

PROGRAM ABSTRACT - Form A

Proposed Degree Title: B.S. in Wildfire Science
B.A., B.S., M.A., M.S., etc. Discipline

COLLEGE: Science and Mathematics / Extended Learning

Proposed Implementation Date: Fall 2017

About the A-Form.

Background: New baccalaureate and graduate-level degrees must be approved by the Chancellor's Office. Every January, CSU campuses send updated University Academic Master Plans (or UAMPs) to the Chancellor's Office, which are then approved by the Board of Trustees at their March meeting. When the Board of Trustees approves a campus request to add a new program to the UAMP, it authorizes the campus to submit a formal proposal to the Chancellor's Office for establishing such a degree program.

Purpose: The A-Form is used to propose the addition of a new baccalaureate or graduate degree to the UAMP.

Process: After review by the appropriate college curriculum or planning committee in the Spring semester, A-Forms are sent to Academic Programs at the beginning of the Summer. The forms are distributed to key University officers (including all members of Provost's Council and the President's Cabinet) over the Summer for information dissemination, review and feedback. The feedback received as a result of this distribution is provided to proposers as it is received during the Summer (to inform development of the program proposal) and to the Budget and Long-range Planning Committee (BLP) at the beginning of the Fall semester.

Outcomes: BLP reviews the A-Forms and the feedback collected by Academic Programs, and makes recommendations as to whether programs should be added to the next UAMP. Placement of a program on the UAMP is the campus-level authorization to proposers to submit a complete new program proposal (via a P-Form). Comments from BLP are sent back to the proposal originator to inform the final design and plan for the proposed program. The A-Form, Summer reviewer feedback, and BLP comments are additionally used to prepare a summary statement for the Chancellor's Office, which is required for any addition to the UAMP.

Directions.

- Fill in the degree title, college and implementation date above.
- Attach a program abstract addressing items 1-5 to this form.
- Identify the program proposer and obtain the department chair or program director signature below.
- Submit the abstract and the Form A to the college curriculum or planning committee. (Check with the college for submission deadlines.)

1. **Description:** Briefly describe the essential features of the curriculum that will be developed.

- If the new degree is currently offered as an option in an existing degree program, give a rationale for the conversion.
- If the new degree program is not commonly offered as a bachelor's or master's degree, provide a compelling academic rationale explaining how the proposed subject area constitutes a coherent, integrated degree major that has potential value to students.

2. **Mission:** How will this program benefit the college, university, region and/or state? How is it aligned with the College and University Mission and Vision?

3. Demand: What evidence is there of adequate student demand for this program?

[Note that Board of Trustees classifies Anthropology, Art, Biology, Chemistry, Economics, English, Foreign Languages, Geography, Geology, History, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Sociology, Speech/Communication and Theatre Arts/Drama as "Broad Foundation Programs" for which societal need and student demand are not "the preeminent criteria" for offering baccalaureate programs.]

Preliminary evidence of adequate student demand for the proposed program should include

- (i) A list of other CSU campuses currently offering the proposed degree major program (see the CSU Mentor website at <http://www2.assist.org/browseAreas.do>),
- (ii) A list of neighboring institutions, public or private, currently offering the proposed degree major program,
- (iii) Information indicating substantial regional demand for individuals who have earned this degree (contact the Career Center for assistance), and
- (iv) Information indicating adequate student interest in the proposed program (e.g., numbers of minors, existing programs at feeder community colleges, or results of student surveys).

Graduate degree program proposals must also include the number of declared undergraduate majors and the degree production over the preceding three years for the corresponding baccalaureate program.

4. Resources: Give preliminary estimates of the following resources needed to implement the program:

- Additional faculty positions;
- Additional resources required for program administration (e.g., release time for a Chair or Director);
- Additional staff support;
- Additional space requirements; and
- Additional specialized equipment and materials other than those expected to be provided by the Library and Instructional and Information Technology Services (IITS).

Note that in the course of reviewing the A-Form over the Summer, the Library and IITS will estimate additional library, information technology and academic computing resources needed for implementation. Indicate whether there are any unusual aspects of the curriculum design that need to be taken into account in the preparation of the Library and IITS estimates.

If there are recognized accrediting bodies in the program area, what are the accreditation criteria and how necessary is accreditation?

5. Relation to Existing Programs: Describe the potential effect on existing programs (e.g., enrollment changes, opportunities for collaboration, resources).

REVIEW PROCESS

Tracey Brown

1. 
Originator (Please Print and Sign)

11/2/15
Date

Tracey Brown

2. 
Program/Department Director/Chair*
- if applicable

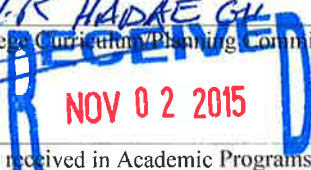
11/2/15
Date

3. A. R. HADRE GIL
College Curriculum Planning Committee*

NOV 2, 2015
Date

4. Katherine A. Kantawong
College Dean (or Designee)*

11/2/2015
Date

5. 
Date received in Academic Programs

BY:

* Signature indicates support that the proposed program move forward for consideration for placement on the UAMP.

1.0 DESCRIPTION AND BACKGROUND

The goal of the Bachelor of Science Degree in Wildfire Science is to train a new generation of expertly skilled firefighters and scientists to meet the evolving and increasing demands of the firefighting industry, with an emphasis on wildland and wildland urban interface (WUI) fires.

Since 1970, the US has witnessed an increase from three million to an overwhelming seven million acres burned each year, with further increases projected.¹ Across the country, local fire departments are now responding to over 330,000 wildfires each year with over 900 incidents occurring each day.² Most of these wildfires are not simply an isolated event that occurs in rural, unpopulated ecosystems. Rather, these incidents frequently threaten homes, businesses, and lives, with the annual costs of these fires now exceeding \$14 billion.³ Indeed, over 40% of our homes are located in the WUI, where 46 million homes in 70,000 communities are now located in high-risk areas (California has approximately 5.1 million homes in the WUI – more than any other state).^{4,5} As a result, the term 'wildland fire' has become a misnomer, where “traditional” wildland firefighting now focuses on community defense.

A WUI incident today represents a dynamic, complex environment where wildland, structure, and vehicle fires merge; we do not clearly understand the risks this synthesis creates nor have we trained and educated our first responders adequately. Furthermore, as our population grows, decisions made in developing and managing our communities, and the concomitant growth into the WUI, will exacerbate our vulnerability and risks. Unfortunately, most higher education programs, specifically at the Bachelor Degree level, do not adequately address this paradigm shift nor provide the level of education and understanding required by modern wildland/WUI firefighters.

The most prominent fire agencies in the US all agree that wildland firefighting is decades behind structure and high-rise firefighting. This was highlighted during the 2014 Wildfire Symposium held in Sacramento, California, echoed by representatives from CAL FIRE, the International Association of Fire Fighters, the US Forest Service, and the National Institute of Standards and Technology (NIST) (Appendix A, and discussed in Section 3.2 below). The degree proposed herein is aimed at resolving this deficiency by focusing on the following:

- Providing a strong scientific and technical foundation emphasizing ecology, chemistry, physics, geography, land use, policy, and natural/cultural resource management
- Providing a focus on fire ecology, risk, and post-fire recovery related to ecosystem management and land use
- Providing advanced education on tactics and strategies for wildland and WUI firefighting
- Improving understanding of issues and risks related to firefighter health and safety
- Improving understanding of land use and development in fire prone areas
- Providing a basic foundation in administration, leadership, and management
- Providing a capstone opportunity that reinforces important skills, allowing students to demonstrate a meaningful and applied understanding (while also contributing to the advancement of the field)

With Southern California as the backdrop, representing one of the most high-risk regions in the world, this program will fulfill a significant need in public safety education by providing a singular focus on wildfires and the wildland urban interface. CSUSM can offer a progressive, career-oriented undergraduate degree where students can work in modern classroom and laboratory facilities and conduct applied research. The program would ensure that students are prepared to compete in the modern fire service industry, serving as leaders and instruments of change. This program is intended to respond to a critical state and national need by providing advanced education for the next generation of fire service professionals and decision-makers, herein referred to as the **Bachelor of Science in Wildfire**. No such program currently exists.

¹ U.S. Communities Dealing with WUI Fire Fact Sheet (ICC) 1.1.2011; Headwater Economics, www.headwaterseconomics.org

² Karter, M. and G. Stein. 2013. U.S. Fire Department Profile 2012. National Fire Protection Association, Fire Analysis and Research Division.

³ Hamins, A., Averill, J., Bryner, N., Gann, R., Butry, D., Amon, F., Gilman, J., Maranghides, A., Madrzykowski, D., Manzello, S. and Mell, W. 2012. Reducing the Risk of Fire in Buildings and Communities: A Strategic Roadmap to Guide and Prioritize Research. NIST Special Publication 1130. National Institute of Standards and Technology. Gaithersburg, MD.

⁴ Radeloff, V., R. Hammer, S. Stewart, J. Fried, S. Holcomb, and J. McKeefry. 2005. The Wildland-Urban Interface in the United States. *Ecological Applications*, 15(3) 799-805.

⁵ Communities Dealing with Wildland/Urban Interface Fire; WUI Fact Sheet, ICC and NARCD Councils, updated March 18, 2013.

2.0 MISSION

Founded in service, California State University San Marcos continues to be a leader in addressing complex community problems and regional need. The mission of CSUSM includes aligning education with regional needs, intellectual enrichment, and the civic, economic, and cultural life of our region and state. Furthermore, the mission of the College of Science and Mathematics fosters interdisciplinary instruction and collaborative research, innovation, and creative endeavors that provide students with the foundational knowledge and skills needed to meet technological challenges in a rapidly evolving world. The proposed Bachelor of Science Degree in Wildfire and the Wildland Urban Interface (WUI) uniquely meets this growing local, regional, and national demand.

This proposed Wildfire degree continues the CSUSM legacy in an area that is fundamentally consequential to California and the nation by building on a strong tradition of innovative programs. We can continue this custom with the development of a degree that meets the demand for a program focused on wildland and WUI fires in the context of science, land use, public safety, policy, administration, and advanced firefighter education.

Our region is one of the highest fire-risk regions in the United States and the world, in which wildfire is a natural part of ecosystem functioning but human development is rapid, making it an ideal location for a Wildfire degree. We will be creating new opportunities to educate the next generation of wildland firefighters that will have a deeper understanding of the field, going beyond traditional firefighter education and training programs. This could create an unparalleled synergistic relationship between agencies, and research and education that can simultaneously advance the firefighting industry and provide professional advancement. The importance of this effort cannot be overstated. There is a serious deficiency in the current understanding of wildfire practices, land use decisions, policy and regulatory development, community protection, and firefighter health and safety, and technology. This program can significantly benefit our region by becoming a hub for advancing the wildfire industry, becoming a specialized program that is responsive to state and regional needs.

We will develop a collaborative approach to wildland fire education that creates a partnership between a diverse group of agencies and organizations, with this program ultimately emerging as a leader in this field. While the program is primarily focused on a science foundation, it is necessarily interdisciplinary. Therefore, the program not only benefits the College of Science and Math, but can also benefit the College of Humanities, Arts, Behavioral, and Social Sciences. Students will be at the forefront of this field, solving many of the critical challenges facing this rapidly evolving industry.

3.0 DEMAND

3.1 LOCAL, REGIONAL, AND NATIONAL DEMAND

Between 2007-2011, local fire departments responded to over 330,000 wildfires each year.⁶ Given the complexity of our communities, most firefighters will, at some point in their career, respond to a WUI fire. Therefore, this program will have local and national benefits far beyond agencies with significant responsibility for wildland areas (like CAL FIRE or the US Forest Service).

There are over 1.1 million firefighters and 30,100 fire departments in the US.⁷ Conservatively, if only about 9% of the US is part of the WUI, it is estimated that around 100,000 firefighters are regularly involved in wildland/WUI incidents at 2,709 departments across the country (although the International Association of Fire Fighters estimates the numbers are much higher). California has the largest wildland fire agency outside of the US Forest Service. CAL FIRE, is our statewide agency that is responsible for fire protection in the State Responsibility Areas (SRA) that covers over 31 million acres. This agency is the largest full service all risk fire department (including structure and wildland fires, medical aid, vehicle accidents, hazardous materials, natural disasters, etc.) in the Western United States and operates more fire stations year round than the New York (FDNY), Los Angeles (LAFD), and Chicago (CFD) fire departments combined. CAL FIRE and CAL FIRE Local 2881 support the development of this educational resource, and has

⁶ Ahrens, M. 2013. Brush, Grass, and Forest Fires. National Fire Protection Association, Fire Analysis and Research Division.

⁷ Communities Dealing with Wildland/Urban Interface Fire; WUI Fact Sheet, ICC and NARCD Councils, updated March 18, 2013.

expressed interest in participating in the creation and implementation of this program. This is an opportunity for our state resources to work together to advance one of our most critical needs.

Although firefighting response and effectiveness has vastly improved, many of the most basic issues have not been researched and considerable uncertainty remains. As a result, wildland and WUI fires have not kept pace with the advancements seen in structure and high-rise fires. For example, in 1973, the National Commission on Fire Prevention and Control published a report (*America Burning*) that was the result of nearly two years of work. Findings and recommendations from this report served as a catalyst for significant changes and advancements in our urban fire sector, including advanced education programs. The results are nothing short of miraculous, especially when you consider that the US population has increased by about 100 million people, with the concomitant increases in buildings and homes (**Table 1 – *advancements in structure firefighting in the United States***). Results of the 2014 wildland fire symposium (held in Sacramento, California) urge similar investment and advances in research and education.

Table 1. Trends in structure fires, deaths, injuries, and dollar loss in the United States.^{8,9}

Category	1971	2012	Percent Decrease
<i>Deaths</i>	7,570	2,385	68.5%
<i>Property Loss (adjusted for 2012 dollars)</i>	\$12.85 Billion	7.10 Billion	44.7%
<i>Number of Fires (structure)</i>	996,900	374,000	62.5%
<i>Injuries</i>	Tens of Thousands (estimate)	13,050	unknown

Indeed, the societal and economic consequences from wildfires cannot be overstated. Large-scale wildfires have significant, and overlooked economic impacts, often exceeding billions of dollars in losses. Each fire has a unique personality and concomitant economic impacts. In California, the most alarming trend is that half of the twenty largest wildfires in recorded history have occurred in only the past decade, with many of these events having an unprecedented physical and financial impact to the state. The economic, social and environmental costs of wildfires are often staggering. Here in San Diego County, the 2003 and 2007 wildfires resulted in nearly \$5 billion in economic losses to our region.¹⁰ It is important that we see this education program as not only filling a need, but also serving as a catalyst for change.

3.2 THE 2014 WILDFIRE SYMPOSIUM, SACRAMENTO, CALIFORNIA

In June 2014 – CAL FIRE Local 2881 hosted the first *California Wildfires and Statewide Challenges Symposium* in Sacramento, California. Community experts from the federal, state and local levels accepted invitations to attend the symposium. Topics ranged from environmental change to land management to firefighter staffing and safety. High-ranking officials from local, state, and federal agencies were all in attendance. The idea was simple enough – allow the experts to honestly view the California and national landscape as it relates to wildland and WUI fires and encourage common sense conclusions.

The discussions were insightful, particularly with regard to education and research. A universal conclusion was that urbanization has profoundly changed the California landscape, forever, and that we are a generation behind urban strategies for fire suppression and response when dealing with these fires. At the end of the 2014 symposium, participants recommended the following:

“There is a need to create a comprehensive wildfire/WUI education and training program that meets the diverse needs of urban and wildland fire agencies with an emphasis on research and education on new tools, technologies, and operational strategies to meet the evolving risks and demands.” □

⁸ Data based on Appendix V, *America Burning*, the Report of the National Commission on Fire Prevention and Control (1973)

⁹ Data based on US Fire Administration statistics (http://www.usfa.fema.gov/downloads/pdf/statistics/res_bldg_fire_estimates.pdf)

¹⁰ Rahn, M. 2009. Economic impact analysis of wildfires: the 2003 San Diego wildfires in retrospect. *Wildfire Research Report #1*. Montezuma Publishing, Spring 2009.

The results from the 2014 Symposium were presented to the Wildfire Task Force with the International Association of Fire Fighters (IAFF) in Washington, DC. Their conclusion at the end of the workshop similarly states:

“We need to develop advanced education and training programs focused on wildland and WUI firefighting that are accessible to career firefighters and diverse agencies throughout the U.S.”¹¹

3.3 STUDENT INTEREST AND NEED

Participants of the 2014 Symposium noted that one of the biggest points of concern for people applying to fire departments is whether or not to take the time to earn a bachelor’s degree. Colleges and universities offer a variety of fire-related programs, but tend to focus specifically on fire administration, fire science (generally, often with an emphasis on materials science), and forestry. While aspects of all these fields should be incorporated into the CSUSM degree in Wildfire, none of the existing CSU programs meet the educational demand of the industry with regard to wildland and WUI fires.

Creating this education pathway in collaboration with agency partners is key to the success and sustainability of this program. To date, we have received interest from the following agencies and organizations regarding this new degree program, all of which are ready to work with CSUSM:

- CAL FIRE
- CAL FIRE Local 2881
- National Institute of Standards and Technology (NIST)
- International Association of Fire Fighters
- U.S. Department of Agriculture
- U.S. Forest Service
- California Senate Natural Resource Committee

Wildland firefighting agencies operate at the federal level (National Park Service, Forest Service, Bureau of Land Management, Fish and Wildlife Service, and Bureau of Indian Affairs), the state level (Department of Fish and Wildlife, Land Management, CAL FIRE, and Office of Emergency Services), and local level especially in the incorporated areas of our counties. While some wildland firefighters work year-round and some work only during the fire season, the positions are always highly competitive. Prospective workers can often increase their chances of securing a job by earning a bachelor’s degree, as well as seeking advancement within the agencies. This degree should be designed to meet the education needs of a diverse cross section of the industry. This can be accomplished by developing a program with the following objectives:

- Providing flexibility and accessibility to existing (working) professionals locally, regionally, and nationally
- Creating a pathway for a “veterans to firefighters” program
- Providing the education and training necessary for federal, state, and tribal governments
- Creating opportunities for international cooperation and training¹²

¹¹ During discussions with the International Association of Fire Fighters, several of the affiliates from other states, including Colorado, Texas, Florida, Arizona, and Oregon all expressed significant interest in this potential program.

¹² This is particularly important with regard to trans-border issues with Mexico, where there is a significant need for training and education programs focused on wildland fires and land management.

3.4 EXISTING CALIFORNIA STATE UNIVERSITY PROGRAMS

The following Universities with the California State University system provide programs related to fire and/or wildfire. None however offer a specific degree in “Wildfires.” This is most commonly provided as concentration, area of emphasis, or through coursework.

- **California State University Los Angeles:** Fire Protection Administration and Technology B.S.
 - Focus on fire administration
- **Cal Poly San Luis Obispo*:** Forestry and Natural Resources B.S.- Conc. in Wildland Fire and Fuels Management
 - Focus on Forestry and Natural Resource Management. The concentration in wildland fires and fuels management is largely focused on forest management.
- **Humboldt State University**:** Forestry B.S. with an option in Wildland Fire Management
 - Focus on forestry and forest management. The option in Wildland Fire Management is focused mainly on traditional forest fires and forests rather than wildland and WUI fires.

3.5 EXISTING NATIONAL PROGRAMS

- University of Wisconsin-Stevens Point offers a Wildland Fire Science Program that integrates forestry, wildlife management, human dimensions, natural resources, and meteorology.
- University Of Idaho College Of Natural Resources created the nation’s first Bachelor of Science in Fire Ecology and Management.
- University of Montana offers two undergraduate degree options in Wildland Fire: a minor in Fire Sciences and Management or a Bachelor of Science in Resource Conservation with an emphasis in Fire Management.
- Oregon State University has a Rangeland Ecology and Management program with an option or emphasis area for fire ecology and management. They also have a Forest Management degree with one of the options being Wildland Fire Management.
- Northern Michigan University is offering a minor in wildland firefighting.
- Colorado State University offers a Forestry degree with a “concentration” in Forest Fire Science.
- Chadron State College in Nebraska offers a track for students that began at Casper College. It is a “BS with a comprehensive major in rangeland management”, and within that program is an option for “Rangeland Fire Management.”

*As with similar programs currently offered by the CSU (described above), those programs offered nationally lack a singular focus on wildland and WUI fire, and are generally focused on land management, forestry, and ecology. Despite our prominence as one of the highest-risk wildland fire communities in the United States, no existing program on wildland or WUI fire is offered in Southern California.

4.0 RESOURCES

This program meets the requirements for being a self support program for the following reasons: 1) the program is designed primarily for career enrichment and advancement of a very specialized segment of the workforce, 2) Extended Learning has long played a role in expanding access to higher education and continuing education to "adult professionals" as well as to geographically underserved populations through such mechanisms as distance learning, and 3) the client group for the courses or program receives educational or other services at a cost beyond what could be reasonably provided under state support.

The program will be housed under the College of Science and Mathematics, and will be owned by the Department of Biology. The program will be financially supported and implemented through Extended Learning as a self-support degree. The proposed program is targeted to launch in Fall 2017. The program resources include a tenure track faculty with expertise in wildfire science and policy. The faculty member will teach in the program as well as serve as the faculty program director. The program will also rely on the industry experts as lecturer faculty to enhance the curriculum. Existing (stateside) faculty can provide coursework to meet the needs of the broader curriculum. All program management, staff support, space requirements and specialized equipment will be similarly supported through Extended Learning.

It is anticipated that if there are any additional needs that arise, (including faculty, staff, infrastructure, equipment and supplies, space, and other resources), the costs would be funded through a combination of federal and state grants, cooperative agreements, and donations from the industry and private sector for the first five years. After that time, the program will continue to seek funding from external resources, but will also be supported by Extended Learning. Results from a future submittal on the P-form would reaffirm these assertions. It is not intended that a large-scale “fire lab” will be needed in support of this proposed program. Any future laboratory facilities would likely be developed in collaboration with state and federal partners (including CAL FIRE, NIST, and the US Forest Service).

A new Bachelor of Science Degree in Wildfire / Wildland Urban Interface is by nature a broad program, requiring coursework across a diverse cross section of areas, including (but not limited to): biology, chemistry, physics, mathematics, geography, environmental sciences/studies, and economics. As proposed, this degree program could be fulfilled through both a traditional pathway completely encompassed by CSUSM, or through a continuation (2+2) of an existing Associates Degree in Fire Services or a closely related field.

The resource needs for a degree in Wildfires will be evaluated in a feasibility study that would be commissioned after the approval of this proposal (A-form). The cost of this study and evaluation will be funded by external sources, including agency and industry sponsors. This feasibility study will include a specific analysis of this degree on supporting majors (e.g. biology, chemistry, physics, etc.). Similarly, Extended Learning, as a self-support program, will fund all costs related to program or curriculum development.

With regard to library resources, the majority of the educational and scientific resources required are generally available through online, peer-reviewed sources, open access journals, or journals that can be accessed through existing campus subscription services. No specific additional library resources are anticipated.

5.0 RELATION TO EXISTING PROGRAMS

As described earlier, federal, state, and local agencies and organizations are supportive of this concept. As such, the curriculum team will consist of key faculty from departments and programs within the University, and will also include experts from the agencies and organizations. As necessarily interdisciplinary, Wildfire majors will be required to satisfy the usual General Education courses.

As proposed, this degree will generally take four years of full-time study. We will explore two main options for completing the degree:

- 1) A traditional four-year pathway fully encompassed by CSUSM. Under this option, the first two years of foundation education will be completed on the “state side” with the second two years completed through Extended Learning. While these degrees have been traditionally sought by current firefighters seeking advancement, entry-level candidates are increasingly pursuing this level of education as a competitive advantage to getting hired.
- 2) Completing the degree through a 2+2 program where the first two years are completed through the Community Colleges that currently offer an Associates Degree in the Fire Services or closely related field. We will evaluate and encourage the development of flexible education pathways that tap in to the existing resources and programs offered at local community colleges, exploring the viability of creating partnerships for this 2+2 offering.

We will also explore and encourage the development of this degree to include flexibility and options for online and condensed classes for working professionals. Hybrid programs, where some of the content is learned online and some in person are also viable options. Firefighters living in remote areas without access to a local campus are excellent candidates for online learning, as are seasoned professionals that are looking for a career change within the industry. Finally, we strongly encourage the exploration of a “veterans to firefighters” program as part of this educational opportunity, as well as outreach to Tribal governments to support their public safety needs.

Regardless of the pathway, it is anticipated that all of the students will obtain the basic skills of oral and written communication, mathematics, science, arts and humanities, and social sciences. The Wildfire majors will increase the demand for supporting courses for the major that would potentially include (but is not limited to) mathematics, chemistry, biology, physics, environmental studies, economics, and geography. It is important to note, that as the curriculum development process proceeds, there will be specific courses that are important for students in Wildfire that the University does not currently provide. In some cases, new curricula could be created in collaboration with existing faculty (e.g. a course in fire ecology offered by the Department of Biology or a course in fire modeling offered by the Geography faculty). In some instances, it may be necessary to provide a unique course that could be fulfilled by experts from our agency partners (e.g. CAL FIRE, US Forest Service, and NIST). These needs, costs, and solutions will be critically evaluated during the feasibility study and development process.

Specialized courses and/or increased enrollment may provide opportunities for additional teaching faculty support within the College of Science and Mathematics. Opportunities for collaboration with the College of Humanities, Arts, Behavioral, and Social Sciences may be available as there is an interdisciplinary aspect to this proposed program. The proposed program will also facilitate increased research opportunities on wildfire/WUI issues and interactions with state and federal agencies, tribal governments, and international collaborations.

Bachelor of Science in Wildfire

5 Year Rolling Budget

	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22
Tuition	\$ 495	\$ 495	\$ 495	\$ 545	\$ 545
Target Number Participants	25	25	25	25	25
Units Taught in Program	24	24	24	24	24

Tuition	\$ 495	\$ 495	\$ 495	\$ 545
Target Number Participants	25	25	25	25
Units Taught in Program	24	24	24	24

	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20
Revenue					
Tuition	\$ 297,000	\$ 594,000	\$ 594,000	\$ 624,000	\$ 654,000
Attrition	\$ -	\$ (29,700)	\$ (29,700)	\$ (31,200)	\$ (32,700)
Total Revenue	\$ 297,000	\$ 564,300	\$ 564,300	\$ 592,800	\$ 621,300
Direct Expenses					
Lead Faculty/Instruction Payments (50% FT)	\$ 65,600	\$ 65,600	\$ 67,568	\$ 69,595	\$ 71,683
Faculty Program Director (25% FTE)	\$ 32,500	\$ 32,500	\$ 33,475	\$ 34,479	\$ 35,514
Faculty - Biology (60% FTE)	\$ -	\$ -	\$ -	\$ 76,000	\$ 76,000
Lecturers (2 per semester)	\$ 30,000	\$ 30,000	\$ 30,900	\$ 31,827	\$ 32,782
Printing/Copying	\$ 2,000	\$ 2,000	\$ 2,200	\$ 2,200	\$ 2,500
Graduation Ceremony and misc.	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 6,000
Marketing	\$ 25,000	\$ 25,000	\$ 10,000	\$ 10,000	\$ 10,000
Scholarship for Military Veterans	\$ 23,760	\$ 23,760	\$ 23,760	\$ 23,760	\$ 39,240
Total Direct Expenses	\$ 183,860	\$ 183,860	\$ 172,903	\$ 252,861	\$ 273,718
Operating Income/Margin	\$ 113,140	\$ 380,440	\$ 391,397	\$ 339,939	\$ 347,582
Indirect Expenses					
CSU/CSUSM, FAS, IITS	\$ 57,067	\$ 98,498	\$ 97,841	\$ 107,056	\$ 112,725
CSM @ 5% of class gross	\$ 10,918	\$ 27,790	\$ 28,409	\$ 29,365	\$ 29,365
AA Reimbursement	\$ 5,940	\$ 11,286	\$ 11,286	\$ 11,856	\$ 12,426
EL Costs @ 30% of Revenue	\$ 89,100	\$ 178,200	\$ 178,200	\$ 187,200	\$ 196,200
	\$ 163,024	\$ 315,774	\$ 315,736	\$ 335,477	\$ 350,716
Total All Expenses	\$ 346,884	\$ 499,634	\$ 488,639	\$ 588,338	\$ 624,434
Net Gain/Loss	\$ (49,884)	\$ 64,666	\$ 75,661	\$ 4,462	\$ (3,134)
% Net Margin	-17%	11%	13%	1%	0%
Loss Carry Forward View	\$ (49,884)	\$ 14,782	\$ 90,443	\$ 94,905	\$ 91,771

* Campus Fee's (to be paid separately by each student)

Program Application Fee = \$50

CSU Application Fee = \$55