
PSU ETIC Strategy & Plan for The 2009-2011 Biennium – Supplement

Maseeh College of Engineering and
Computer Science

Key Points

- Definition of 140-150 faculty members as “critical mass”
- Hiring is spread over 3 biennia, with a target of 20 in the 2009-11 biennium
- Hiring is based on 6 specific interdisciplinary focus areas:
 1. Sustainability
 2. Instrumentation
 3. BioEngineering
 4. Technology Management and Transfer
 5. Undergraduate Excellent and Women/Minority Recruitment
 6. Manufacturing / Materials
- We can recruit – we have successfully met our ETIC hiring goals with quality faculty
- We have the necessary lab and office space

Self-Sufficiency

- The notion of a faculty member being self-sufficient is difficult to assess
- Academic accounting involves more than salary
 - Research: there is graduate student support, overhead (46% at PSU), and tuition
 - Teaching: it is difficult to assess revenue and costs, some courses are more expensive than others due to labs
- Although large grants exist, they are harder to get, only a small number of faculty are able to bring in enough funding to cover overhead, graduate students, indirect, tuition, and their salary too
 - Incidentally, at NSF these days around 8-12% of submitted proposals are funded

Reminder: Our Targets for 2013/2020

	Actuals (1)		Projected (2)		
	AY 99	AY07	AY11	AY13	AY20
Undergraduate student credit hours	20785	28518	34500	37800	40600
Graduate student credit hours	8685	12357	14950	17550	19575
Bachelor's degrees granted	157	210	242	284	290
Master's degrees granted	105	189	228	258	274
PhD degrees granted	4	7	10	12	16
Women graduating (4)	55	95	113	133	157
Minorities graduating (5)	76	99	106	122	145
Externally-funded research expenditures	\$1.65M	\$5.77M	\$11.5M	\$14.9M	\$18.9M

- These outcomes meet ETIC's goals:
 - 2x enrollment at 2013 over 1999
 - 5x research revenue at 2020 over 1999

How We Did -- Federal & Other Grants, New Grants for Biennium 05-07

Granter	Description	Value
National Science Foundation	CAREER: Component-Based Hardware/Software Co-Verification of Embedded Systems	\$626,894
National Science Foundation	CAREER: Electromagnetic Scattering and Propagation at Terahertz Frequencies	\$566,428
National Science Foundation	Collaborative Research: Biogeochemical Transformations and Cross-Margin Transport	\$496,753
Oregon Health and Science University	Science & Technology Center for Coastal Margin Observation & Prediction (CCF-0424602)	\$492,556
National Science Foundation	CT-ISG: Making Network Layer Proofs-of-Work Work	\$491,625
Maryland Procurement Office	Programatica for System Software	\$489,976
National Science Foundation	Exploiting Live Plus Archive Data for Intelligent Transportation Systems	\$410,670
Semiconductor Research Corporation	Stochastic Modeling of Device Test Input and Test Response for Improved Yield and Reliability	\$400,486
US Department of Agriculture	A Mechanistic Study of the Transport and Fate of Biosolid Colloids in Soil	\$394,392
National Science Foundation	Adapting Information Using Superimposed Models and Structures	\$390,000
National Oceanic and Atmospheric Administration	Estuarine Habitat and Juvenile Salmon: Linkages in the Lower Columbia River and Estuary	\$360,000
Thrasher Research Fund	Modeling Intracranial Pressure Dynamics in Pediatric Traumatic Brain Injury	\$319,882
Office of Naval Research	Mid-Frequency Bottom Scattering Model Development and Validation	\$300,000
Office of Naval Research	Multistatic Active Target using an Invariance Constraint within an Evolutionary Formulation	\$290,680
National Institute of Justice	Using Portable Radios to Operate Mobile Data Terminals	\$287,000
Semiconductor Research Corporation	Scalable Co-Verification Based on Hardware IPs and Software Components	\$271,240
National Science Foundation	SoD-HCER Semantics Based System Design Using Omega	\$242,678
National Science Foundation	MRI: Instrument Development: Optical Tweezers/Micro-PIV System to Investigate Cell Biomechanics	\$214,226
Oregon State University	Ocean Modeling and Data Assimilation for Regional Studies of the Internal Tide	\$198,089
National Science Foundation	Internationalization of Computer Science Education: The Pacific Rim Community Model	\$196,806
Oregon State University	Tactical Power Sources	\$189,000
National Science Foundation	SoD Team: A Feedback-Based Architecture for Highly Reliable Embedded Software	\$185,973
	Total Shown	\$7,815,354
	OTHER	\$4,233,823
	TOTAL	\$12,049,177

ETIC Supported Faculty in Red

How We Did: Other Miscellaneous Results FY05-07

- We have 6 faculty who have received prestigious NSF Career awards, most are ETIC hires
- And one, Lisa Zurk, recently received a Presidential Career award
- OTREC, The Center for Transportation Studies is one of only 10 National University Centers in the country, focusing on traffic congestion, safety, road planning, and mass transit
- PSU's Computer Science program is recognized as a Center of Excellence In Information Assurance Education by the National Security Agency
- We have a five-year program in conjunction with Oregon Health & Science University in which students may simultaneously earn a bachelor's degree in computer science and a master's in biomedical informatics

How We Did: Other Miscellaneous Results FY05-07

- The infraStructure Testing and Applied Research (STAR) laboratory is renowned throughout the region as the place where structural designs can be tested and refined to make them safer in the event of earthquakes
- The Environmental Engineering group is working with Oregon agricultural interests to ensure that fertilizer use does not pollute groundwater with heavy metals
- They are also addressing the competing needs for clean water in rivers, lakes, reservoirs, and estuaries and researching the impact that dams, dikes, and oceanic changes have on the whole coastal and estuarine ecosystem, including salmon

How We Did: Other Miscellaneous Results FY05-07

- The Credence Integrated Circuit Design and Test Laboratory is one of a few of its kind in the world, allowing researchers at Portland State to test circuits for industry remotely via the Internet
- One of the lab's distinguishing characteristics is its close working relationship with leading companies in the semiconductor industry, including LSI Logic, Texas Instruments, IBM, Credence Systems, Sharp, Intel, Tektronix and Electroglas

How We Did: Other Miscellaneous Results FY05-07

- PICMET (Portland International Center for Management of Engineering and Technology) is housed in the ETM department
 - PICMET organizes international conferences, symposia, and workshops every year.

- Areas of research include: technology management, technology forecasting, technology evaluation, project management, decision making, new product development, technology roadmapping, productivity analysis, quantitative benchmarking, management of emerging technologies, technological innovation, and entrepreneurship

- ETM has served as the editorial headquarters for the John Wiley Book Series on Engineering and Technology Management from 1987 to 2000, and IEEE Transactions on Engineering Management from 1987 to 2002

How We Did: Examples of Private Support July 1, 1999 – December 2007

Fariborz Maseeh	\$ 8,000,000
James F. and Marion L. Miller Foundation	\$ 3,000,000
Gordon E. and Betty I. Moore	\$ 2,500,000
The Vollum Family	\$ 1,000,000
Bill and Melinda Gates Foundation	\$ 500,000
Henry W. and Janice J. Schuette	\$ 468,000
Intel Corporation	\$ 252,000
Tektronix Foundation	\$ 205,000
Microsoft Corporation	\$ 200,000

Plan vs. historic results

- We have consistently met our SCH, graduates and research funding goals, though with some recent softening in credit hour goals
- We have created a larger vision for the college, the new Engineering Building is one result of this
- We have expanded our vision to include a set of cross college / university / OUS + OHSU initiatives – to provide maximum leverage of ETIC funding
- We are proposing significant additional funding for ramping our focus on our undergraduate programs, the marketing for those programs, and recruiting from underrepresented groups
- We are confident that we will continue to meet or exceed our metrics

Other Points to Consider

- The ETIC metrics are not complete, for example, how does one measure student quality?
- Metrics can increase non-linearly with respect to the number of faculty
 - For example, our proposal is based on the notion of critical mass, where once you have enough faculty and the university gets more visibility, it gets easier for individual faculty members to recruit better students, get more funding, etc.
- Self-Sufficiency or not, ETIC is achieving its mission of being the primary driver for improving the quantity and quality of, and access to engineering education in Oregon