Meeting of the Academic Senate
Tuesday, March 2 2010
UU220, 3:10 to 5:00pm

I. Minutes:
Approval of minutes for Academic Senate meeting of February 9 2010 (pp 2-3).

II. Communication(s) and Announcement(s):
Nominations are being received for the positions of Academic Senate Chair and Vice Chair for 2010-2011. If you are interested in serving in one of these positions, please contact the Academic Senate office for a nomination form. The closing date for receiving nominations is Thursday, March 4 2010 at 2pm. Elections will take place on March 9.

III. Regular Reports:
A. Academic Senate Chair:
B. President’s Office:
C. Provost:
D. Vice President for Student Affairs:
E. Statewide Senate:
F. CFA Campus President:
G. ASI Representative:
H. Committee Chair(s):

IV. Business Item(s):
A. Resolution on Proposal for the Establishment of the University Center for Innovation and Entrepreneurship: Tornatzky/York, Orfalea College of Business, second reading (pp. 4-16).
B. Resolution on MS Fire Protection Engineering Program: Hannings, chair of Curriculum Committee/Pascual, College of Engineering, second reading (pp. 17-22).
C. Resolution on Campus Wide Change of Major Policy: Hannings, chair of Curriculum Committee, first reading (pp. 23-27).
D. Resolution on Revision of Cal Poly Mission Statement to Include Staff: Executive Committee, first reading (pp. 28-29).

V. Consent Agenda:
Curriculum Proposals for AERO, CSC/CPE, and FPE: (p. 30).

VI. Special Report(s):

VII. Discussion Item(s):

VIII. Adjournment:
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA 93407
ACADEMIC SENATE

MINUTES OF
The Academic Senate
Tuesday, February 9, 2010
UU 220, 3:00 to 5:00pm

I. Minutes: Minutes of the January 19, 2010 Academic Senate meeting were approved.

II. Communications and Announcements: none.

III. Reports:
A. Academic Senate Chair: Fernflores will be attending a Statewide Academic Senate Chairs meeting at which the Senate Chairs hope to ask Chancellor Reed about furloughs, deliverology as a tool to improve graduation rates, and rumors about a CSU GE Task Force exploring the possibility of reducing the number of upper division GE units required for graduation.

B. President’s Office: none.

C. Provost’s Office: Koob reported that Cal Poly has received $4 million as part of a second batch of stimulus funds to cover expenses for the 2009-2010 academic year. One-third of the funds will be set aside for high demand courses, while the remaining two-thirds will be allocated to colleges according to typical proportions. Conn announced the opening of an ombudsman services office for students. This office, which is located in the library, will provide a place where students can voice their concerns in a confidential, neutral, and independent manner. The office is not a decision making body but will occasionally serve as mediator.

D. Vice President for Student Affairs: none.

E. Statewide Senators: Foroohar reported on the large number of resolutions addressed at the last meeting statewide meeting. In addition to the resolutions, the issue of deliverology was discussed. A resolution was passed, about the need for a faculty trustee representative on the CSU Board of Trustees, which states that the CSU is 100% behind the current nominees, have full confidence in their qualifications, and encourage the Governor to choose one of them. LoCascio talked about the concern with the “troops to college” program and the need for each campus to have a mental health office. In addition, the issue of professional doctorates was discussed.

F. CFA Campus President: none.

G. ASI: Rugani announced that April 5 is the deadline to submit applications for the CSU student trustee position. Nominations for ASI President and ASI Board of Directors are due March 5.

H. Committee Chair(s): Hannings, Chair of the Curriculum Committee, mentioned that work on the next catalog cycle is underway. In order to complete a summer 2011 catalog, the review process must begin immediately and colleges must submit their proposals to the Office of the Registrar no later than July 1, 2010. The GE Task Force is working on a new GE governance structure; therefore, no new GE proposals will be accepted at this time. Full curriculum cycle details are available at (http://www.academicprograms.calpoly.edu/curric-handbook/Curric-cycle.htm).
IV. Consent Agenda: none.

V. Business Items:
A. Resolution on Program Suspension (Faculty Affairs Committee/Research & Professional Development Committee): Foroohar, Chair of the Faculty Affairs Committee, presented this resolution which requests that a task force be formed to draft a policy and that no program be suspended without consultation with the affected faculty. M/S/P to approve the resolution.

C. Resolution on Faculty Participation in DigitalCommons@CalPoly (Research & Professional Development Committee): Stankus and Ramirez, members of the Research and Professional Development Committee, presented the resolution which requests that the Academic Senate recommend that faculty (campus-wide) participate in order to enhance global access and availability of research, scholarship, and creative activities. M/S/P to approve the resolution.

D. Resolution on Proposal for the Establishment of the University Center for Innovation and Entrepreneurship: (Orfalea College of Business): Tornatzky and York, CBUS Faculty, presented the resolution which requests that the Academic Senate endorse the establishment of the center. Resolution will return as a second reading.

E. Resolution on MS Fire Protection Engineering Program: (College of Engineering): Hannings, Chair of the Curriculum Committee, presented the resolution which requests that the Academic Senate endorse the implementation of the program. Resolution will return as a second reading.

F. Resolution on Grade Forgiveness (Instruction Committee): Lertwachara, Chair of the Instruction Committee, presented this resolution which requests the repeal of AS-645-06 and allows undergraduate students to repeat up to 16 units of grade forgiveness in courses with a grade lower than a C. M/S/P to approve the resolution.

VI. Special Report: none.

VII. Discussion Item:
Resolution on Campus Wide Change of Major Policy: Hannings, Chair of the Curriculum Committee, discussed the resolution and policy intended to facilitate the change of major process and help students with time to degree. The policy guidelines state that students must complete at least one quarter at Cal Poly before requesting a change of major, must enter into a contract with the target department, feasible to complete in no more than two quarter, and must complete the degree requirements in the new major with a maximum of 24 units above the program requirement. The resolution will be a first reading item at the next Academic Senate meeting.

VIII. Adjournment: 5:00pm

Submitted by,

[Signature]
Gladys Gregory
Academic Senate
ACADEMIC SENATE
of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA

AS-___-10

RESOLUTION ON
PROPOSAL FOR THE ESTABLISHMENT OF THE
UNIVERSITY CENTER FOR INNOVATION AND ENTREPRENEURSHIP

RESOLVED: That the Academic Senate of Cal Poly endorse the attached proposal for establishment of the University Center for Innovation and Entrepreneurship.

Proposed by: Orfalea College of Business
Date: November 24 2009
Attached is a copy of a proposal to establish a University Center for Innovation and Entrepreneurship. In accordance with campus policy for the Establishment, Evaluation and Discontinuation of Centers and Institutes, this proposal received conceptual approval by the Academic Deans’ Council at its meeting on November 16, 2009. I would now appreciate the Academic Senate’s review of this proposal. Simultaneously an ad hoc committee, appointed by me, will review organizational and financial aspects of the proposed center. Please feel free to contact Drs. Lou Tornatzky or Jonathan York in the Orfalea College of Business, authors of the proposal, should you have any questions or would like them to make a presentation to the Academic Senate.

Thank you, and if you have any questions, please do not hesitate to contact my office.
Proposal for a University Center for Innovation and Entrepreneurship

California Polytechnic State University

Submitted by

Louis G. Tornatzky, Ph.D.  Jonathan L. York, Ph.D.
Orfalea College of Business

October, 2009

Submitted to

Dave Christy, Dean, Orfalea College of Business
"The core elements of an entrepreneurial university are: a strengthened steering core with a clear vision and mission, boundary spanning structures and mechanisms to interact with the “outside” world (external stakeholders), a diversified funding base (less state funding), inter- and multidisciplinary activity and an integrated entrepreneurial culture.\(^1\)"

\textit{from the World Economic Forum’s 2009 Report on entrepreneurship education}

\section*{Background and Purpose}

This proposal develops the rationale and goals for a \textbf{University Center for Innovation and Entrepreneurship} at Cal Poly. The proposed Center would enhance classroom and field-learning opportunities for students across the campus, encourage interdisciplinary scholarly research and publication, and be a resource for the university as it evolves its role in innovation, creativity, entrepreneurship, technology commercialization and regional technological and economic development. Moreover, it would perform an important coordinating and clearinghouse role among students, faculty and staff who are deeply interested in these issues.

The proposal has its origins in informal discussions between Dr. Tomatzky and Dr. York, with Dr. Susan Opava, Dean of Research and Graduate Studies at Cal Poly, Dr. Robert Koob, Provost, and Dr. Dave Christy, Dean of the Orfalea College of Business on how to best expand the mission interests of the institution in the area of entrepreneurship and innovation. These preliminary interactions have been supplemented with discussions with a much larger cohort of interested parties, both on campus and in the community (Appendix A) several of whom would be formally affiliated with the Center when it launches. Based on these interactions, and research that we have conducted on national trends and practices at other universities, we believe that there is a strong case for the formation of a University Center for Innovation and Entrepreneurship that could yield numerous programmatic enhancements at Cal Poly, such as:

\begin{itemize}
  \item An enlarged, focused and more interdisciplinary program of undergraduate and graduate instruction in innovation and entrepreneurship;
  \item A significantly enhanced effort to foster hands-on entrepreneurial experiences, both within the university and in collaboration with community organizations and entrepreneurs, consistent with the polytechnic and learn-by-doing orientation of the institution;
  \item A more robust program of research, scholarship and policy studies dealing with entrepreneurship and innovation;
  \item A partner in Cal Poly’s increasing involvement in technology commercialization in evaluating, “incubating,” and supporting faculty and students’ entrepreneurial activities;
\end{itemize}

• An active participant in and supporter of Cal Poly's role in regional economic development, especially where it comes to technology-based start-ups and innovative growth practices in existing companies;

• An administrative and philosophical “home” and/or support system for entrepreneurial activities and programs such as intra- and inter-university competitions, lecture series and symposia;

• A venue for domestic and international collaboration with universities with comparable missions and interests in innovation and entrepreneurship (e.g., Politecnico di Milano, Helsinki University of Technology, Chalmers University of Technology, Grand l’Ecole des Mines de Paris) with which Cal Poly already has significant or budding exchange relationships.

It should be emphasized that while many of the above activities are being implemented at some level at Cal Poly, their full flowering will benefit from the establishment of a Center. The experience of many universities is that a Center can leverage significant external support in the form of dedicated gifts, grants and contracts, as well as function as a lightning rod for change. We also believe that the Cal Poly context and “brand” will be a significant asset. However, only an officially sanctioned and approved Center can be competitive in the soft money arena.

In the following pages, the authors further develop the argument for a University Center for Innovation and Entrepreneurship located administratively in the Orfalea College of Business along with a concurrent coordinating relationship with the Dean of Research and Graduate Programs consistent with its campus wide interdisciplinary vision. The two principals leading this development effort (York and Tornatzky) have appointments in OCOB, but from the beginning of the planning effort many individuals from other colleges have been involved. Moreover, as the center evolves it will truly become a University Center in terms of the breadth of its activities, units and individuals involved and its face to the world.

Background and Context

Entrepreneurship and innovation are topics that preoccupy academics, business and government leaders, and the country’s imagination. If one “Scholar-Goggles” on either term, the resulting search yields hits in the hundreds of thousands. Nationally prominent private and government foundations (e.g., Ewing Marion Kauffman, National Science Foundation) have focused and expanded their program agendas on fostering entrepreneurship and innovation. Even in a time of economic disorder, that portion of the U.S. and California economies that focuses on technologically innovative entrepreneurial startups remains the envy of the world.

Most important from the university perspective is the fact that the growth of entrepreneurship centers, research programs, and dedicated positions (e.g., endowed chairs) has been phenomenal over the past decade. For example, the Global Consortium of Entrepreneurship Centers has over 200 sanctioned university programs as members.
Almost all of these Centers focus on both innovation and entrepreneurship as tightly linked activities. Also, a 2004 Kauffman Foundation study found 404 endowed chairs in entrepreneurship in the U.S. alone. There is also a growing link between entrepreneurship education and research and regional economic development, particularly university technology transfer resulting in the establishment of technology-based startups. Both of the authors of this proposal have been involved in the practice and study of these phenomena (e.g., NSF-supported national benchmarking\(^2\)).

While the small enterprise, entrepreneurial portion of the US economy has been the major source of new jobs for over two decades, there is a subcomponent -- the "gazelle" companies -- that account for a disproportionate fraction of that economic growth. Typically, gazelle firms have been particularly clever and innovative in their products and business models, often commercializing research-based innovations from universities.

There is also a strong relationship between successful entrepreneurship and the mastery of innovation processes and technological creativity. The more successful entrepreneurs tend to be more innovative, and the more innovative companies tend to be entrepreneurial -- or "intrapreneural" in the case of larger companies. By illustration, a business best-seller entitled *The Innovator's Dilemma*\(^3\) has documented the extent to which most large corporations are unable to adopt or implement radical technological innovations and spend most of their efforts on incremental, cost-saving changes to production processes or product features. Thus the proposed Center must place significant effort on understanding and implementing innovation processes wherever they occur. While the scholarly literature in this area is large\(^4\), there are nonetheless many opportunities for Cal Poly to make a contribution.

As the World Economic Forum report *Educating the Next Wave of Entrepreneurs* notes, "The design of adequate framework conditions by universities and governments should not only serve to support entrepreneurship education and the recognition of credible entrepreneurial opportunities, but also to establish the further entrepreneurial 'support chain' of technology commercialization and academic spin-off activity in higher education contexts."

For example, in the public policy domain over the past 15 years, the vast majority of state governments and regional organizations have tuned their economic development strategies so as to pay more deliberate attention to nurturing technological innovation -- particularly with state-based research universities as key players\(^6\) - with the hope that it


will help anchor high wage, high technology companies in their region. Increasingly these public policy initiatives are focused on the nurturance of entrepreneurial ventures, through the establishment of business incubators\(^7\), public-private seed funds and university-based entrepreneurship centers.

At the same time, the public sector continues to struggle with the problem of how to serve its constituencies more effectively. Often this discussion involves not what to do, but how to export the culture and practices of private sector entrepreneurship to the public domain, and how to effectively foster innovation processes and disseminate and implement innovations that are already proven. This problem repeats itself in settings as disparate as public education, sustainability or mental health.

**Why Is a Center Needed?**

This proposal for the establishment of the University Center for Innovation and Entrepreneurship at Cal Poly represents the coming together in time of several significant activities and trends that make this the right time:

- An increased focus on technology commercialization at Cal Poly at both university and college levels, with a rapidly growing interest in leveraging research into new companies;
- Significant growth in faculty research and grant activity, particularly in areas that have entrepreneurial potential and incorporate interdisciplinary innovation;
- Establishment of a tenure track faculty position in entrepreneurship in the Orfalea College of Business with the concomitant energizing of the entrepreneurship curriculum;
- Establishment of a clearer role for Cal Poly in regional economic development efforts and a more robust series of conversations between the university and relevant organizations (e.g., SLO Chamber of Commerce);
- Increasing cross-departmental research cooperation with entrepreneurship potential;
- Increased faculty interest and involvement in technology innovation and commercialization, expressed in both new and revised curricula as well as in new approaches to long-standing Cal Poly traditions, such as the Senior Project;
- Efforts on behalf of Cal Poly and the community to better identify and catalogue the significant entrepreneurial efforts of Cal Poly alumni over the past decade, resulting in a large list of potential supporters of a variety of entrepreneurial activities and research;
- Development of specialized facilities with implications for entrepreneurship instruction and practice, such as a recently configured Entrepreneurial Ideation

Laboratory (EIL, 38-133), in the Orfalea College of Business, that is patterned after approaches pioneered by IDEO and in Stanford design facilities.

**What Will the Proposed Center Do?**

Based on the existing research on and practice of innovation and entrepreneurship – and the shortcomings therein – we believe that a strong case can be made for a University Center with the following features:

- A Center that cuts across and integrates different disciplinary concepts, methods and approaches;
- A Center that is tied to applications, and to fostering innovation and entrepreneurship in a polytechnic, learn-by-doing context;
- A Center that bridges epistemological boundaries between business, engineering, the social sciences, the humanities and the physical and natural sciences.

We also believe that Cal Poly is the logical parent for such an organization as the proposed University Center for Innovation and Entrepreneurship, for the following reasons:

- Cal Poly today has a critical mass of faculty, staff and business partners actively involved in technological innovation and entrepreneurship;
- Cal Poly is evolving a culture of entrepreneurship that focuses industrial partnerships on new ventures;
- Cal Poly is increasingly involved in community partnerships trying to foster an entrepreneurial, technology-based regional economy;
- As a polytechnic university, innovation is at the core of what Cal Poly does and is.

**How Would a University Center for Innovation and Entrepreneurship Work?**

Four issues are particularly pertinent to answering this question: vision and mission; structure; leadership; and funding.

**Vision and Mission.** The vision is to create a nationally recognized education, research, action and advocacy center concerned with the processes, structures and outcomes of entrepreneurship and innovation. The mission is to educate more students more intensively in these areas, foster research in entrepreneurship and innovation and enable the practice of entrepreneurship in our campus and regional community.

**Structure and Leadership.** The Center would function as an R&D and outreach entity, with a modest amount of core “hard money” support (ideally in the form of endowment) that would also be highly leveraged in terms of external grants and contracts. A small leadership cohort would receive guidance from a Center Advisory Board, with members from campus, regional and national organizations. Many of the members of this Board can be drawn from the list of interested parties in Appendix A. Researchers and practitioners from across the country would be invited to be affiliated Scholars, and
partner with Cal Poly-based faculty. The primary unit of activity would be the Project, all of which would be externally funded and most of which would involve collaboration between faculty from various units and institutions on campus, as well as partnerships from regional and national entities.

It is recommended that intellectual and scientific leadership (Director) of the Center during a two-year launch period be shared between Dr. Louis Tornatzky and Dr. Jonathan York (working initially on a partial released time basis). Since Dr. Tornatzky and Dr. York are both tenure track faculty members in the College of Business, with leadership responsibilities in the Entrepreneurship Concentration therein, there will be a natural and enduring linkage to the College of Business. In addition, a staff Administrator will be folded into Center operations, starting initially on a part-time basis. It should be emphasized however, that the Center can only accomplish its vision and mission if it is seen, and is in fact, an organization that serves the entire campus as well as being seen as a community asset. In Appendix B, vita have been provided for Drs. Tornatzky and York.

Launch Funding. As suggested above, the Center is visualized as eventually a predominantly soft money operation, supported by a variety of public and private "investors." Initially, a modest amount of launch resources, in cash or in kind, for the first two years of operation will need to be secured, probably in the range of $25-100K per year. This could be raised privately through grants and/or individual supporters, with a small amount of initial University funding through the Orfalea College of Business and the Office of Research and Graduate Programs. It would be reasonable to expect that within 6-9 months a number of proposals would be under review by federal funding agencies, foundations and private donors. If funded, and of sufficient magnitude, there would be eventual IDC recovery that would accrue to the Center.

In the longer term, a stable source of endowment-based funding would be desirable to support the ongoing administrative functions of the Center, as well as to kick-start and match-fund Center Activities (see below).

We expect to reach a goal of steady-state level of funding in the range of $250-500K per year from a variety of sources within 2-3 years after official launch. A more detailed depiction of future funding expectations is presented in Appendix D. Both of the founding leaders of this center have an established track record in securing financing such as this. Over his career, Dr. Tornatzky has secured well over $10 million in external research funding from various agencies and foundations. In his previous positions, Dr. York has raised over $150 million in public and private funds for business, civic, and academic projects.

Illustrative Activities and Projects

The work of the Center is expected to be quite diverse and will include research and "action" projects, with one-time events alongside multi-year work, which will be
attractive to a wide variety of potential “investors.” The following are the best opportunities for building a portfolio of sponsored projects and activities:

**Research Studies of Innovation and Entrepreneurial Processes.** Despite a relatively rich body of research, across a range of disciplines, there are still a number of important questions about innovation and entrepreneurial processes, that have been a difficult challenge for academic institutions. Simply put, the phenomena do not fit well with the typical structures and processes of the academic world, nor do they match well with the disciplinary structure of universities. For example, one of the most complete integrative reviews of the conceptual and empirical literature on innovation argued the following:

- Entrepreneurship and innovation are not discrete events, but processes that encompass many events and many explanatory factors that cut across disciplinary boundaries;
- Entrepreneurship and innovation are longitudinal processes, often taking years, and the events and explanatory factors are qualitatively distinct depending on where one is in the overall process;
- Entrepreneurship and innovation processes occur at different levels, often simultaneously, that in turn do not correspond to the conceptual domains and preferred methodologies of academic disciplines or sub-disciplines.

This state of the field suggests that there is an opportunity to focus Cal Poly’s research assets, through the enabling role of the Center, on topics that have conceptual and practical value. For example, these include: the cultural underpinnings of university technology transfer; organizational and inter-organizational structures facilitating technological innovation; risk-taking and innovation; and the regional economies of entrepreneurship. Studies of this nature are likely to be funded by the discipline-based programs of NSF or similar agencies, or larger national foundations. The Center will emphasize interdisciplinary projects relating to both innovation and entrepreneurship.

**Projects Fostering Campus and Community Entrepreneurship and Innovation.** There is now a rich experience base of activities that can foster student and community interest and involvement in entrepreneurship. In the past year, the pace of entrepreneurship activities on campus has quickened. Among these have been:

- Drs. Christy and Tornatzky hosted an Entrepreneurship Forum at Cal Poly in the fall of 2008 that brought together faculty from across the campus, community business and technology leaders, and venture capitalists to highlight entrepreneurial progress at the University;
- Dr. Susan Opava, Dean of Research and Graduate Programs, has been sponsoring a quarterly forum focused on technology transfer activities and recent innovations by Cal Poly faculty. These events have been well attended by CEOs and Chief Technology/Engineering Officers from high-tech companies in the region as well as Cal Poly faculty researchers;

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• Dr. Opava sponsored an extended visit this past year by Dr. Ken Walters and Dr. Alvin Kwiram, who met with many groups across campus to share their experience in a variety of areas related to entrepreneurship and technology commercialization at the University of Washington;

• Innovation activity among faculty has increased dramatically in recent years, resulting in a steady stream of invention disclosures to the Office of Research and Graduate Programs and a concomitant increase in the filing of patent applications and issuance of patents;

• Both the Ray Scherr Business Plan Competition and Innovation Quest have seen an increase in the quality of the applicants and the leaders of Innovation Quest have planned a summer activity to provide more business development support to this year's winners;

• Drs. York and Tornatzky have been meeting regularly with faculty in the College of Engineering across most of their disciplines to seek avenues for collaboration in entrepreneurship activities;

• Dr. York and a group of students have re-started the Entrepreneurship Club, Cal Poly Entrepreneurs which will commence a full range of activities in the Fall of 2009. A fall kickoff meeting was held in the Entrepreneurial Ideation Lab (EIL) and drew 35 students from 4 colleges;

• The Cal Poly Office of University Housing, Department of Apartment Life and Education, has designated an “Entrepreneurship Learning Center” at Poly Canyon Village. Drs. York and Tornatzky are assisting in the launch of this program for the 09-10 academic year;

• Conversations are well along with the Dean of Libraries to co-host, at the library, entrepreneurship related events, perhaps modeled after the MIT Enterprise Forum;

• The marketing faculty in the Orfalea College of Business have focused their curriculum on innovation and in project-based courses supporting startups and new business opportunities.

There is also an opportunity to foster general awareness and knowledge among faculty members about technology transfer policies and procedures – particularly with an eye to startups – by conducting short seminars at targeted disciplines and individuals. Tornatzky has been involved in such work in the past.

**Fostering Venture Incubation.** In the past, and still at this point in time, the “deal flow” of potential entrepreneurial ventures coming out of the Cal Poly community – faculty, students and staff – has been quite modest. Nonetheless, it is increasing (as noted above) as is a perceived need for some kind of technology commercialization and business support services. The Dean of Research and Graduate Programs, Dr. Susan Opava, and Jim Dunning, Project Administrator for C3RP, have been working on this problem and the University Center for Innovation and Entrepreneurship would be an asset to those efforts, particularly given the past experiences of the initial Center leadership.
While a fully functioning incubator facility may not yet be justified, there is an opportunity and need to develop a transitional structure providing such services. This could be achieved by the establishment of non-residential “virtual” incubation services, in partnership with local experienced entrepreneurs. In addition, with the Cal Poly Technology Park coming on line within the next 15 months, this could provide another venue for time-limited virtual and physical incubation activities. A plan is being considered for a small incubation space in the building funded through sponsorships. Dr. Tornatzky serves on the Academic Advisory Committee for the Technology Park project, and Dr. York serves on the San Luis Obispo Chamber’s Economic Development Collaboration Committee as one of Cal Poly’s representatives, along with Provost Koob, Susan Opava and Jim Dunning.

**Evaluation and Benchmarking Studies of Innovation and Entrepreneurship Outcomes.** While understanding innovation and entrepreneurial processes is the intellectual thread that ties this body of work together, often progress toward this goal can be reached via work that is primarily looking at outcomes. For example, under Dr. Tornatzky’s direction, the Southern Technology Council executed a 10-year program of “benchmarking” research that examined technology transfer outcomes across research universities in the South. There is a great need to expand and update work such as this and develop a more comprehensive set of metrics, tools and analytic methods. Currently, Dr. Tornatzky and Dr. York are in the early stages of a national study of long-term outcomes of regional entrepreneurial public-private initiatives. Also, Drs. Tornatzky and York, along with Dr. Lynn Metcalf and Dr. Stern Neill, have submitted to the National Science Foundation a research proposal on “marooned assets” in innovation and technology, which will examine university-community technology collaboration in smaller university communities that are geographically isolated.

**Culture-Changing Events and Activities.** Historically, the exposure of the Cal Poly community to entrepreneurship and entrepreneurs has been limited and hit-or-miss. As a result, student and faculty interest and involvement has been much less than at other campuses. Similarly, at campuses that are active and successful in fostering technology-based ventures, there is lore, a set of stories and cultural values that encourages entrepreneurship among faculty and students. In order to accelerate the visibility and actual deal flow of entrepreneurial ventures, an awareness and culture building process needs to be undertaken, in which the Center will play a role and which will involve both students and faculty, as well as the broader entrepreneurial community. These could include: an entrepreneurship mentoring series; organizing entrepreneurship events such as “fairs”; accelerating the scope and prominence of the business plan competition; organizing field trips to entrepreneurship events (e.g., Tornatzky has been leading student attendance at events hosted by the MIT Enterprise Forum based in Santa Barbara); facilitating exposure to entrepreneurship enabling organizations (e.g., Plug and Play Tech Center) and encouraging participation in entrepreneurship activities on campus that bridge disciplines and colleges. All of these events and activities have cumulative impacts that tend to “tip” the culture. The goal would be that within the foreseeable future the student and faculty culture at Cal Poly regarding entrepreneurship would look more like a Stanford or MIT than it does now.
Vetting the Center Concept

At the suggestion of Drs. Christy, Opava and Koob, conversations have been conducted with a range of on-campus and community stakeholders to discuss the concepts behind this proposal and potential action items. We have identified and talked with faculty members, administrators and staff who have substantive interests in entrepreneurship and innovation, who might want to affiliate with such a Center, and who would be willing to be involved in further planning and fund raising. A parallel process was also undertaken in the community – identifying and enlisting private sector parties including venture investors, technology entrepreneurs and economic development officials.

The outcomes of that process have been positive and substantive, and this version of the Center Proposal reflects many suggestions that we received. Nonetheless, the question of whether Cal Poly should play a larger role in entrepreneurship and innovation education, scholarship and practice seemed to be a “no-brainer” for the admittedly biased sample of informants. Their message was: do it; do it now; and do it as big as current and future resources permit.
WHEREAS, There are no Fire Protection Engineering Masters programs in the Western United States; and
WHEREAS, There is significant industry demand and support for such a program at Cal Poly; therefore be it
RESOLVED: That the Academic Senate at Cal Poly endorse the implementation of the attached proposal for a Masters Degree in Fire Protection Engineering as a five-year pilot program commencing in fall quarter 2010.

Proposed by: Academic Senate Curriculum Committee
Date: December 4 2009
1. **Title of proposed program:**
   
   Master of Science in Fire Protection Engineering

2. **Reason for proposing the program:**
   
   The need for fire protection engineers, especially in California and the Western States, is growing critical. The projected large numbers of retirements in the field of fire protection engineering, increasing challenges due to California’s wildland/urban interface environment, new state structural regulations related to fire protection, and the lack of any higher education providers is creating a situation that needs to be addressed immediately. The challenge of fire in the wildland/urban interface, which can be defined as those areas where structures and wildland vegetation coincide, is of particular concern in California due to climate and growth factors. The program is primarily targeted toward people with undergraduate degrees in engineering who want to earn a master's degree and obtain their professional license in fire protection engineering. Fire protection engineering firms have asked California Polytechnic State University to develop this program in response to this critical shortage of fire protection engineers in California and the western states. Currently, there are only two universities on the East Coast that offer a master's degree in fire protection engineering, Worcester Polytechnic Institute and the University of Maryland.

3. **Expected student learning outcomes and methods for assessing outcomes:**
   
   Upon completion of this program, the students will possess the necessary knowledge and skills to pursue professional certification and licensure in the fire protection engineering discipline. Furthermore, the program will address unique fire challenges faced by California and other western states, including wildland-urban interface fires and post-earthquake fires.

   The educational objective of the Fire Protection Engineering program is to provide students with the knowledge, skills and tools needed to solve fire protection engineering problems and develop fire safety design solutions in a variety of professional settings. Upon completing the requirements for a Master of Science degree in Fire Protection Engineering, students should be able to:

   a) Identify relevant fire safety codes, standards and regulations, comprehend the fire safety performance objectives and criteria associated with these documents, and apply these fire safety objectives and criteria to a broad range of applications.
b) Analyze the flammability characteristics of different materials, interpret the results of standard and non-standard fire test methods and evaluate the fire hazards associated with different materials in a range of anticipated settings.

c) Analyze the dynamics of fires in and around buildings and other structures through the application of fundamental principles and the use of state-of-the-art computer-based fire simulation models.

d) Understand how people interact with fire conditions in buildings and calculate evacuation times through the application of fundamental principles of people movement and the use of state-of-the-art computer-based evacuation models.

e) Design fire detection and alarm systems, fire suppression systems, smoke management systems, egress systems and structural fire protection to achieve specified performance objectives.

f) Perform comprehensive fire and life safety evaluations of buildings and other structures through application of the knowledge, skills and tools acquired in this program and effectively communicate the results and findings of such evaluations.

Assessment of student learning will take several forms including direct examination of student work; feedback from students via (for example) course evaluations, surveys, and focus groups; and alumni and employer surveys. With advice and counsel from an industry-based advisory board, the program’s faculty program committee will draw on the assessment results in pursuing continuous improvements in curriculum and other aspects of program design/implementation.

4. Anticipated student demand:

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<td></td>
<td>3 years</td>
</tr>
<tr>
<td></td>
<td>at initiation</td>
</tr>
<tr>
<td>Number of Majors</td>
<td>20</td>
</tr>
<tr>
<td>Number of Graduates</td>
<td>0</td>
</tr>
</tbody>
</table>

*Indicate briefly what these projections are based upon:*

Twenty students are expected in the first class, with enrollment increasing to forty students by the fifth year of operations. It is estimated it will take students 5-6 quarters to complete the program. Since the program is designed for working professionals as well as students continuing directly from undergraduate degrees, some will only attend part-time.

The anticipated student demand for the proposed FPE program is based on a survey distributed to the California and Nevada chapters of the Society of Fire Protection Engineers (SFPE) and to the California Fire Prevention Officers (CFPO) organizations in northern and southern California. The CFPO organizations represent the fire code enforcement authorities in small, medium and large jurisdictions throughout California. The SFPE and the CFPO distributed the survey to their member organizations.
5. If additional resources (faculty, student allocations, support staff, facilities, equipment, etc.) will be required, please identify the resources, indicate the extent of the college's commitment to allocate them, and evidence that college decision-making committees were aware of the sources of resource support when they endorsed the proposal. If the college expects the university to provide additional resources, please identify the resources and anticipated cost.

A coordinator will be required to develop and maintain this program. This coordinator will be supported by income generated by the program. Support has been received from the California State University Commission on the Extended University and the Society of Fire Protection Engineers' Education and Scientific Foundation. Additional funding is being sought from private industry to help support this program. The program will operate through special session so no state general funds will be required to start or maintain the program. The program will be financially self-supporting.

6. If the program is occupational or professional, summarize evidence of need for graduates with this specific education background:

The shortage of fire protection engineers in California is critical. Despite the demonstrated need for individuals trained in this field, there are no graduate degree programs in fire protection engineering west of the Mississippi. The only two existing programs in fire protection engineering are in Maryland and Massachusetts. In addition to the traditional fire protection engineering field, California has a unique Wildland Urban Interface (WUI) fire problem that fire protection engineers can help address. As our WUI areas continue to expand along with the overall population, California can expect to realize even greater human and property loss from fires.

The lack of degree opportunities has created significant demand for individuals with fire protection engineering expertise in California. More positions open each year than there are qualified individuals to fill them. This demand is expected to expand in California and other western states, which continues to be one of the fastest growing regions in the country.

In its 2009 recruitment survey, the SFPE reported that of 56 respondents, 33 (59%) attempted to hire a FPE despite the economic downturn. Of these 33, 21 (64%) experienced difficulties with the hiring process, with the primary issue being a lack of applicants in the geographic location. Of the 56 respondents, 49 (88%) anticipated hiring additional FPEs within the next 5 years. Of these 49, 36 (73%) felt it would be difficult to find qualified applicants.

7. If the new program is currently a concentration or specialization, include a brief rationale for conversion:

N/A
8. **If the new program is not commonly offered as a bachelor’s or master’s degree**, provide compelling rationale explaining how the proposed subject area constitutes a coherent, integrated degree major which has potential value for students. If the new program does not appear to conform to the CSU Trustee policy calling for “broadly based programs,” provide rationale:

The discipline of fire protection engineering is not new; however, programs designed to educate individuals to be fire protection engineers have not been offered by the California State University. There is only one undergraduate program in the country at the University of Maryland. There are only two graduate programs, University of Maryland and Worcester Polytechnic Institute.

Fire protection engineering is recognized as a distinct engineering discipline in the State of California as well as in most other states. Engineers practicing in this discipline must be licensed as professional engineers. Students in this program will be prepared to sit for the professional engineering examination in this discipline.

9. **Briefly describe how the new program fits with the mission and/or strategic plan for the department, college and/or university:**

The addition of this program will not impede the successful operation and growth of existing programs on campus. As a special session program offered under Executive Order 802, the program will be administratively and academically completely self-supporting. No general fund resources from either the College of Engineering or any other academic units will be used to support this program. The program’s interdisciplinary structure, application of theory to practice, and outreach and engagement features support and advance the missions of Cal Poly, the College of Engineering, and Continuing Education and University Outreach.

**Cal Poly Mission Statement**

Cal Poly fosters teaching, scholarship, and service in a learn-by-doing environment where students and faculty are partners in discovery. As a polytechnic university, Cal Poly promotes the application of theory to practice. As a comprehensive institution, Cal Poly provides a balanced education in the arts, sciences, and technology, while encouraging cross-disciplinary and co-curricular experiences. As an academic community, Cal Poly values free inquiry, cultural and intellectual diversity, mutual respect, civic engagement, and social and environmental responsibility.

This program enhances the strong polytechnic mission of Cal Poly by applying engineering and architectural theories to fire protection. The program expands our civic engagement initiatives by producing graduates who will reduce the loss of lives and property in California due to fire.
10. Attach a display of curriculum requirements.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Units</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPE 501 Fundamental Thermal Sciences</td>
<td>4</td>
<td>Grad Standing or consent</td>
</tr>
<tr>
<td>FPE 502 Fire Dynamics</td>
<td>4</td>
<td>FPE 501 or consent</td>
</tr>
<tr>
<td>FPE 503 Flammability Assessment Methods</td>
<td>4</td>
<td>FPE 502</td>
</tr>
<tr>
<td>FPE 504 Fire Modeling</td>
<td>4</td>
<td>FPE 502, FPE 503</td>
</tr>
<tr>
<td>FPE 521 Egress Analysis and Design</td>
<td>4</td>
<td>Grad Standing or consent</td>
</tr>
<tr>
<td>FPE 522 Fire Detection, Alarm and Communication Systems</td>
<td>4</td>
<td>Grad Standing or consent</td>
</tr>
<tr>
<td>FPE 523 Water-based Fire Suppression</td>
<td>4</td>
<td>FPE 501 or consent</td>
</tr>
<tr>
<td>FPE 524 Structural Fire Protection</td>
<td>4</td>
<td>Grad Standing or consent</td>
</tr>
<tr>
<td>FPE 596 Capstone Experience in Fire Protection Engineering</td>
<td>5</td>
<td>FPE 504, advanced graduate standing, completion of, or concurrent enrollment in, engineering courses in program, &amp; consent</td>
</tr>
</tbody>
</table>

**TOTAL** 37

<table>
<thead>
<tr>
<th>Elective Courses</th>
<th>Units</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPE 551 Fire Safety Regulation and Management</td>
<td>4</td>
<td>Grad Standing or consent</td>
</tr>
<tr>
<td>FPE 552 Smoke Management and Special Hazards</td>
<td>4</td>
<td>FPE 502, FPE 504</td>
</tr>
<tr>
<td>FNR 455 Wildland-Urban Interface Fire Protection</td>
<td>3</td>
<td>Consent</td>
</tr>
<tr>
<td>ME 541 Advanced Thermodynamics</td>
<td>4</td>
<td>ME 303, ME 343, ME 347, MATH 244, Grad Standing</td>
</tr>
<tr>
<td>ME 554 Computational Heat Transfer</td>
<td>4</td>
<td>ME 343, ME347, Math 418, Grad Standing</td>
</tr>
<tr>
<td>Choose a total of 8 units from elective courses</td>
<td>8</td>
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</tr>
</tbody>
</table>

**TOTAL NUMBER NEEDED FOR DEGREE** 45
RESOLUTION ON CAMPUS WIDE CHANGE OF MAJOR POLICY

WHEREAS, Cal Poly requires students to declare their major at their time of application; and

WHEREAS, Approximately thirty percent of Cal Poly students change their major during their time at Cal Poly; and

WHEREAS, Changing majors can increase a student’s time to degree; and

WHEREAS, Senate Resolution AS-582-02/IC, Resolution on Process for Change of Major, adopted March, 2002, was never fully implemented; and

WHEREAS, The process and rules for change of major are set by each department and are inconsistent across the campus, and in some cases they are unclear or onerous; and

WHEREAS, Student success is our primary goal; and

WHEREAS, The attached Change of Major Policy has been created with input from a committee of the associate deans, the Senate Curriculum Committee, and the faculty at an open forum; therefore be it

RESOLVED: That the Academic Senate adopt the attached Change of Major Policy; and be it further

RESOLVED: That the Academic Senate recommend to President Baker that the campus adopt the attached Change of Major Policy.

Proposed by: Academic Senate Curriculum Committee
Date: January 14 2010
Revised: January 24 2010
CHANGE OF MAJOR POLICY
January 24, 2010

Policy Statement

Cal Poly students are required to declare a major at the time of application. Some students find that their interests and abilities lead them in a different direction. The university must offer a transparent and timely process for all students who seek to change majors.

Process

I. General Guidelines

A. Minimum Time at Cal Poly
   Students must complete at least one quarter at Cal Poly before requesting a change of major.

B. Basic Criteria that may be used in determining Target Major Options
   All academic departments should give careful consideration when determining target major options. The following criteria may be considered:

   1. The majors for which the student was eligible at time of admission,
   2. College academic record (e.g., GPA, coursework, etc.), and
   3. Remaining coursework and the student’s ability to complete degree requirements in the new major within the published unit maximums for that major.

C. One Chance to be Accepted
   Students who enter into an individualized change of major agreement (ICMA) and do not complete the ICMA requirements will not be eligible to request that major again later in their career at Cal Poly.

D. Completion of Change of Major
   The change of major will be approved once the student has successfully met all of the requirements of the ICMA.

E. Timeframe
   The ICMA must be feasible to complete and be completed in no more than two quarters.

F. Publication of Change of Major Criteria
   As applicable, department’s web sites should post the minimum criteria required of all students to change major into their program.
G. Impaction Constraints
Per the Office of the Chancellor’s *The California State University Enrollment Management Policy and Practices*, other admissions requirements for all transfer students (internal and external) entering the target majors on impacted campuses must be the same (e.g., portfolios, auditions, etc.).

H. Academic Standing
A change of major agreement will be void if a student is academically disqualified prior to the completion of the agreement.

II. Requesting a Change of Major

A. Meet with current adviser to review major options and talk about career paths. Consider, also, consulting with Career Services, other advisers, and faculty and/or department heads/chairs in both current and target majors.

B. Meet with the department head/Chair or designee in the target major to determine the likelihood of success in the new major.

C. Review the curriculum requirements for the target major.

D. If the target major is not a good fit for the student, the student will be advised to look at other options.

E. If the student receives a positive assessment based on consideration of I.B., and it is clear that they can complete degree requirements in the new major within the unit maximum (unit maximum is 24 units above program requirements), then an ICMA will be developed (see below).

III. Individualized Change of Major Agreement (ICMA)

The change of major will be approved once the student has successfully met all of the requirements of the ICMA.

The ICMA will cover no more than two quarters. The ICMA may include the following components:

A. Maximum of three specified courses or 12 units in the target major.

B. Additional courses and/or units to allow the student to meet minimum progress standards and complete degree applicable units in both majors, whenever possible (e.g., GE courses or electives a student could use to meet degree requirements in both current and target majors).

C. GPA requirements, as determined by the department (e.g., overall/term GPA, GPA in major-specified courses, GPA in past two quarters).
D. If applicable, specific steps to be met to resume good academic standing status.

**General Information**

As much as possible, entering students are encouraged to make careful and informed decisions about the initial application to their declared majors. All majors at Cal Poly are impacted and it will be difficult to change into some majors despite a student’s best efforts. Nevertheless, sometimes students will find that their interests, abilities, or talents will take them in a different direction than they had identified when they originally applied to Cal Poly and they may seek to change to a different major. Depending on the degree of impaction of the target major (i.e., the relationship between the number of applicants to the major and the number of places available), there might only be a few spaces available for change of majors, or no spaces at all. Students who are unable to change into their desired majors might also need to consider applying to another university in the major of their choice.

If a student makes the decision to change major, doing so early in the academic career will better allow a student to make degree progress in a timely manner and stay within the university’s minimum progress to degree standards; major changes late in the academic career will be restricted by the university’s minimum progress standards, including the unit maximum.

All students, whether lower division (those with fewer than 90 Cal Poly units) or upper division (those with more than 90 Cal Poly units or 90 transfer units), intending to change majors must demonstrate that they can complete the new major within the minimum progress standards and the unit maximum set forth by the university. This is likely to be a greater challenge for upper division students, who will have fewer remaining degree requirements. Further, students need to be aware that not all departments can accommodate upper division change of majors.
INDIVIDUALIZED CHANGE OF MAJOR AGREEMENT

Name: ____________________________________________ 

EmplID: ________________________________ Today’s Date: ________________________________

Current College/Major: ____________________________________________________________________ Current Catalog Year: ____________________________________________________________________

Concentration (if applicable): ____________________________________________________________________ Minor (if applicable): ____________________________________________________________________

Current Term (last completed term): ____________________________________________________________________

Current Term GPA: ____________________________________________________________________ CPSLO GPA: ____________________________________________________________________ 

Higher Ed GPA: ____________________________________________________________________

Cal Poly Units Completed: ____________________________________________________________________ Units Completed (towards target major): ____________________________________________________________________

Target College/Major: ____________________________________________________________________ Catalog Year: ____________________________________________________________________

REQUIREMENTS TO BE MET

<table>
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<th>Met</th>
<th>Term #1 [ _______ Quarter] Requirements</th>
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<th>Term #2 [ _______ Quarter] Requirements</th>
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<td>Required Courses/Units*</td>
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<td>B.</td>
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<td>Additional Courses/Units**</td>
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<tr>
<td>C.</td>
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<td>Higher Ed:</td>
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<tr>
<td>D.</td>
<td>Good Academic Standing</td>
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</tr>
<tr>
<td>E.</td>
<td>Other</td>
<td>E.</td>
<td>Other</td>
</tr>
</tbody>
</table>

APPROVALS

Current Department Designee: __________________________________ Date ________________

Current College Designee: __________________________________ Date ________________

Target Department Designee: __________________________________ Date ________________

Target College Designee: __________________________________ Date ________________

I understand that academic disqualification or failure to meet the requirements to change major as outlined above will void this agreement.

Student Signature: __________________________________ Date ________________

Attached: Curriculum Plan for Target Major

ICMA.doc 1/25/10
WHEREAS, The current Cal Poly Mission Statement neglects to mention the contributions of staff; and

WHEREAS, Page 28 of the 2009-10 WASC Capacity and Preparatory Review Report entitled “Our Polytechnic Identity in the Twenty-First Century,” states that “These [i.e., multiple learning venues] are consistent with the Cal Poly Mission Statement, which recognizes the importance of the co-curriculum but fails to explicitly acknowledge the staff as a partner in the development of the Cal Poly graduate”; and

WHEREAS, It is well-known that the contributions of staff in realizing Cal Poly’s mission are always crucial and often superlative; therefore be it

RESOLVED: That the Academic Senate recommend for approval the attached revised Cal Poly Mission Statement in which the contributions of staff are recognized.

Proposed by: Academic Senate Executive Committee
Date: January 18, 2010
Revised: February 23 2010
CAL POLY
MISSION STATEMENT

Cal Poly fosters teaching, scholarship, and service in a learn-by-doing environment in which students, staff, and faculty are partners in discovery. As a polytechnic university, Cal Poly promotes the application of theory to practice. As a comprehensive institution, Cal Poly provides a balanced education in the arts, sciences, and technology, while encouraging cross-disciplinary and co-curricular experiences. As an academic community, Cal Poly values free inquiry, cultural and intellectual diversity, mutual respect, civic engagement, and social and environmental responsibility.

Revised: February 23 2010
Continuous Course/Curriculum Summary
For Academic Senate Consent Agenda

Note: The following courses have been summarized by staff in the Academic Programs Office for review by the Academic Senate Curriculum Committee (ASCC) and Academic Senate (AS)

Date: February 17, 2010

Winter 2010 Review

<table>
<thead>
<tr>
<th>ITEMS TO BE CONSIDERED BY ACADEMIC SENATE</th>
<th>Program Name or Course Number, Title</th>
<th>ASCC Recommendation/ Other</th>
<th>Academic Senate (AS)</th>
<th>Provost</th>
<th>Term Effective</th>
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<tbody>
<tr>
<td></td>
<td>AERO 425 Aircraft Performance (4) 4 lec</td>
<td>Approved 2/11/10</td>
<td>March 2 On Consent Agenda</td>
<td></td>
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<td></td>
<td>AERO 517 Multidisciplinary Design and Optimization (4) 4 lec</td>
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<td>March 2 On Consent Agenda</td>
<td></td>
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<tr>
<td></td>
<td>CSC/CPE 123 Introduction to Computing (4) 3 lec 1 lab</td>
<td>Approved 2/11/10</td>
<td>March 2 On Consent Agenda</td>
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<td></td>
<td>MS Fire Protection Engineering (ME Dept), a pilot program</td>
<td>Approved 12/1/09</td>
<td>March 2 2nd Reading</td>
<td></td>
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<td></td>
<td>FPE 501 Fundamental Thermal Sciences (4) 4 lec</td>
<td>Approved 12/1/09</td>
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<td></td>
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<tr>
<td></td>
<td>FPE 502 Fire Dynamics (4) 4 lec</td>
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<td>March 2 2nd Reading</td>
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<tr>
<td></td>
<td>FPE 503 Flammability Assessment Methods (4) 4 lec</td>
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<td>March 2 2nd Reading</td>
<td></td>
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<td></td>
<td>FPE 504 Fire Modeling (4) 4 lec</td>
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<td>March 2 2nd Reading</td>
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<td></td>
<td>FPE 521 Egress Analysis and Design (4) 4 lec</td>
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<td>March 2 2nd Reading</td>
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<tr>
<td></td>
<td>FPE 522 Fire Detection, Alarm and Communication Systems (4) 4 lec</td>
<td>Approved 12/1/09</td>
<td>March 2 2nd Reading</td>
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<td></td>
<td>FPE 523 Water-based Fire Suppression (4) 4 lec</td>
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<td>March 2 2nd Reading</td>
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<td>March 2 2nd Reading</td>
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<td>FPE 551 Fire Safety Regulation and Management (4) 4 lec</td>
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<td>FPE 596 Culminating Experience in Fire Protection Engineering (5) supv</td>
<td>Approved 12/1/09</td>
<td>March 2 2nd Reading</td>
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