. Holmes Hall is now the focus of some university attention for renovation and build out, which will meet many of the space concerns.

The Dean will work to ensure that the renovation occurs in a timely manner, but ultimately depends upon funding from the Legislature.

Incentives
The Program Review does ask the question of incentives for departments in increasing productivity and, in particular, asks if it is well understood what the “rewards” are for significantly increasing the number of students enrolled and research productivity. The College does right now have a formula for allocating to units operating funds that does reward the units for enhanced student enrollment. However, the relatively small size of the operating funds, as compared with that for base salaries, does not provide very much incentive. The units already receive a standard percentage of the RTRF generated from grants and contracts, but this surprisingly also does not provide much of an incentive for enhancing research productivity. The office of the VCAA has begun to offer incentives for the numbers of enrolled students, but this has not gotten to be a reliable mechanism as
yet. The Dean has worked recently with the College Senate to formulate further annual recognition for the accomplishments of the faculty and staff and working together have instigated another reward for research to complement the award for service. The Dean’s Office has made awards for teaching for many years.

*The Dean will continue to look for additional incentive mechanisms.*
Response to the Graduate Program Review for the College of Engineering

Actions Required of the Dean, Chairs, Graduate Chairs, Dean’s Office

9/25/12

Ordered as they appear in the text

The Dean will continue to encourage enhancing the ratio of Doctoral Students to Masters Students in the program.

The Dean’s Office will work with the Graduate Chairs and the Graduate Division to identify the characteristics of the full time cohort of Master’s students within the total pool of Master’s Students. Once this is accomplished, further mechanisms to differentiate full time and part time Master’s Students will be identified and implemented. This will include consideration of more occasions in which the graduate student bodies are engaged by the Graduate Chairs and mechanisms to record graduate student progress semester to semester in order to promote intervention where necessary.

The Graduate Chairs will work on updating the Graduate Handbook for their students.

The Dean with the assistance of the Graduate Chairs will develop materials for their respective programs and the Dean’s Office will assist in producing these materials.

The Graduate Chairs will work with the Graduate Division to formulate a publicity strategy with coupled recruitment efforts.

Graduate Chairs will be active proponents for mentoring of graduate students in their respective departments as well as leading the mentoring process, and helping create a graduate student culture in the College as part of their duties.

The Dean’s Office will work with the Graduate Division to bring their Faculty Mentoring Program to the College once a semester for some period to give faculty an opportunity to understand best practices.

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Graduate Chairs will lead a review and appropriate modifications of the Master’s curriculum for their respective departments to ensure that they can be completed by full-time students in 2 years.

The Chairs will report in the Spring of 2013 the quantitative results of their revised workload documents and in particular the resulting differentiation of teaching load amongst differing faculty profiles.
The Dean will continue to work with the Chairs to mold the faculty profile to address the College clusters through hiring and helping identify opportunities for research.

Funding issues surrounding the UARC need to be addressed by the UH administration.

The Chairs and Dean will seek additional mechanisms to communicate with the faculty.

The Chairs will employ student fees to offset reasonable technician time directed at undergraduate education.

The Dean will continue to seek additional resources for staff support and technician support for the Graduate Programs from the university administration.

The Dean will work to ensure that the renovation occurs in a timely manner, but ultimately depends upon funding from the Legislature.

The Dean will continue to look for additional incentive mechanisms.

Ordered by subject

Dean (with Others)
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Chairs
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The Chairs will employ student fees to offset reasonable technician time directed at undergraduate education.

Other
Funding issues surrounding the UARC need to be addressed by the UH administration.