Adopted: October 23 2012

ACADEMIC SENATE
of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA

AS-754-12

RESOLUTION ON THE PROPOSAL FOR THE ESTABLISHMENT OF THE INSTITUTE FOR ADVANCED TECHNOLOGY AND PUBLIC POLICY

RESOLVED: That the Academic Senate endorse the attached proposal for the establishment of the Institute for Advanced Technology and Public Policy.

Proposed by: Senator Sam Blakeslee PhD and
Doug Piirto PhD (Professor CAFES)
Date: September 18 2012

PROPOSAL FOR

THE INSTITUTE FOR ADVANCED TECHNOLOGY & PUBLIC POLICY

AT CAL POLY, SAN LUIS OBISPO

CONTENTS

Submitted by Senator Sam Blakeslee, Ph.D. and Doug Piirto, Ph.D.

9/24/2012

INTRODUCTION

To create the next generation of business leaders and entrepreneurs, not just employees, educational pedagogy must evolve to catch up with what is already occurring around the world.

The self-supporting Advanced Technology and Public Policy Institute at Cal Poly will create such a multi-disciplinary learning environment, a setting which will be unique within the university system. Students and faculty who participate in institute activities will be well suited to compete effectively in the 21st century economy and will find themselves in high demand.

The Advanced Technology and Public Policy Institute will be a **non-partisan** institute that creates ideas by strict adherence to established principles of **academic freedom**, which are key to arriving at the best problem solving knowledge.

In today's 21st Century Economy new businesses excel because they understand the interactions and synergies between new advanced technologies, cultural and social practices and norms, markets, government policy, and public relations. The new compressed timelines for winning in the global marketplace does not allow the old silo approach to business planning and development. Multi-disciplinary teams must simultaneously identify and overcome complex and multi-faceted barriers to entry, often on their first try with no second chances.

This is very different from the world in which old brick and mortar Fortune 500 Corporations would set up insular functions and departments that would communicate with each other slowly, if at all. In that earlier 20th Century economy a captain of industry might spend 30 years moving between departments to acquire the knowledge and skill to run a corporation. Today's entrepreneurs must know how to work effectively and rapidly with experts in multiple disciplines very early in their career if they are to rise to the top of the organization.

Notwithstanding these remarkable changes, most institutions of higher education have evolved at a markedly slower pace. In fact a student attending an average CSU in 1990 would detect little change in how educational services are delivered today. Cal Poly stands out as one of the few that has continuously evolved to keep up by utilizing their Learn by Doing model. However, more can be done to integrate this multi-disciplinary approach within the university.

MISSION

The non-partisan, self-supporting Advanced Technology & Public Policy Institute will create unique educational experiences that provide world-class learning and research opportunities for Cal Poly students and faculty while advancing the University's statewide standing and prestige for its ability to constructively engage on cutting edge policy challenges facing California. The highest principles of academic freedom will guide all of the Institute's efforts.

FUNDING

The self-supporting Advanced Technology & Public Policy Institute will be funded through fundraising.

GOALS

- Increase Cal Poly's Recognition and Reputation: Cal Poly is operating in a highly competitive academic arena in which there is a high demand for the nation's best and brightest faculty and students. Although already respected as a superb institution of higher learning, Cal Poly has the potential for rivaling such world-renown universities as U.C. Berkeley, Stanford, and CalTech. By providing new innovative high-quality programs that are unique and distinct from those offered by competing institutions, Cal Poly can enhance its reputation as being a high-impact leader in the field of higher education.

- Improve Cal Poly's Ability to Attract Private and Public Support: Across the nation state governments are struggling to provide sufficient resources to enable higher education to keep up with ever increasing costs. As a result, many Universities are raising tuition, lowering enrollment, and seeking increased private and public sector donations and grants to support high-quality and high-cost programs. Although Cal Poly has historically been successful in its fundraising efforts, the competition for scarce resources continues to grow. To increase the University's fundraising opportunities Cal Poly can cultivate targeted program offerings that inspire and motivate donors and grantors to invest even more generously in the institution.

- Advance Faculty Scholarship, Professional Development, and Personal Satisfaction: Most faculty are attracted to their academic fields due to their personal passion for knowledge, learning, and teaching. To ensure that Cal Poly faculty maintain their excitement for academic pursuits throughout their careers the University benefits from providing opportunities for advanced scholarship and pedagogical development. Though difficult to quantify, probably no other factor plays a larger role in a student's learning experience than a professor who is energized and informed though exposure to cutting edge ideas and thought leaders.

- Train Tomorrow's Leaders: Although many Universities are happy to simply graduate their students and hope that they will be gainfully employed, Cal Poly can realize its goal of graduating future entrepreneurs, captains of industry, and leaders in public service who have the potential to change the world in which they will operate. One need only review the resumes of such leaders to find that institutions such as Columbia, Harvard, Berkeley, Stanford and others are frequently the launching pad for their impactful careers. Cal Poly has the potential of producing future generations of such leaders. Doing so not only greatly enriches the lives of its current student population, but also creates cohorts of life-long ambassadors who provide valued civic benefits and later support of the University's mission.

STRATEGIES:

1. Establish a University wide Institute that forges relationships between leaders in the public, private and academic arena to promote whole-systems thinking to explore solutions to current technology-driven policy challenges.

2. Utilize Cal Poly's Learn by Doing methodology to provide students with "hands-on" learning experiences that enhance student fulfillment and success while increasing future employability, especially for positions of leadership.

3. Support the Teacher-Scholar Model within the Institute to provide opportunities and funding for integration of faculty research, teaching, and scholarship in all six colleges (College of Agriculture, Food, and Environmental Sciences, College of Architecture and Environmental Design, College of Engineering, College of Liberal Arts, Orfalea College of Business, College of Science and Mathematics).

4. Publicize and promote Cal Poly's capacity to make a significant impact on relevant cutting edge issues that affect the California economy and public policy.

STRATEGY #1: Forge Relationships – Whole System Thinking

- WHOLE SYSTEM THINKING: The Institute will forge relationships and partnerships in three broad areas that bring together leaders in public policy, academia, and the private sector. Participants from each of these sectors will be identified from the entities such as the following:

    - Public Policy: State Legislature, CA. Public Utilities Commission, CA Energy Commission, CA Air Resources Board, State Water Board, CA Department of Food and Agriculture, CA Department of Forestry and Fire Protection, etc.

    - Private Sector: Tech-Net, Silicon Valley Leadership Group, Tech America, BioCom, BayBio, etc.

    - Academia: Interested faculty and students from the six colleges who would like to engage in institute activities are welcome and needed (College of Agriculture, Food, and Environmental Sciences, College of Architecture and Environmental Design, College of Engineering, College of Liberal Arts, Orfalea College of Business, College of Science and Mathematics)

STRATEGY #2: Learn by Doing – Teams & Curriculum

Problem solving in the 21st-Century Innovation Economy requires the ability to operate in cross-disciplinary teams that facilitate seamless communication and coordination with those who have expertise in areas such as science & technology, public policy & ethics, social and cultural practices and norms, finance & strategic planning, marketing & communications.

- TEAMS: Annually conduct a two-quarter Institute Fellows Program for students and faculty (when possible, use upper division special topics courses) in which students from diverse disciplines are organized into teams to tackle advanced technology challenges that exist at the cutting edge of current public policy development.

    - Institute Student Fellows will be nominated by colleges/departments and then formed into cross-disciplinary teams as is done in MBA programs to work on a specific

whole-solution approach to an identified advanced-technology public policy challenge. Examples of such topics include:

- Integrated Water Sensor and Control Systems for Water Conservation in Agriculture
- Cellulosic Biofuels for Transportation
- Genetically Modified Organisms in foods, pharmaceuticals, and consumer products
- Desalinization Systems for Fresh Water in Water-Limited Coastal Communities
- Fuel Cell, Co-Gen, and Renewable Distributed Generation in Manufacturing, Agriculture, and Institutional settings
- Green Building Technologies and Material Science for Residential and Commercial Construction
- Waste to energy solutions
- Solar/Distributed Energy
- Cyber Security

EXAMPLE #1: Water Conservation

The state's current approach to regulating agricultural water runoff is widely criticized by the agricultural community as being costly, cumbersome, confusing, and largely an exercise in monitoring, measuring, and documenting agricultural activities rather than actually improving water quality.

Recent advances in technology are now allowing sensitive tensiometers to measure soil adhesion as a proxy for moisture content. Spikes with multiple sensors can measure moisture in a 3D grid at targeted depths across the entirety of a planted field. These sensors can wirelessly send moisture data back to a central control system on a continuous basis. That system can then turn drip irrigation systems on and off in a manner that optimally wets the field at the proper depths and times for the specific crop that is being grown.

In the near future, this technology could conceivably be integrated into the state's regulatory and public policy strategy with the following benefits.

- Reduced use of water for agricultural operations
- Improved crop yields due to optimal wetting during key growth phases
- Minimized silt runoff from fields into nearby sensitive riparian habitats
- Minimized conveyance of nitrate-laden fertilizer residue from the crops into the aquifer used for drinking water

Although this technology may not yet be fully ready for deployment in all applications, the concepts are showing enormous promise.

A thoughtful analysis involving students with backgrounds in technology, agriculture, computing, business, public policy, sociology, and communications could devise important proposals that could drive thinking of the state's policy makers while helping grow new jobs and lowering costs for agricultural operations.

EXAMPLE #2: Google Government

Accountability measures have passed both the Legislature and the ballot which require increased transparency in how the Legislature conducts its business. Proposition 122 limited the ability of the Legislature to hold closed meetings by either the full body or its committees. The Legislative Open Records Act allows interested persons to inspect legislative records. Additionally, the Legislature passed the Bagley Keene Act which states, "The people, in delegating authority, do not give their public servants the right to decide what is good for the people to know and what is not good for them to know. The people insist on remaining informed so that may retain control over the instruments they have created."

Despite these measures, the Legislature continues to conduct its business largely outside of the public's eye. Every year thousands of bills are presented during hundreds of committee hearings. While most hearings are technically open to the public, only some are broadcast and the archived record is limited and difficult to obtain.

Currently, if a member of the public wishes to review a specific legislative hearing, they must submit a written request under the Legislative Open Records Act, specifying the date and location of the hearing. The file is then located and copied onto a DVD which is then mailed to the requester. This process may take days or weeks to complete. However, there exists no mechanism for a member of the public to look back through a search tool for specific issues, language or a particular exchange.

Emerging technologies are allowing for more automated capture, transcription, archiving and searching of information than ever before. An online searchable database of Senate and Assembly hearings would revolutionize the public's ability to participate in and influence the legislative process.

Just as students from Stanford University launched California Common Sense using information technology to open up the state's finances, Cal Poly students could be on the cutting edge of developing technological applications that bring the full record of legislative deliberations to the public's fingertips, allowing the public to easily 'Google Government'.

- First Quarter: lectures and readings
    - On campus presentations by Cal Poly Institute Faculty Scholars with expertise in the relevant subject areas for the problem addressed in this quarter
    - On campus presentations by experts in public policy and government including current and former elected officials and agency experts
    - On campus presentations by technologists and industry leaders including venture capitalists, clean-tech entrepreneurs, and established companies
    - Readings and analysis of case studies of examples of how advanced technologies encountered support or opposition when they raised the potential of affecting existing markets and public policy.

- Second Quarter: Fellow Proposals
  - Each Student Fellowship will conclude with written proposals developed by each cross-disciplinary team that describes their strategies for addressing a current real-world challenge in a way that integrates the technological, public policy, social and cultural and public relations/ communications dimensions of the project. Each student will be responsible for writing the chapter that incorporates their expertise in the proposal.
  - Written proposals will be provided to affiliated Institute Fellow Faculty, participating legislative offices, policy makers, and corporate partners to help advance the discussion beyond the walls of the University
  - For participating students the student contribution to the proposal can possibly serve as a basis for the student's Senior Project and/or later graduate work. Upon completion of the second quarter, Student Fellows will receive a non-degree or Cal Poly unit certificate of accomplishment.

- Institute Student Leaders – Interns and Stipends for Certificate Bearing Student Fellows
  - Obtain work experience with industry and public sector partners at their workplace
  - Conduct follow-on research through continued development of their Fellow Proposal
  - Mentor current-year students in the Fellows Program
  - Investigate and identify grant opportunities in private and public sector
  - Work with Institute Faculty Scholars to assist with grant writing for funding with other non-profits, educational foundations, state and federal agencies.

- Future Growth Possibilities:
  - Graduate student involvement in Institute projects
  - Paid summer research work for faculty and students

STRATEGY #3: Teacher-Scholar Model

Cal Poly faculty members from all six colleges are key. They will bring invaluable insight, expertise, and pedagogical experience to all aspects of the Institute's functioning. Possible contributions range from developing methodologies for selecting problems to address with students, participating in course design, and advancing their own scholarly knowledge and expertise. Working with the Institute, Faculty Scholars can strengthen implementation of the teacher-scholar model at Cal Poly in several ways:

- Establish **Faculty Scholars program** which provides research and teaching opportunities to Cal Poly faculty who wish to participate in the Institute. May establish a grant/stipend program as resources come available.

- Strengthen cooperative ties between Cal Poly, Industry, and State Policy Leaders

- Improve awareness among Industry and State Policy Leaders of Cal Poly faculty research capacity to engage on topical and relevant research issues that have funding

- Improve awareness among Cal Poly faculty of the current pressing research challenges that are being pursued by the private and public sector in California

- Help network faculty with private and public sector opportunities to conduct grant-supported research

- Working in the area of policy also creates opportunities for faculty to serve their discipline in support of the teacher-scholar model.

STRATEGY #4: Outreach - Enhance Cal Poly's Reputation

- Conduct publicized annual policy conference addressing cutting-edge problems which highlight Cal Poly's leadership with participation by:
    - World class guest speakers and thought leaders
    - Experienced voices in government, academia, and industry
    - Institute Student Fellows, Institute Student Leaders and Institute Fellow Faculty

- Institute Fellows/Leaders Program for Cal Poly Students
    - Provide a unique learning and resume building opportunity that will serve as a magnet for high-quality students from around the state and nation.

- Expanded Advancement and Fundraising
    - Assemble new networks of Partners and Sponsors from the employer, advocacy, and public policy community
    - Assist in raising funds for Cal Poly Foundation by demonstrating Cal Poly's innovation and forward-leaning programs

- Annual community awards luncheon held locally to recognize student and faculty contributions; and build awareness and local support

GOVERNANCE & STAFFING

Due to the unique and inter-related nature of the various partners and sponsors, three separate advisory bodies will be constituted to ensure diverse inputs from those with expertise in industry, government, and academia:

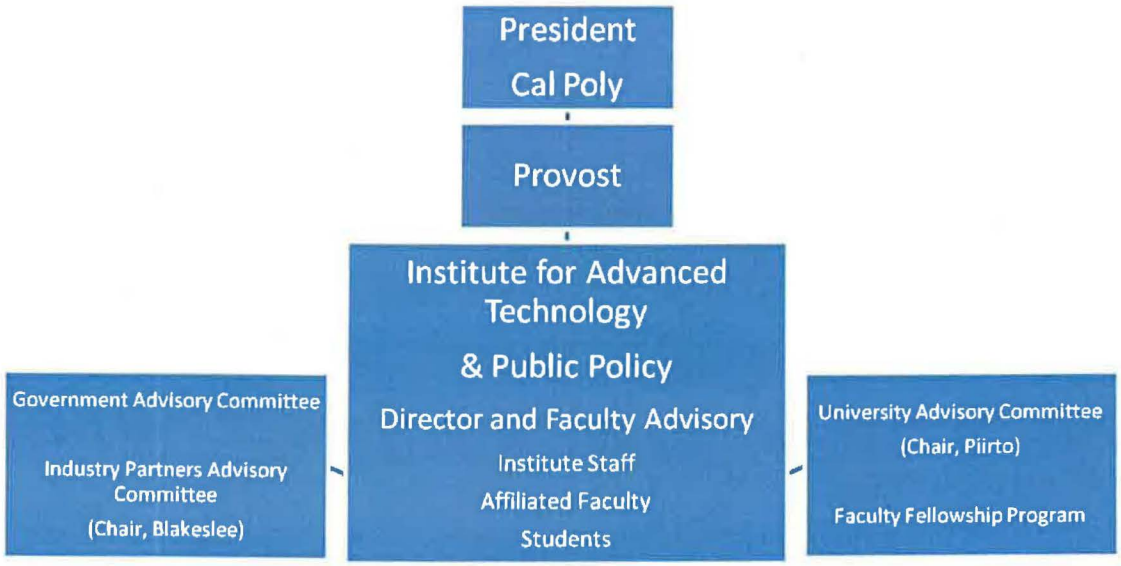
- Institute Leadership and Staff
    - Director – Sam Blakeslee, Ph.D. *(volunteer)*
    - Faculty Sponsor, Doug Piirto, Ph.D.
    - Program Director
    - Program Administrator
    - Student Interns

- University Advisory Committee
    - One faculty member from each college
    - Chaired by Dr. Doug Piirto, Institute Faculty Sponsor

- Industry Partners Advisory Board

  - Industry leaders, CEOs/CFOs/CTOs, Technologists from Silicon Valley and Southern California
  - Chaired by Dr. Sam Blakeslee, Institute Executive Director

- Government and Public Policy Sponsors
  - Government advocates, public policy experts based mainly in Sacramento
  - Chaired by Dr. Sam Blakeslee, Institute Executive Director



ANTICIPATED TIMELINE

- 2012: Finalize requisite authorizations with Cal Poly

- 2013: Establish relationships with key partners
  - Work with faculty and deans to better understand current activities on campus and how Institute can support their efforts
  - Work statewide to identify industry and government partners who would become Partners and Sponsors of the Institute's efforts
  - Based on feedback from campus, industry, and government leaders finalize seminar topics and materials for first-year rollout
  - Work with faculty and deans to identify Student Fellows for first-year rollout

- 2013: Launch first Seminar
  - Fall & Winter Terms
  - Fall Term used to network with Partners and Sponsors, prepare for 2015 Seminar

- 2015: After first Seminar explore the potential to add additional sections
  - Work with interested faculty to empower them to use the model if they have an advanced technology issue they wish to use as a subject around which to build a cohort of students
  - Work with interested faculty to help them obtain speakers and develop their own programs with Institute Partners and Sponsors

COORDINATION WITH UNIVERSITY ADVANCEMENT

In development

EXAMPLES OF INSTITUTES IN CALIFORNIA

Examples of higher-education public policy institutes that utilize the contributions of former elected officials already exist in California's CSU, UC, and private colleges.

- Panetta Institute: California State University, Monterey Bay
  - Founder – Leon Panetta (former Congressman)
- Maddy Institute: California State University, Fresno
  - Board Chair – Dave Cogdill (former State Senator)
- Jess Unruh Institute of Politics: University of Southern California
  - Director – Dan Schnur (former Chair of Fair Political Practices Commission)
- Institute for Governmental Studies: University of CA, Berkeley
  - National Advisory Council – over a dozen top Sacramento lobbyists and advocates in banking, oil, real estate, insurance, technology.

State of California
Memorandum

CAL POLY
SAN LUIS OBISPO

To: Steven Rein
Chair, Academic Senate

Date: January 29, 2013

From: Jeffrey D. Armstrong
President

Copies: K. Enz Finken
B. Anderson
S. Blakeslee
D. Piirto

Subject: Response to Academic Senate Resolution AS-754-12
Resolution on the Proposal for the Establishment of the Institute for Advanced Technology and Public Policy

Based upon the above subject Resolution, the positive endorsement by the Academic Deans' Council at its December 10, 2012, meeting, as well as the recommendation of Provost Enz Finken, I was pleased to approve the establishment of the Institute for Advanced Technology and Public Policy as amended in the final proposal, submitted November 19, 2012.

I am attaching the approval page, signed December 20, 2012, and the November 19, 2012, final proposal for your records.

Attachments

CAL POLY
SAN LUIS OBISPO
Office of the Provost

MEMO

TO: Jeffrey D. Armstrong, President

FROM: Kathleen Enz Finken, Provost

SUBJECT: Institute for Advanced Technology & Public Policy Proposal

DATE: 12/18/12

CC: Sam Blakeslee, Susan Opava

Attached for your review and approval is a copy of the proposal for the Institute for Advanced Technology & Public Policy prepared by Senator Sam Blakeslee and Dr. Doug Piirto. The Deans' Council reviewed the proposal on December 10, 2012 and approved it contingent upon changing the language in Example 1 on page 5 - 6. The contingency has been met and the changes are reflected in the final proposal.

I recommend you approve the proposal. If you have any questions, please let me know.

APPROVE: _____
Jeffrey D. Armstrong
President

20 Dec 12
Date