Mechanical Engineering Department Response
Academic Program Review Team Report

Review Team Recommendations (*in italics*) and Responses

1) *The Department may be offering too wide a breadth of course offerings. We recommend a focus of the UG curriculum on ABET outcomes. The practice of offering every required course every term may be part of the tradition of the Department but it comes as an opportunity cost, as it drives a significant fraction of the teaching requirements and it hampers the development of a coherent graduate curriculum.*

Response: The issue of not offering required undergraduate courses every term was examined at the ME retreat on August 2007 without much success. It will be re-visited in the up-coming retreat on August 2009 with the aim of reducing the number of undergraduate courses offered each semester and the teaching load of research active faculty to the recommended 1+2 load.

2) *There is a pressing need to bolster the PhD enrolment, which directly influence rankings and to address the current imbalance between MS and PhD enrolments. A reasonable target would be that the research active faculty ought to have at least 2-3 PhD students.*

Response: The current MS dominated graduate program has been the result of a weak graduate student population in the past. The balance is beginning to shift as the Department is attracting better quality students and offering a stronger research program. One proven approach to enroll PhD students is to offer attractive support packages that "lock in" especially well qualified students as they apply (even if there is no grant to fund the student), but the Department does not have the resources to make this type of commitment.

3) *Given the current composition of the faculty, reaching critical mass implies a growth in faculty size over the next 5 years to a total of 22-23 faculty (not counting possible retirements) against a current total of 17. Putting it another way, the Department should be hiring at least one research-active faculty per year.*

Response: The Department is painfully aware of its need to grow so that we do not loose standing in the national arena. For example, resources are needed immediately to hire at least two research-active faculty in the area of sustainable energy. Without this investment we will loose the technological lead that we currently have. Additional resources are also needed to add faculty in the dynamics and manufacturing area. This problem is exacerbated by the fact that 3 of our full Professors are dedicated to the MEP program.

4) *The Department has made one excellent female hire recently and should continue to be vigilant and proactive in pursuing opportunities to hire promising women faculty who have interests aligned with the goals and emphases of the research program.*

Response: The Department has been actively looking into the possibility of adding female faculty whose research interests coincide with its strategic areas. Success will depend strictly on the availability of resources to carry out the hiring. An attempt was made last Spring to attract a woman in the energy area as a spousal hire. However, the other Department involved was unable to hire her husband.

5) *We suggest that the Department and the MEP discuss ways to leverage existing strengths in manufacturing and move forward aggressively to hire several faculty over the next five years in order to build a PhD research-based program in this general area.*

Response: The relationship between ME and the MEP is complicated by the different funding mechanism operating for the MEP. A solution at a level higher than the SOE is needed to achieve this goal, which would greatly benefit both the ME and MEP programs. The fact that Profs. Ron Lumia and John Wood are paid 50% from ME and 50% from MTTC creates difficult managerial problems, and has added significant strains after MTTC suffered a drastic budget cut.

6) *We visited a number of the laboratories for both required and elected courses… However, in an unacceptably large number of cases, the equipment and instrumentation is outdated and falls well below the standard expected of an ABET-accredited program. Since this was cited as a deficiency in previous ABET visits, it will be especially critical to have an infusion of funds in order to address the issue this academic year. There is an immediate and pressing need for significant upgrading of all the required laboratories.*

Response: The Department has continuously invested in the labs trying to keep them in working condition. Since the last ABET review we have spent almost $100K in new equipment, but this is insufficient because no upgrades had been made for too many years. We have conducted a careful examination of the required undergraduate laboratories and prepared a list of required equipment necessary to bring them up to a standard that will satisfy ABET.

7) *The position of U/G program assistant has been vacated since the freezing of all open positions…It is essential that the Department be allowed to fill this position.*

Response: The position has since been filled.

8) *The Department is operating the machine shop with a single machinist…It also raises potential safety issues, since standard practice (if not the letter of the occupational health and safety laws, e.g., CalOsha in the State of*

California)requires two trained professional machinists present at any given time. The Department and the School will be well served by adding an additional machinist over time.

Response: This issue requires a decision to be made at the School level or higher. A second machinist is essential if we are expected to increase our enrolments, right now we are limited in the number of students that we can get through the program because our design labs for undergraduates count with only one machinist, which limits the number of students in the design lab to 36.

9) *The Department is currently operating without a trained technician who would normally support the research and teaching labs…Given the pressing need to do something about the required undergraduate labs, it is essential that this position be restored…In the long run the Department will require at least two technicians…*

Response: During 2008, the Department lost its Administrator, Student Advisor, machinist and Technician; three of these positions (except the machinist) were subjected to the hiring pause. The Department has so far been successful in been allowed to replace its Administrator and Student Advisor, a request to be allowed to replace the Technician has been made. In August 2009 the Department lost its Accountant and asked to delay its replacement by a month. We must be able to replace key personnel on a timely fashion, otherwise we suffer cumulative damage. Moreover, when a key staff member leaves, the rest must step up to cover the functions left unattended, and afterwards there is no mechanism to reward their extra efforts that can be very significant.