Engineering and Technology Industry Council
Capital Investment Proposal
Biennium from July 1, 2005 to June 30, 2007

Campus: University of Oregon
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Summary of Proposal:

The University of Oregon is planning a building of up to 65,000 sq. ft. containing space for Materials Science Institute (MSI) researchers (30,000 sq. ft.), industrial tenants and incubator space (15,000 sq. ft.) and shared equipment space for the Center for Advanced Materials Characterization in Oregon (CAMCOR) (20,000 sq. ft.). Existing funding commitments will build the shell and a fraction of the finished interior space. ETIC capitol funding is requested to build out laboratory and teaching space for MSI's Masters and Ph.D. internship programs, a portion of the CAMCOR space most intimately tied to the internship programs, and a portion of the research space. For the teaching laboratory space, approximately 5000 sq. ft. is needed for the three existing tracks. Estimates for building out this space, which includes significant numbers of hoods and ventilation are approximately $300/sq. ft. The CAMCOR surface analysis laboratory, micro-analytical facility, electron microscopy facility, chemical analysis facility and new nanofabrication clean room facility will be located in the shared equipment space. This space is estimated to cost approximately $200/ sq. ft. to build out for the first four facilities and $400/sq. ft for the 2-3000 sq. ft. clean room facility. Estimates for the price per square foot for the research space averages approximately $350/sq. ft. A total of $4,000,000 is requested from ETIC to assist in this project.

Goals

To compete nationally, MSI's strategy is to anticipate where leading Universities will be in the future, including much closer ties between academic and industrial researchers. Stanford, for example, has announced building a new structure with a very similar make-up to the building we describe above. As Stanford has discovered, getting faculty to accept these changes will be a challenge on most University campuses. The University of Oregon's advantage is that a significant percentage of the key faculty members are leading the efforts to build and occupy this new building, with strong institutional support being provided from the Office of the Vice President for Research. MSI is leading the country by developing both Ph.D. and Masters programs with intensive summer immersion classes in areas between traditional science and engineering disciplines and incorporating industrial, academic and national laboratory internships as key components in graduate training. This national leadership is highlighted by the invitation to have both a graduate student and a faculty member be keynote speakers in a symposium on advances in graduate education at the August 2004 American Chemical Society National meeting.

The new University of Oregon building is a dramatic break from a traditional academic building, recognizing the potential synergistic advantages of intermixing shared equipment and facilities and industrial and academic researchers. We recognize the significant challenges that will result from this mix of users, but this risk is offset by the tremendous upside potential. We believe this arrangement will result in more facile transfer of intellectual property from academia to industry, as start-up companies can be located down the hall from the laboratories that developed the intellectual capital and that can provide key expertise. The education of the graduate students will also be influenced by the ability to interact with industrial researchers in addition to academics. MSI faculty will be exposed to new ideas and problems, resulting in additional ideas for proposals. In addition to the above opportunities, the creation of these new facilities will provide enough space for the eventual expansion of the internship classes to as many as 30 students per laboratory, a significant increase from the 8-10 students that we can currently teach in our existing polymer laboratory, for example. The new research space will also allow for the additional growth of the Ph.D. program. The location of the new facilities within the Riverfront Research Park will further enhance industry collaboration in an environment nurturing University-Industry partnerships.

Investment Description

As described above, the proposed capital investment will be used to build out space for shared equipment facilities, internship teaching laboratories and faculty research laboratories. The proportion of ETIC funds used in each of these areas will depend on our successes in private, industrial and foundation fund raising to both match the requested ETIC funding and complete the internal components of the building. The centralization of the graduate internship teaching laboratories and CAMCOR facilities will enhance efficiencies. The creation of new research space is overdue, with significant crowding in some MSI laboratories and especially acute in the science core on campus. As the plans for the building develop further during the next 6 months, we will keep ETIC posted on the evolution of this new concept in a university research building.

Results

The construction of state of the art facilities combined with the proposed unique tenant mix in the building will enable MSI to compete for the best graduate students, better compete for federal funding, and attract faculty with entrepreneurial spirit and aspirations. Working through the issues involved in this facility will put us significantly ahead of other universities and provide an example that can be adopted by our sister OUS institutions.

Proposed Investment and Private Support Forecast ($M)

	7/1/05-6/30/06	7/1/06-6/30/07	Total
Proposed OUS Investment ($M)			
New facilities	2000000.00	2000000.00	4000000.00
Improvements to facilities			0.00
Laboratory equipment			0.00
Other equipment			0.00
Other capital investments			0.00
Subtotal	2000000.00	2000000.00	4000000.00
Expected private support ($M) (1)	4000000.00	4000000.00	8000000.00
Total ($M)	6000000.00	6000000.00	12000000.00
Notes:			
(1) Devoted to capital investments as described in this proposal.			

MSI - Metrics Forecast:

	Baseline	Projected			
	AY 99	**AY04**	**AY05**	**AY06**	**AY09**
Total research expenditures per year	2,880,000	6,000,000	6,500,000	7,000,000	8,000,000
Average GPA of incoming freshmen	3.4	3.6	3.7	3.7	3.7
Average SAT/ACT percentile of incoming freshmen (1)	66%	80%	80%	80%	80%
Average GRE percentile of incoming grad. students (2)	70%	75%	80%	80%	80%
Pass rate of Fundamental of Engineering (3)	NA	NA	NA	NA	NA
Women entering ECS programs (4)	28%	35%	35%	40%	40%
Women graduating from ECS programs (5)	25%	30%	30%	30%	35%
Minorities entering ECS programs (4)(6)	2%	5%	8%	10%	10%
Minorities graduating from ECS programs (5)(6)	2%	5%	8%	10%	10%
ECS undergraduate student credit hours	NA	NA	NA	NA	NA
ECS bachelors degrees granted	NA	NA	NA	NA	NA
ECS graduate student credit hours	190	1000	1200	1400	1600
ECS internship masters degrees granted	2	15	18	21	25
National ranking of <program or department> (7)(10)	See note	below			
Ranking of total federal expenditures as if all chemistry .	91	top 50	top 50	top 50	top 40
Ranking of total federal expenditures as if all physics .	83	top 50	top 50	top 50	top 40
Ranking of total federal expenditures as if materials dept.	31	top 25	top 25	top 25	top 20
National ranking of <college>	NA	NA	NA	NA	NA
Pre-college contact hours (8)	NA	NA	NA	NA	NA
Licenses sold (9)	0	1	1	1	1

Notes:

(1) If your applicants are required to submit SAT scores, use the percentile corresponding to the average compo score of those submitting them. If they have the choice of SAT and ACT, use the average composite SAT score average composite ACT score, convert them to percentiles, and compute a weighted average of the two.

(2) Percentile based on the average quantitative score over those submitting such scores; ignore verbal and ana scores.

(3) As a percent of those taking it for the first time

(4) As a percent of all those entering

(5) As a percent of all those graduating

(10) Since the MSI is an institute, not a department, we are invisible to most national rankings. MSI's status as an institute, however, makes it much more able to respond to opportunities. There would be definite losses in MSI becoming a department.

To address the issue of National rankings, we have examined the basis for the ratings given by various sources (US News and World Report, Chemical and Engineering News, …). While several are based on opinion polls, we believe the most impartial rankings are based on federal research dollars obtained. This data is collected nationally by NSF and is published yearly with breakouts based on disciplines – chemistry, physics and materials. We will determine the federal research expenditures generated by the institute (using the numbers reported to the federal government) and then compare the total dollars with those from other institutions across the country. These are hard numbers that cannot be fudged. The figures for academic year 1999 are detailed below.

Total federal research expenditures from MSI faculty	-	$2,257,000
Average federal research expenditures/MSI faculty	-	$205,000

MSI's funding level would place it 92 with respect to chemistry funding, 84 with respect to physics funding and 31st as a metallurgical/materials department. Given the small number of MSI faculty in 1999 (eleven), these rankings are actually quite good. For example, the chemistry related funds at University of Texas at Austin were generated by more than 60 faculty in both their chemistry and biochemistry departments. If the ranking were done on the basis of average federal research expenditures per faculty to compensate for the different faculty sizes at each institution, MSI would rank approximately 40th, above the University of Texas at Austin.