Request for Authorization to Establish

Master of
Fire Protection and Administration

November 2009

Lee College of Engineering
Department of Engineering Technology

THE UNIVERSITY OF NORTH CAROLINA
Request for Authorization to Establish a New Degree Program

INSTRUCTIONS: Please submit five copies of the proposal to the Senior Vice President for Academic Affairs, UNC Office of the President. Each proposal should include a 2-3 page executive summary. The signature of the Chancellor is required.

Date November 19, 2009

Constituent Institution: The University of North Carolina at Charlotte

CIP Discipline Specialty Title: Fire Protection, Other

CIP Discipline Specialty Number: 43.0299 Level: B ☐ M ☒ 1st Prof ☐ D ☐

Exact Title of Proposed Program: Master of Fire Protection and Administration

Exact Degree Abbreviation (e.g. B.S., B.A., M.A., M.S., Ed.D., Ph.D.): M.F.P.A.

Does the proposed program constitute a substantive change as defined by SACS? Yes ☐ No ☒

a) Is it at a more advanced level than those previously authorized? Yes ☐ No ☒

b) Is the proposed program in a new discipline division? Yes ☐ No ☒

Proposed date to establish degree program (allow at least 3-6 months for proposal review):

month August *year* 2010

Do you plan to offer the proposed program away from campus *during the first year of operation*?

Yes ☐ No ☒

If so, complete the form to be used to request establishment of a distance learning program and submit it along with this request.

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Appendices:

Executive Summary

The Department of Engineering Technology proposes the creation of the Master of Fire Protection and Administration (MFPA) degree program. The program will consist of a common core and concentrations in Fire Protection and Fire Administration. Each student will choose one of the concentrations, fire protection or administration. The fire protection concentration prepares fire protection professionals to use modern fire protection methodologies, techniques and tools for fire protection design, fire investigation, industrial fire safety, key infrastructure security, safety assessment, and other fire safety related matters. The administration curriculum prepares those who are engaged in occupations in the fire, emergency services, and safety fields to effectively manage the administrative decision-making requirements of both public and private entities.

The UNC Charlotte MFPA will provide an advanced technical background for professionals involved with fire protection and administration, in areas such as fire protection analysis and design, fire service, fire safety, occupational safety, and security. The MFPA program is designed to provide the necessary knowledge and skills to begin work in many areas of the fire protection and administration fields and to solve fire protection and related safety problems in our complex technical society.

This will be the first graduate degree of this type in the state and region; as such, it is expected to draw students from across the southeastern United States. Many practicing fire protection professionals have no easily accessible advanced degree opportunities because of the lack of a program in this region of the country. The implementation of this degree will provide a much sought after opportunity for those individuals to pursue graduate study. Since the degree will be offered concurrently on-campus and as an online offering (primarily via the Internet) in year two or three, the possibility exists for enrollments from across North Carolina, the U.S., and perhaps, internationally.

The proposed program will share facilities with the existing Fire Safety Engineering Technology (FSET) program in the Smith Building and the Fire Laboratory at Shopton Road. The FSET program has an established off-campus fire research laboratory on Shopton Road. The Laboratory houses several state-of-the-art fire test apparatus such as a Cone Calorimeter, an Intermediate Scale Calorimeter (ICAL), a Lateral Ignition and Flame Spread Test, a Furniture Calorimeter and an intermediate scale furnace equipped with load frames. The ICAL is a unique test apparatus and UNC Charlotte has one of the five ICALs currently in use in the United States. In addition, the program recently invested in a structural fire testing facility, one of only a few at U.S. academic institutions.

The occurrence of fire emergencies remains a significant dilemma nationwide. Each year fire departments in the U.S. respond to more than 519,000 structural fires, more than 3,000 people die from fire, and more than 18,000 people are injured from fire. On average there is a civilian fire death every 156 minutes and a civilian fire injury every 28 minutes in the U.S. There are more than $10 billion in direct property damage as a result of fire. In addition to the direct costs from fire, there are indirect costs such as the cost of business interruption.

Other fire costs include damage to the environment, fire insurance costs, and the cost of public fire protection (fire service).

The demand for professionals in the field of fire protection and emergency preparedness exceeds the number of students graduating. An example of this is evidenced by a special publication produced by the Society of Fire Protection Engineers (SFPE). The publication titled Careers in Fire Protection Engineering states that the shortages are "particularly acute in western and southern United States where there are no colleges with fire protection engineering programs." An executive summary of the article and reports from which it was compiled are available at www.sfpe.org. Also, based on a survey done by SFPE, 36 percent of SFPE members will reach retirement age within the next fifteen years. There are currently 4,800 members of SFPE, so that would indicate an average of 115 SFPE member engineers per year (this is just SFPE members and not all FPE's), may leave the profession. Those numbers are dwarfed by the number of non-SFPE members (conservatively estimated at some 9,000 plus non-members) and the increasing demand due to growth. It is clear that the current output of FPE's graduating from all US colleges and universities collectively does not come close to meeting the demand. Because of this situation, significant efforts are underway at SFPE to heighten the awareness of, and the interest in, fire protection engineering. One of the major issues facing the profession is the relatively small number of fire protection programs nationally. SFPE is developing a higher education initiative to increase the number of fire protection programs. There is a task group working to identify potential schools including determining their funding and resource needs. The proposed MFPA program is endorsed by the SFPE Higher Education Task Group. A letter of support from the SFPE task group chairman is included in the appendix.

The events of 9/11/01 have increased the public's awareness of what the fire service does and created new expectations for those within the profession. To answer the demands placed upon them and to ensure minimum levels of competency, the fire protection community is working toward a unified educational structure that includes a model curriculum for fire related associates, bachelors and master's degrees. Additionally, new research methodologies to develop more fire resistant structures and provide more robust fire protection systems are at the forefront of concern for homeland defense.

In the Charlotte metropolitan area, industries in energy, construction, insurance, fire protection system equipment, and consulting are looking for well-trained fire protection engineers and fire administration officials. There is a great deal of employer interest in graduates of the existing undergraduate fire safety engineering technology program at UNC Charlotte. It is expected that the UNC Charlotte MFPA degree recipients will also be recruited by the major businesses and industries from across North Carolina and all areas of the United States. Graduate placement, starting salary offers, and advancement into managerial positions should be excellent due to the uniqueness and strong technical orientation of the MFPA degree. Outside North Carolina, a recent national survey showed that the annual national market demand for fire protection engineers is about 500, while the graduate output from US universities ranges from 50-100 per year. There is a big gap between market demand and graduate supply both in the state and national levels.

The FSET program at UNC Charlotte has quickly become a leader in undergraduate fire education. The faculty is well known in professional circles and the graduates are quickly hired in both industry and public service areas. Increased threats to homeland security, threats to the infrastructure and heightened expectations from the public for their safety and wellbeing place demands on the profession that are often not met with only an undergraduate degree. To cope with these new responsibilities, graduate education must prepare professionals to meet these demands. The MFPA will play a vital role in meeting these increasing demands.

Specific goals from the University's strategic plan are addressed by this proposal. Excerpts from Goals #1 and #2 of UNC Charlotte's Strategic Plan congruent with the proposed MFPA degree program are listed below:

University Goal #1: To improve ***educational*** opportunities that respond to the intellectual and professional needs of the region, ….

- Maintain a broad portfolio of masters' and baccalaureate programs; ….
- Increase continuing education and distance education offerings….

University Goal #2: To increase both faculty and student ***research*** that will address fundamental and regional problems, ….

- Accelerate the research activity of the University that meets the needs of the region through the Charlotte Research Institute agenda; ….

Initiation of this MFPA program is in direct congruence with achievement of university goals #1 and #2. Specifically, this program will add to the portfolio of master's programs and provide a platform to increase faculty and student research to address fundamental and regional problems.

This MFPA program was specifically targeted in UNC Charlotte's response to UNC Tomorrow to increase the intellectual and research capacity of the University. Overall, the proposed MFPA graduate program meshes properly with the institutional mission and strategic plan. The program will address the broad areas of concern listed in the mission statement, specifically areas related to offering exemplary graduate programs.

As the first graduate level Fire Protection and Administration program, or more directly, the first fire related graduate program of any description in the state of North Carolina and the Southeastern region of the United States, the program will provide opportunities for students all across the region to receive an advanced degree in their chosen field. Moreover this will establish UNC Charlotte as the recognized leader in the southeast in the field of fire protection and administration. Additionally, the graduate program will assist the Department and its faculty in becoming fully active participants in the institutional goal of raising the University's graduate research and scholarly profile.

I. DESCRIPTION OF THE PROGRAM

A. Describe the proposed degree program (i.e., its nature, scope, and intended audience).

The Department of Engineering Technology proposes the creation of the Master of Fire Protection and Administration (MFPA) degree program. The program will consist of a common core and concentrations in Fire Protection and Fire Administration. Each student will choose one of the concentrations, fire protection or administration. The fire protection concentration prepares fire protection professionals to use modern fire protection methodologies, techniques and tools for fire protection design, fire investigation, industrial fire safety, key infrastructure security, safety assessment, and other fire safety related matters. The administration curriculum prepares those who are engaged in occupations in the fire, emergency services, and safety fields to effectively manage the administrative decision-making requirements of both public and private entities.

The UNC Charlotte MFPA will provide an advanced technical background for professionals involved with fire protection and administration, in areas such as fire protection analysis and design, fire service, fire safety, occupational safety, and security. The MFPA program is designed to provide the necessary knowledge and skills to begin work in many areas of the fire protection and administration fields and to solve fire protection and related safety problems in our complex technical society.

B. List the education objectives of the program.

The primary objective of the UNC Charlotte MFPA program is to provide graduate level education for those engaged in the fields of fire protection, safety and emergency services related occupations. The UNC Charlotte MFPA program emphasizes design and application principles, as well as general educational principles. Those principles are presented below:

General Educational Principles – Upon graduation, MFPA graduates will:

- Demonstrate the application of a systematic approach to problem solving,
- Identify and explain common industrial processes,
- Demonstrate the ability to conduct training on loss control topics,
- Function effectively on teams,
- Communicate effectively,
- Recognize the need for, and ability to engage in, lifelong learning,
- Demonstrate an understanding of professional, ethical and social responsibilities,
- Demonstrate a respect for diversity and an awareness of contemporary professional, societal and global issues, and
- Demonstrate a commitment to quality, timeliness, and continuous improvement.

Technical Educational Objectives - MFPA graduates will:

- Recognize and evaluate hazards,

- Conduct risk analysis and risk management activities,
- Formulate control and mitigation strategies,
- Maintain program/system effectiveness,
- Perform fire protection system design and evaluation,
- Anticipate probable hazards,
- Apply and interpret applicable codes and standards, and
- Demonstrate an understanding of the conduct of incident investigations including associated legal responsibilities and recordkeeping

C. Describe the relationship of the program to other programs currently offered at the proposing institution, including the common use of: (1) courses, (2) faculty, (3) facilities, and (4) other resources.

The proposed program will reside in the Department of Engineering Technology and will provide graduate level education opportunities for students graduating from the Fire Safety Engineering Technology (FSET), Mechanical Engineering Technology and Civil Engineering Technology programs. This program will offer a variety of classes that may be of interest to those seeking degrees in other disciplines such as Civil, Mechanical and Electrical Engineering, Engineering Management, and Construction and Facilities Management, and Architecture. The program will be delivered by the Fire Safety faculty and will facilitate increased research and external funding opportunities for the Department and College of Engineering.

The FSET program, with a proven track record for delivering online education, is a logical choice to deliver this degree. The FSET program has been delivering the BS program via Distance Ed since 2000 and has developed a unique and successful strategy for interactive student participation that blends both synchronous and asynchronous delivery. The proposed graduate program will be delivered both on campus and online by building upon the successful models utilized by the undergraduate program. It is anticipated that online distance delivery will be initiated in year two or three of the program.

Furthermore, the FSET program already has an established fire research laboratory. The Laboratory houses state-of-the-art fire test apparatus such as the Cone Calorimeter, Intermediate Scale Calorimeter, Lateral Ignition and Flamespread Test, and intermediate scale furnace equipped with load frames. The Intermediate Scale Calorimeter (ICAL) is a unique test apparatus; UNC Charlotte has one of the five ICALs currently is use in the United States. In addition, the program recently invested in a structural fire testing facility, one of only a few at U.S. academic institutions. Addition of this graduate program will provide graduate student support to leverage and support an active and growing research program in the Department.

D. **Describe any explorations of collaborative offering of this program and the results of those explorations.**

The proposed new Master of Fire Protection and Administration (MFPA) degree program will be the first fire protection or fire administration graduate degree program in the

University of North Carolina system; hence, no collaborations have been explored to date. It is expected that this program will be delivered online during the second cycle of course offerings, thus making it available to all students in the UNC system. Of note, this program may be of particular interest to graduates of the undergraduate Fire Science program at Fayetteville State and the undergraduate Emergency Management program at Western Carolina as a viable alternative to continue their fire education beyond the baccalaureate level.

II. JUSTIFICATION FOR THE PROGRAM

A. Describe the proposed program as it relates to:

B. <u>The institutional mission and strategic plan and response to UNC Tomorrow</u>

Following is the Mission Statement for the University of North Carolina at Charlotte (*Approved by the University's Board of Trustees on September 18, 2008.)*:

UNC Charlotte is North Carolina's urban research university. It leverages its location in the state's largest city to offer internationally competitive programs of research and creative activity, exemplary undergraduate, graduate, and professional programs, and a focused set of community engagement initiatives. UNC Charlotte maintains a particular commitment to addressing the cultural, economic, educational, environmental, health, and social needs of the greater Charlotte region.

In fulfilling this mission, we value:

- Accessible and affordable quality education that equips students with intellectual and professional skills, ethical principles, and an international perspective.
- A strong foundation in liberal arts and opportunities for experiential education to enhance students' personal and professional growth.
- A robust intellectual environment that values social and cultural diversity, free expression, collegiality, integrity, and mutual respect.
- A safe, diverse, team-oriented, ethically responsible, and respectful workplace environment that develops the professional capacities of our faculty and staff.

To achieve a leadership position in higher education, we will:

- Implement our Academic Plan and related administrative plans.
- Rigorously assess our progress using benchmarks appropriate to the goals articulated by our programs and in our plans.
- Serve as faithful stewards of the public and private resources entrusted to us and provide effective and efficient administrative services that exceed the expectations of our diverse constituencies.
- Create meaningful collaborations among university, business, and community leaders to address issues and opportunities of the region.
- Develop an infrastructure that makes learning accessible to those on campus and in our community and supports the scholarly activities of the faculty.
- Pursue opportunities to enhance personal wellness through artistic, athletic, or recreational activities.

- Operate an attractive, environmentally responsible and sustainable campus integrated with the retail and residential neighborhoods that surround us.

Specific goals from the University's strategic plan are addressed by this proposal. Goals #1 and #2 of UNC Charlotte's Strategic Plan are listed below:

University Goal #1: To improve ***educational*** opportunities that respond to the intellectual and professional needs of the region,

- Increase number of doctoral programs in high demand fields;
- Maintain a broad portfolio of masters' and baccalaureate programs;
- Increase enrollment systematically to 25,000 students by the year 2010;
- Increase continuing education and distance education offerings, particularly through innovative uses of information technology;
- Use effective review and assessment as the basis for program improvement
- Foster channels of communication to and from the community that facilitate the integration of the University and its programs into the life of the community.

University Goal #2: To increase both faculty and student ***research*** that will address fundamental and regional problems,

- Expand campus physical and human infrastructure supportive of research;
- Reach "Doctoral/Research University – Extensive" status by the year 2010;
- Secure gifts, pledges, and monies for faculty and student research;
- Accelerate the research activity of the University that meets the needs of the region through the Charlotte Research Institute agenda;
- Communicate university research activities to the public to increase understanding, enhance support, and facilitate the application of the products of research.

Initiation of this program is in direct congruence with achievement of university goals #1 and #2. Specifically, those goals include maintaining a broad portfolio of master's programs and increasing faculty and student research to address fundamental and regional problems.

This program was specifically targeted in UNC Charlotte's response to UNC Tomorrow to increase the intellectual and research capacity of the University. Overall, the proposed MFPA graduate program meshes properly with the institutional mission and strategic plan. The program will address the broad areas of concern listed in the mission statement, specifically areas related to offering exemplary graduate programs.

As the first graduate level Fire Protection and Administration program, or more directly, the first fire related graduate program of any description in the state of North Carolina and the Southeastern region of the United States, the program will provide opportunities for students all across the region to receive an advanced degree in their chosen field. Moreover this will establish UNC Charlotte as the recognized leader in the southeast in the field of fire protection and administration. Additionally, the graduate program will assist the Department and its faculty in becoming fully active participants in the institutional goal of raising the University's graduate research and scholarly profile.

2. Student demand

No similar programs have been offered in North Carolina; nationwide, there are only a few universities that offer a master's program in fire protection or fire safety. Historically, many engineers that work in the fire protection field earned degrees in other engineering disciplines, and were trained in fire protection on the job by their employers. The National Council of Examiners for Engineering and Surveying (NCEES) has changed their model law effective in the year 2015. At that time, engineers desiring to sit for the P.E. exam will be required to have a B.S. degree plus an additional 30 credits. A recent survey conducted by SFPE has shown that fire protection engineers who have a P.E. license earn between $10,000 and $15,000 more per year than their counterparts without a P.E. license, but with similar length of experience. An overwhelming majority of large employers of fire protection engineers indicated they currently have difficulty recruiting enough qualified fire protection engineers. They also predicted coming recruitment problems in the next few years. Similar market demand and supply situation exists for fire administration professionals. This will encourage many students to continue education at the graduate level as an avenue to pursue professional licensure.

It is estimated that the initial enrollment would range from 15 to 20 students depending upon time of approval and subsequent recruiting efforts. Enrollments are expected to increase to 25-30 per year within a few years. These estimates are considered conservative given the high demand for professionals in fire protection and emergency preparedness. For example, Fire Protection Engineering at Worcester Polytechnic Institute (WPI) has about 100 graduate students in fire protection engineering, plus 76 undergraduates who are taking part in a five-year program that leads to a graduate degree in fire protection engineering. WPI typically graduates 30–35 students per year. A similar program at the University of Maryland typically enrolls 80 undergraduate and 25 graduate students, and graduates about 30 students each year.

The needs in both the private and public sectors of North Carolina and the larger southeast region provide unique opportunities for a MFPA program, including outreach and collaboration with local, state and regional fire and emergency services organizations. Many fire safety and emergency preparedness practicing professionals (including some recent UNC Charlotte FSET graduates) in the Charlotte metropolitan area have showed strong interest in pursuing a master's degree such as the proposed MFPA program. Internally, there is interest among current students at UNC Charlotte and its College of Engineering for such a program; this was identified early on in the program's development. As early as October 2004, surveys conducted by Prof. Jeff Kimble at UNC Charlotte yielded 253 responses, with 220 respondents indicating interest in pursuing a graduate degree such as the one proposed herein.

3. Societal need (For graduate, first professional, and baccalaureate professional programs, cite manpower needs in North Carolina and elsewhere.)

The occurrence of fire emergencies remains a significant dilemma nationwide. Each year fire departments in the U.S. respond to more than 519,000 structural fires, more than 3,000

people die from fire, and more than 18,000 people are injured from fire. On average there is a civilian fire death every 156 minutes and a civilian fire injury every 28 minutes in the U.S. There are more than $10 billion in direct property damage as a result of fire. In addition to the direct costs from fire, there are indirect costs such as the cost of business interruption. Other fire costs include damage to the environment, fire insurance costs, and the cost of public fire protection (fire service).

The demand for professionals in the field of fire protection and emergency preparedness exceeds the number of students graduating. An example of this is evidenced by a special publication produced by the Society of Fire Protection Engineers (SFPE). The publication titled Careers in Fire Protection Engineering states that the shortages are "particularly acute in western and southern United States where there are no colleges with fire protection engineering programs." An executive summary of the article and reports from which it was compiled are available at www.sfpe.org. Also, based on a survey done by SFPE, 36 percent of SFPE members will reach retirement age within the next fifteen years. There are currently 4,800 members of SFPE, so that would indicate an average of 115 SFPE member engineers per year (this is just SFPE members and not all FPE's), may leave the profession. Those numbers are dwarfed by the number of non-SFPE members (conservatively estimated at some 9,000 plus non-members) and the increasing demand due to growth. It is clear that the current output of FPE's graduating from all US colleges and universities collectively does not come close to meeting the demand. Because of this situation, significant efforts are underway at SFPE to heighten the awareness of, and the interest in, fire protection engineering. One of the major issues facing the profession is the relatively small number of fire protection programs nationally. SFPE is developing a higher education initiative to increase the number of fire protection programs. There is a task group working to identify potential schools including determining their funding and resource needs. The proposed MFPA program is endorsed by the SFPE Higher Education Task Group. A letter of support from the SFPE task group chairman is included in the appendix.

In the Charlotte metropolitan area, industries in energy, construction, insurance, fire protection system equipment, and consulting are looking for well-trained fire protection engineers and fire administration officials. Outside North Carolina, a recent national survey showed that the annual national market demand for fire protection engineers is about 500, while the graduate output from US universities ranges from 50-100 per year. There is a big gap between market demand and graduate supply both in the state and national levels.

There is a great deal of employer interest in graduates of the existing undergraduate fire safety engineering technology program at UNC Charlotte. It is expected that the UNC Charlotte MFPA degree recipients will also be recruited by the major businesses and industries from across North Carolina and all areas of the United States. Graduate placement, starting salary offers, and advancement into managerial positions should be excellent due to the uniqueness and strong technical orientation of the MFPA degree.

4. Impact on existing undergraduate and/or graduate academic programs of your institution. (e.g., Will the proposed program strengthen other programs? Will it stretch existing resources? How many of your programs at this level currently fail

to meet Board of Governors' productivity criteria? Is there a danger of proliferation of low-productivity degree programs at the institution?)

The proposed program will certainly strengthen the existing Fire Safety Engineering Technology undergraduate program and other degree programs in Engineering Technology. The proposed MFPA program will strengthen other Engineering programs at UNC Charlotte. For example, students and graduates from Mechanical or Civil Engineering can take MFPA courses in preparation for registration exams in fire protection engineering.

Academic infrastructure is in place to support laboratory experiences and computing needs of the program. The existing BSET engineering technology programs are growing quickly (Fall 2009 enrollments are approximately 830 students) and will benefit from the synergy of the proposed MFPA program. All data indicate that this proposed program and all existing engineering technology programs will continue to grow at UNC Charlotte. Collaborations between the fire safety faculty and other faculty in the department and UNC Charlotte will strengthen the department and the university in external research funding and scholarly activities as well as service and outreach programs.

B. Discuss potential program duplication and program competitiveness

1. Identify similar programs offered elsewhere in North Carolina. Indicate the location and distance from the proposing institution. Include a) public and b) private institutions of higher education.

a) public institutions

None.

b) private institutions

None.

2. Indicate how the proposed new degree program differs from other programs like it in the University. If the program duplicates other UNC programs, explain a) why is it necessary or justified and b) why demand (if limited) might not be met through a collaborative arrangement (perhaps using distance education). If the program is a first professional or doctoral degree, compare it with other similar programs in public and private universities in North Carolina, in the region, and in the nation.

The proposed program will be the only graduate degree of this type in the state and region. Nationally, there are two universities in the US that offer the M.S. in Fire Protection Engineering and three universities that offer the M.S. in Fire Administration (or Management). UNC Charlotte's MFPA program will be the only master's program in the nation that combines Fire Protection and Fire Administration. Compared with other similar programs in the nation, the proposed MFPA program provides more options for students, and provides students with courses in both Fire Protection and Fire

Administration. Therefore, students graduating from this program will have core knowledge in both fire protection and fire administration.

C. Enrollment (baccalaureate programs should include only upper division majors, juniors, and seniors).

Headcount enrollment

Show a five-year history of enrollments and degrees awarded in similar programs offered at other UNC institutions (using the format below for each institution with a similar program); indicate which of these institutions you consulted regarding their experience with student demand and (in the case of professional programs) job placement. Indicate how their experiences influenced your enrollment projections.

No similar graduate program exists within the UNC system.

Use the format in the chart below to project your enrollment in the proposed program for four years and explain the basis for the projections:

	Year 1 (2010-11)	Year 2 (2011-12)	Year 3 (2012-13)	Year 4 (2013-14)
Full-time	5	10	15	15
Part-time	10	15	15	15
TOTALS	**15**	**25**	**30**	**30**

Please indicate the anticipated steady-state headcount enrollment after four years:

Full-time 15 Part-time 15 Total 30

SCH production (upper division program majors, juniors and seniors *only*, for baccalaureate programs). Use the format in the chart below to project the SCH production for four years. Explain how projections were derived from enrollment projections (see UNC website for a list of disciplines comprising each of the four categories).

Year 1: 2010-11	**Student Credit Hours (SCH)**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I		180	
Category II			
Category III			
Category IV			

Year 2: 2011-12	**Student Credit Hours (SCH)**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I		315	
Category II			
Category III			
Category IV			

Year 3: 2012-13	**Student Credit Hours (SCH)**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I		405	
Category II			
Category III			
Category IV			

Year 4: 2013-14	**Student Credit Hours (SCH)**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I		405	
Category II			
Category III			
Category IV			

Student credit hour projections were derived assuming that full-time students will enroll in 18 credits per year and that part-time students will average 9 credits per year.

III. Program Requirements and Curriculum

A. Program Planning

1. List the names of institutions with similar offerings regarded as high quality programs by the developers of the proposed program.

Program	University
M.S. in Fire Protection Engineering	University of Maryland
	Worcester Polytechnic Institute (MA)
M.S. in Fire (or Safety) Administration (or Management)	Eastern Kentucky University
	University of New Haven (CT)
	Arizona State University

2. List other institutions visited or consulted in developing this proposal. Also list any consultants' reports, committee findings, and simulations (cost, enrollment shift, induced course load matrix, etc.) generated in planning the proposed program.

The University of Maryland (UMD) and Eastern Kentucky University (EKU) were consulted in developing this proposal since those programs are closest geographically to UNC Charlotte.

The Fire Protection Engineering (FPE) Department at the University of Maryland is the oldest and the only accredited FPE program in the country. The department offers both the BS and MS degrees in FPE. Dr. Quintiere at UMD indicated that a tremendous need exists in the U.S. for FPEs with BS or MS degrees. He quantified the need with his assessment that on average 50-100 FPEs (both BS and MS) graduate yearly in the U.S. The current need is about 500 graduates per year. He further illustrated the existing supply/demand imbalance by pointing out that current and recent graduates of their program that applied for five positions typically received five offers. Dr. Quintiere strongly supported our proposed program. He believes that "the proposed program is unique in the curriculum, and will fill the gap currently existing between the fire administration and fire protection engineering, as well as provide a needed option for better education of fire investigators."

Consultation with Eastern Kentucky University yielded similar responses. Dr. Larry Collins, Chair of the Dept of Loss Prevention and Safety at EKU, provided the following comments:

"The demand for the program is strong. The demand for safety managers continues to grow and there is no problem placing these folks if they are willing to relocate. Programs such as fire and emergency management are new to our master's degree but I

think efforts such as FESHE are raising the awareness of the necessity for advanced degrees to move up the career ladder. I believe the success of OSU's master's program was a factor in getting their doctoral program established. Homeland Security (HLS) is also brand new but the student interest at the undergraduate level is strong. We have a few folks in the master's program who are or want to work in the HLS area. As EKU approaches the 2nd anniversary of the accelerated online master's program, there are approximately 250 duplicated enrollments in the master's online."

B. Admission. List the following:

1. Admissions requirements for proposed program (indicate minimum requirements and general requirements).

- An earned undergraduate degree in engineering, engineering technology, emergency management, or a related technical or scientific discipline. For the Fire Protection concentration, an undergraduate degree in engineering, engineering technology, or a related technical or scientific discipline is acceptable. For the Fire Administration concentration, a degree in engineering, engineering technology, emergency management, or a related discipline is acceptable.
- An undergraduate GPA of 2.75 or better
- Acceptable scores on the verbal, quantitative, and analytical sections of the GRE
- Positive letters of recommendation
- A TOEFL score of 83 (internet based test), 220 (computer-based) or 557 (paper-based) is required if the previous degree was from a country where English is not the common language
- Integral and differential calculus (MATH 1120 or 1121 or ETGR 3171 at UNC Charlotte or equivalent from other institution) is required for students pursuing the fire protection concentration.
- Statistics (STAT 1220 or STAT 3128 at UNC Charlotte or equivalent from other institution) is required for all students.
- An essay detailing the applicant's motivation and career goals, along with any specific research and training interests.
- Other credentials as required by the Graduate School

2. Documents to be submitted for admission (listing or sample).

- Official transcripts from all colleges and universities attended.
- Official GRE scores and official English proficiency tests scores (for those whose native language is not English).
- The UNC Charlotte application for graduate admission form.
- Three letters of recommendation.
- An essay detailing the applicant's motivation and career goals, along with any specific research and training interests.

C. Degree requirements. List the following:

1. Total hours required.

The minimum requirement for the MFPA degree is 30 credit hours beyond the baccalaureate degree. This includes a minimum of 24 hours of formal course work. Students enrolled will 1) take a common core of 12 credits which includes study in both fire protection and fire administration; 2) choose additional concentrated study of 6 credits in either fire protection or fire administration, and 3) select 12 credits of directed elective. Students who elect the thesis option must complete 6 credits of MFPA 6900 as part of the directed electives. Students who select the non-thesis option will complete 30 credits of coursework and complete a comprehensive exam. Distance students will be directed toward the non-thesis option while resident students may complete either option.

2. Proportion of courses open only to graduate students to be required in program (graduate programs only).

Courses having 5000 numbers are open to graduate students and advanced undergraduate students. Courses with 6000, 7000, and 8000 numbers are open to graduate students only. Twenty-four of thirty credits, or eighty percent, of required courses are at the 6000 level.

3. Grades required.

Graduate students must have a 3.0 GPA in the courses on their degree plan of study in order to graduate. However, the grades for all courses attempted will remain on the transcript and will be included in the calculation of the student's GPA as it is reported on the transcript.

4. Amount of transfer credit accepted.

Up to six hours of approved coursework may be transferred from appropriately accredited graduate programs. Only courses in which the student earned a grade of B or better may be transferred.

5. Other requirements (e.g. residence, comprehensive exams, thesis, dissertation, clinical or field experience, second major, etc.)

Students pursuing a master's degree in fire protection and administration have two options to complete the 30-credit hour program.

a) 24 hours of course work plus 6 hours of thesis project (MFPA 6900), or
b) 30 hours of course work and a comprehensive examination.

Both options require the formation of a program committee.

The thesis option is reserved for students who are attending the on-campus program and are performing research under formal graduate research or teaching assistantships. Students receiving such assistantships may be required to pursue the thesis option. The

thesis option requires students to submit a written thesis and orally defend their work before their program committee.

All non-thesis students must complete 30 credits of coursework and successfully complete a formal comprehensive examination.

The comprehensive examination is a written exam. A student's exam will be scheduled when he/she has at least 24 hours of course credit completed or in progress. The student's graduate advisor and the examining committee will coordinate the examination (to be offered once in the fall and once in the spring semesters), preparing the exam with the assistance of members of the student's program committee. The exam will measure the student's mastery of theories and applications in the selected area of specialization within the discipline. Students will have only two opportunities to receive passing marks on the examination.

6. Language and/or research requirements.

The program has no language requirement.

7. Any time limits for completion.

Students are expected to take no more than six years to complete the program as per Graduate School rules.

D. List existing courses by title and number and indicate (*) those that are required. Include an explanation of numbering system. List (under a heading marked "new") and describe new courses proposed.

The following courses are all new.

<u>*All students must complete the following 12 credit common core:</u>
MFPA 5123 Human Behavior in Fire
MFPA 5132 Fire and Building Codes, Standards and Practices
MFPA 5223 Industrial Safety and Facilities Management
MFPA 6144 Fire Protection Systems

<u>*Students select one of the following 6-credit concentration cores:</u>
<u>Fire Administration Concentration Core (6-credit hours)</u>:
MFPA 6120 Public and Private Sector Interoperability
MFPA 6124 Fire Service and the Community

<u>Fire Protection Concentration Core (6-credit hours):</u>
MFPA 6103 Fire Dynamics
MFPA 6203 Fire Modeling

***Students select 12 credits from the following directed electives to complete credit hour requirements for the degree:**
MFPA 5150 Human Resource Management in Emergency Services
MFPA 6113 Fire Failure Analysis
MFPA 6126 Arson
MFPA 6164 Fire Science Laboratory
MFPA 6232 Structural Fire Safety
MFPA 6233 Performance-Based Design
MFPA 6243 Research Investigation
MFPA 6244 Fire Detection and Smoke Management
MFPA 6252 Law and Fire Safety
MFPA 6255 Leadership/Conflict Management in Public Emergency Services
MFPA 6260 Organization and Management of Public Fire Protection
MFPA 6270 Budgeting, Grants, Contracts and Finance in Emergency Services
MFPA 6800 Independent Study
MFPA 6900 Thesis (6 credits for thesis option)
CMET 5240 Safety and Risk Management
CMET 5270 Operation of Constructed Facilities
CMET 6130 Building Information Modeling
CMET 6140 Building Energy Management

MFPA 5123 Human Behavior in Fire (3) *Prerequisite: ETFS 3103 and ETFS 3113 or permission of department.* Individual decision processes and behavior, modeling of people movement, calculation methods for egress prediction, egress design, and fire safety signs and alarm systems. (Fall) (Alternate years)

MFPA 5132 Fire and Building Codes, Standards and Practices (3) *Prerequisite: ETFS 3103 or permission of department.* History of fire safety regulation development; building fire characteristics, fire test methods, and fire safety of buildings and structures; contemporary building and fire codes, practices, and their enforcement. (Fall) (Alternate years)

MFPA 5150 Human Resources Management in Emergency Services (3) Cross-listed as MPAD 6134. *Prerequisite: permission of department.* A study of the context of public personnel fire/emergency services related administration; basic functions of job evaluation and compensation, employee rights and responsibilities; the legal constraints including equal opportunity, health and safety, collective bargaining; government productivity. (On demand)

MFPA 5223 Industrial Safety and Facilities Management (3) *Prerequisite: ETFS 3123 or permission of department.* Investigation and analysis of hazard control principles relating to the management of personnel, facilities, and equipment, including control procedures, work-task analysis, risk identification and countermeasures, safety training, and pertinent safety management techniques. (Spring) (Alternate years)

MFPA 6103 Fire Dynamics (3) *Prerequisite: ETME 3143 and ETME 3244 or permission from the department.* This course introduces students to fundamentals of fire and combustion and is intended to serve as the first exposure to fire dynamics phenomena. The course includes fundamental topics in fire and combustion such as thermodynamics of combustion, fire chemistry, premixed and diffusion flames, solid burning, ignition, plumes, heat release rate curves, and flame spread. (Fall) (Alternate years)

MFPA 6113 Fire Failure Analysis (3) *Prerequisite: MFPA 6103 or permission of department.* This course provides knowledge for the development of fire investigation and reconstruction as a basis for determining fire cause and origin and evaluating and improving fire safety design. Accident investigation theory and failure analysis techniques such as fire re-creation testing and modeling are presented. (On demand)

MFPA 6120 Public and Private Sector Interoperability(3) *Cross-listed as MPAD 6290. Prerequisite: permission of department.* A study of multi-agency interoperability and the effective organization and management of emergency resources at various fire and large-scale emergency incidents. Includes a review of national standards and federal regulations impacting emergency incident management. Case studies of actual and theoretical incidents will be used to reinforce command and control concepts. (Spring) (Alternate years)

MFPA 6124 Fire Service and the Community (3) *Prerequisite: permission of department.*
Theoretical concepts of public service to build an understanding of how the fire service fits within the community. (Spring) (Alternate years)

MFPA 6126 Arson (3) *Prerequisite: permission of department.* This course utilizes lecture and case studies of arson fires that were started for various reasons, including financial gain, revenge and to conceal other crimes. The criminal intent and the psychological aspects of the fire setter are discussed. (On demand)

MFPA 6144 Fire Protection Systems (3) *Prerequisite: ETFS 3103, ETFS 3113 or permission of department.* An advanced study of various fire protection systems in regard to contemporary fire and life safety problems. Topics include: process of fire and smoke development, principles of active fire suppression and detection systems, hydraulics, automatic sprinkler systems, passive fire protection systems, structural fire resistance, installation and maintenance of fire protection systems. (Fall) (alternate years)

MFPA 6164 Fire Science Laboratory (3) *Prerequisite: MFPA 6103 or permission of department.* This course provides overall instruction and hands-on experience with fire-science-related experimental measurement techniques. The objective is to expose students to laboratory-scale fire experiments, standard fire tests and state-of-the-art measurement techniques. (On demand)

MFPA 6203 Fire Modeling (3) *Prerequisite: MFPA 6103 or permission from the department.* Modeling of compartment fire behavior is studied through the use and application of two types of models: zone and field. The zone model studied is CFAST. The field model studied is FDS. Focus on the understanding of each of these models is the primary objective in terms of needed input, interpretation of output and limitations. (Spring) (Alternate years)

MFPA 6232 Structural Fire Safety (3) *Prerequisite: ETGR 2102 or ETME 3123, ETME 3244 or permission of department.* This course provides the knowledge needed for structural fire safety design and analysis. Course topics include design philosophies and methods in fire safety engineering, principles of and approaches for structural design for fire safety, behavior of compartment fires, behavior of structural materials in fire, and structural fire safety of typical materials and their components. (On demand)

MFPA 6233 Performance-Based Design (3) *Prerequisite: ETFS 6203 or permission of department.* This course covers practical applications of fire protection engineering principles to the design of buildings. Both compartmented and non-compartmented buildings will be designed for criteria of life safety, property protection, continuity of operations, operational management and cost. (On demand)

MFPA 6243 Research Investigation (3) *Prerequisite: permission of the department.* This course provides students with opportunities in conducting research to tackle fire safety related real-world problems. With guidance from the instructor, students can work individually or as a team on a one-semester project. (On demand)

MFPA 6244 Fire Detection and Smoke Management (3) *Prerequisite: ETFS 3103 or permission of department.* This course addresses the fundamentals and practices of fire detection and smoke management. Topics include: principles of fire detection, fire alarm technology, and contemporary fire detection and alarm systems; principles applicable to the design and analysis of smoke management systems; factors affecting smoke movement; smoke hazard assessment; airflow in buildings, performance characteristics of smoke control and management systems. (On demand)

MFPA 6252 Law and Fire Safety (3) *Prerequisite: permission of department.* Responding to natural and manufactured building hazards requires a complex legal environment, including regulation and liability. Key topics include the use of model codes, administrative regulation, retrospective codes, federal preemption, arson, performance based codes, risk based regulation, engineering malpractice, product liability and disaster investigation. (On demand)

MFPA 6255 Leadership/Conflict Management in Public Emergency Services (3) Cross-listed as MPAD 6141. *Prerequisite: permission of department.* The role of the administrator as a focal point in social change and the management of the conflict, which occurs. Perspectives on the negotiation and bargaining process will be reviewed. (On demand)

MFPA 6260 Organization and Management of Public Fire Protection (3) *Cross-listed as MPAD 6104. Prerequisite: permission of department.* A presentation of modern management principles and techniques to the organization and delivery of the array of services that communities have come to expect from the fire service. The traditional and evolving roles of the fire service to protection, prevention, risk analysis and community service are also considered. (On demand)

MFPA 6270 Budgeting, Grants, Contracts and Finance in Emergency Services (3) *Prerequisite: permission of department.* This course works to develop the understanding of strategic planning, contracting and budgeting practices as well as grant proposal writing with the emphasis on contract administration skills necessary to operation of a functioning governmental entity. (On demand)

MFPA 6800 Independent Study (1-3) *Prerequisite: permission of department.* The MFPA program offers independent study and special study courses to allow students to pursue studies in areas for which there are no approved formal courses. Independent study courses can only be taken on a P/F basis. Special study courses can be taken for a grade if the paperwork indicates it will be taken A/F. Each requires a title, justification, and the method of evaluation. Courses taken for A/F grade may be used to satisfy degree requirements. May be repeated for credit. (On demand)

MFPA 6900 Thesis (1-6) *Prerequisite: Consent of graduate committee advisor.* Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

CMET 5240. Safety & Risk Management. (3) Prerequisite: CMET 4228 or consent of instructor. Topics of study will include causes and prevention of industrial accidents, hazardous processes and material, OSHA regulations and requirements, and design of accident prevention programs. *(Spring)*

CMET 5270. Operation of Constructed Facilities. (3) Prerequisite: CMET 3224 and ETCE 3271 or consent of instructor. Topics of study will include acquisition, operation, maintenance, and disposal of building systems, structures, permanent interiors, furniture, and equipment; grounds and other exterior elements. *(Spring)*

CMET 6130. Building Information Modeling. (3) Prerequisite: ETCE 1104 or ETGR 1104 or consent of instructor. Topics of study will include the creation, management, and application of building information models to the construction, operation, and maintenance of a facility. Focus will be on 2D and 3D computer models of building components, renderings, animations, and interfacing with analysis tools. *(Fall)*

CMET 6140. Building Energy Management. (3) Prerequisite: ETCE 3271 or ETME 3143 or consent of instructor. Topics of study will focus on the integrated planning of energy efficient technologies for building environmental control systems. Introduction to the design, planning, and optimization of HVAC systems and technology needed to integrate the heating, cooling, natural ventilation, lighting, electricity, and building energy management systems into a building's structure and design. *(Fall)*

IV. FACULTY

A. List the names of persons on the faculty who will be directly involved in the proposed program. Provide complete information on each faculty member's education, teaching experience, research experience, publications, and experience in directing student research, including the number of theses and dissertations directed for graduate programs. The official roster forms approved by SACS can be submitted rather than actual faculty vita.

Licensure Track: All tracks, educational research component

Faculty Name	Highest Degree and Institution	Other degrees and Institutions
Jozef Urbas, Associate Professor	Ph.D., University of Ljubljana (Slovenia)	M.S. University of Zagreb (Croatia)
Aixi Zhou, Assistant Professor	Ph.D., Virginia Tech	M.S. Lanzhou University of Technology (China)
Jeffrey Kimble, Associate Professor	M.S., Eastern Kentucky University	B.S., Eastern Kentucky University
David Murphy, Associate Professor	M.S., Eastern Kentucky University	B.S., Eastern Kentucky University
Peter Schmidt, Assistant Professor	PhD, Vanderbilt University	MS, Rose Hulman Institute of Technology
Ahmad Sleiti, Assistant Professor	PhD, University of Central Florida	MS, University of Jordan
Chung-Suk Cho, Assistant Professor	PhD, University of Texas	MS, University of Hawaii at Manoa
Rosida Coowar, Associate Professor	PhD, University of Central Florida	MS, University of Massachusetts
Anthony L. Brizendine, Professor	PhD, West Virginia University	MS, Virginia Tech

Primary faculty in the fire protection and fire administration group are Professors Urbas, Zhou, Kimble and Murphy. Brief descriptions of their expertise and scholarly activity follow. In addition, Professors Schmidt, Sleiti, Cho, Coowar and Brizendine will contribute to the proposed program through related instruction and research in building systems, computational modeling, and infrastructure. Dr. Brizendine will handle administration of the program as graduate program director. Short biographical summaries of primary faculty are provided as Appendix B. In addition, the Department has over thirty faculty members who may contribute to teaching and or research in collaboration with this group.

Dr. Joe Urbas has over 30 years of experience in various areas of fire safety, mainly in research, litigation support testing and modeling, standard testing, and fire protection engineering. He holds a Ph.D. in Physical Chemistry from University of Ljubljana, Slovenia. Dr. Urbas is a member of ASTM Committee E-5 on Fire Standards and has been involved in the work of International Standardization Organization (ISO) for many years. He has been a U.S. assigned expert to ISO, Technical Committee 92, Subcommittee 1 (Reactions to Fire). His work has been extensively published (over 50

publications) and presented at national and international fire research and other conferences. Before he joined Fire Safety Engineering Technology (FSET) program at UNC Charlotte he had taught graduate and undergraduate fire protection engineering related courses at the University of Ljubljana and Portland State University. Dr. Urbas' recent work was related to fire re-creation in support of fire investigation, the development of measurement techniques for material fire properties needed as input in fire models, and various aspects of fire protection engineering. Most of the fire investigation work was litigation support related and involved court testimonies as expert witness. He is interested in contributing to further development of the FSET program at UNC Charlotte as well as in further development of research capabilities within the program.

Dr. Urbas' current research interests are in the areas of material flammability, fire modeling, and fire re-creation. Recent research examples include: heat of gasification measurements and calculation (supported by a National Institute of Technology grant), surface temperature measurement techniques of burning materials (supported by a National Institute of Technology grant), Intermediate Scale Calorimeter (ICAL) fire test apparatus development and standardization within ASTM and ISO, and the development of scientific methods for validation of fire origin and cause hypotheses.

Dr. Aixi Zhou has over 10 years of research and teaching experience in engineering and technology. Prior to joining UNC Charlotte, he conducted research and taught at Lanzhou University of Technology (China), conducted research at Virginia Tech and the University of California-San Diego, and conducted research and taught at the Swiss Federal Institute of Technology-Lausanne (EPFL).

Dr. Zhou's expertise and research interests include fire resistant materials and structures, structural fire safety, polymer composites and structural adhesives, and solid mechanics. His research has been supported by the US Office of Naval Research, the American Society of Civil Engineers, and the Swiss National Science Foundation. He has more than 40 scientific publications in peer-reviewed journals, books, and conference proceedings. He is a technical reviewer for six international journals, and has served as session chairs for several international conferences. He is a graduate faculty member at UNC Charlotte, and is currently advisor and committee chair for a doctoral student. His instructional interests include courses in fire safety engineering technology and engineering mechanics.

Prof. Jeffrey Kimble has more than 20 years of fire service experience. He is an instructor with the Virginia Department of Fire Programs and a technician with Virginia's Heavy and Tactical Rescue teaching team. He earned his bachelor's degree in Fire Safety Engineering Technology and Master of Science in Industrial Training at Eastern Kentucky University. Professor Kimble has also completed the course work on a Doctorate in Instructional Design at the University of Kentucky and is a candidate for that degree. Research interests include scale modeling of fires, arson and explosion investigation and juvenile fire setters.

Prof. David Murphy retired as Assistant Chief of the Richmond, Kentucky Fire Department with twenty-five years combined fire service experience. As Assistant Chief, training and education of fire department personnel were among his primary job responsibilities. Professor Murphy has also served as a state fire/rescue training instructor for the state of Kentucky and was one of the first instructors to deliver the Incident Management System to firefighters statewide.

Upon his retirement, Murphy became the Safety and Training Supervisor for AFG Industries, a large glass production (start-up) facility where the design of effective instruction and the subsequent training of employees were again primary responsibilities. Corporate safety duties also included the design of safety instruction tailored to a specific process or facility.

He began his academic career as an Adjunct Instructor at Eastern Kentucky University in Richmond, Kentucky. Since his arrival at the University of North Carolina at Charlotte, he has developed and revised numerous classes for the Fire and Safety Engineering Technology program. He has received two provisional patents since his arrival and has collaborated on several other research projects within the university and from the private sector as well.

B. Estimate the need for new faculty for the proposed program for the first four years. If the teaching responsibilities for the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done without weakening existing programs.

It is anticipated that this new enrollment stream will warrant the addition of three new faculty members over the next four years to adequately deliver the program. Existing fire science faculty, along with new hires, will absorb the teaching requirements of the MFPA. However, the Department has an extremely well-qualified pool of adjunct faculty and faculty associates who teach in the program that will pick up some of the undergraduate curriculum delivery. This resource has additional capacity and the Department will utilize those resources in consort with the new faculty resources to deliver both the existing and proposed programs. Availability of teaching assistants in the MFPA will also leverage faculty capability in both teaching and research.

C. If acquisition of new faculty requires additional funds, please explain where and how these funds will be obtained.

New Fire Safety faculty positions to support the growth of the proposed program will occur through normal university allocations. These positions will be justified through enrollment growth and student credit hours production targets being met.

D. Explain how the program will affect faculty activity including course load, public service and scholarly research.

Implementation of the new program will have no negative impact on faculty activity. All members of the Fire Safety program are currently engaged in or prepared for the activities required to support the MFPA program.

The primary faculty members are prepared to teach the courses described in the previous section, and the fire safety faculty is already active in research and public service. Addition of a graduate program and graduate students will allow the group to expand its evolving research program. The advising workload will increase due to the requirement to advise students as they enter the MFPA program and prepare to graduate. Given the planned size of the fire safety faculty, the expected advising load per faculty member is expected to be fewer than five MFPA students annually. The faculty looks forward to an increased capability in research with the addition of these students.

V. LIBRARY

A. Provide a general statement as to the adequacy of present library holdings for the proposed program.

Atkins Library's holdings are adequate to support study and research in fire protection and administration at the master's level. The library currently holds over 1,100 books and government documents with relevant subject headings, and over 200 print and electronic periodical holdings (see second page for details). It also has extensive holdings in the areas of public policy and administration which will be utilized by students in the program. Student who participate in this degree program as distance education students will be able to take advantage of our full-time distance education librarian's access services, and all students in the program will have access to a subject specialist librarian as well. Students will also have access to interlibrary loan to request material not held by the UNC Charlotte libraries, and to the National Learning Academy through the USFA-NFA. Adequacy of the library holdings and resources was verified through consultation with the library during the curriculum development process.

B. State how the library will be improved to meet program requirements for the next five years. The explanation should discuss the need for books, periodicals, reference materials, primary source materials, etc. What additional library support must be added to areas supporting the proposed program?

No additional library support, other than the ongoing purchases for materials in the discipline is necessary to support the program. Holdings are current and quite adequate to support this new degree program.

C. Discuss the use of other institutional libraries

The library's participation in an interlibrary loan consortium provides another means of effectively supporting research and instructional needs.

VI. FACILITIES AND EQUIPMENT

A. Describe facilities available for the proposed program.

The proposed program will share facilities with the existing Fire Safety Engineering Technology (FSET) program in the Smith Building and the Fire Laboratory at Shopton Road. The FSET program has an established off-campus fire research laboratory on Shopton Road. The Laboratory houses several state-of-the-art fire test apparatus such as a Cone Calorimeter, an Intermediate Scale Calorimeter (ICAL), a Lateral Ignition and Flame Spread Test, a Furniture Calorimeter and an intermediate scale furnace equipped with load frames. The ICAL is a unique test apparatus, and UNC Charlotte has one of the five ICALs currently in use in the United States. In addition, the program recently invested in a structural fire testing facility, one of only a few at U.S. academic institutions. An additional laboratory for small scale fire testing is in development in the Smith Building.

B. Describe the effect of this new program on existing facilities and indicate whether they will be adequate, both at the commencement of the program and during the next decade.

Existing facilities are adequate to start the program and support the program during the next decade. Additional facilities may be necessary to support emerging research opportunities for the program over time but will be addressed as those research projects are funded externally and brought on line.

C. Discuss any information technology services needed and/or available.

Existing information technology services and engineering computing capabilities are available and adequate.

D. Discuss sources of financial support for any new facilities and equipment.

Existing engineering facilities and equipment are in place. Any additional new facilities or equipment will be funded through normal university funding sources. Supplemental funding from public and private sources may be utilized for program enhancements.

VII. ADMINISTRATION

Describe how the proposed program will be administered giving the responsibilities of each department, division, school, or college. Explain any inter-disciplinary or inter-unit administrative plans. Include an organizational chart showing the "location" of the proposed program.

The proposed program will be administered within the Department of Engineering Technology. The Department Chair has ultimate responsibility for the programs within the Department, reporting to the Dean of the College of Engineering, who in turn, reports to the Provost.

At the University of North Carolina at Charlotte, the Dean of the Graduate School is the administrative officer with primary responsibility for the supervision of graduate programs. The Dean is responsible for the executive and administrative affairs of the Graduate School in accordance with policies determined by the UNC Charlotte Graduate Council, the Graduate faculty, and the Faculty Council. The Graduate School is responsible for monitoring the quality of graduate programs, the final admission of graduate students, appointments to the Graduate faculty, and the enhancement of research activities essential to the conduct of graduate programs.

The Graduate Dean's main duties include the following:

- Admission of students
- Appointment of dissertation and thesis committees
- Approval of programs of study
- Admission of students to candidacy
- Final approval of dissertations

Upon admission to the MFPA Program, the student will be assigned an appropriate Faculty Advisor from among the Fire Protection and Administration faculty, based on the student's prior training and stated interests. The Faculty Advisor will recommend a Plan of Study for the student's first year of enrollment in the Program.

If the thesis option is selected, the Faculty Advisor will assist the student in identification of an appropriate research project. Before the beginning of the third semester following admission to the program, the student must form a three-member Advisory Committee. The assigned Faculty Advisor may chair this committee or the student may select a new Faculty Advisor from among the committee members at the time the committee is formed.

Subject to the approval of the Dean of the Graduate School, the functions of the committee are to:

- Approve the student's plan of study
- Evaluate the student's academic progress each semester
- Evaluate the internship project or research project plan
- Certify the candidate's qualifications for the degree subject to the approval of the Dean of the Graduate School

VIII. ACCREDITATION

Indicate the names of all accrediting agencies normally concerned with programs similar to the one proposed. Describe plans to request professional accreditation. It the proposed new degree program is at a more advanced level than those previously authorized or if it is in a new discipline division, was SACS notified of a potential "substantive change" during the planning process? If so, describe the response from

SACS and the steps that have been taken to date with reference to the applicable procedure.

Fire protection programs can seek specialized program accreditation through ABET, Inc. Currently, UNC Charlotte seeks specialized accreditation for our engineering and technology programs at the baccalaureate level but does not seek specialized program level accreditation for master's level programs due to the cost and limited value of such accreditation. This is the practice at most engineering schools across the country, including those in the UNC system. SACS accreditation covers the external evaluation necessary and is sufficient for program review.

IX. SUPPORTING FIELDS

Are other subject-matter fields at the proposing institution necessary or valuable in support of the proposed program? Is there needed improvement or expansion of these fields? To what extent will such improvement or expansion be necessary for the proposed program?

The MFPA program has been designed to be self-contained within the Department of Engineering Technology, and support from other subject-matter fields outside the department is not necessary. As an interdisciplinary program within the department, the MFPA program will rely on support from all disciplines (Civil, Construction, Electrical, Fire, and Mechanical) within the department.

X. ADDITIONAL INFORMATION

Include any additional information deemed pertinent to the review of this new degree program proposal.

There is no additional information pertinent to the review of the proposed program.

XI. BUDGET

Provide estimates (using the attached form) of the <u>additional costs</u> required to implement the program and identify the proposed sources of the additional required funds. ***Use SCH projections (section II.C.) to estimate new state appropriations through enrollment increase funds.*** **Prepare a budget schedule for each of the first three years of the program, indicating the account number and name for all additional amounts required. Identify EPA and SPA positions immediately below the account listing. New SPA positions should be listed at the first step in the salary range using the SPA classification rates currently in effect. Identify any larger or specialized equipment and any <u>unusual</u> supplies requirements.**

For the purposes of the second and third year estimates, project faculty and SPA position rates and fringe benefits rates at first year levels. ***Include the continuation of previous year(s) costs in second and third year estimates.***

Additional state-appropriated funds for new programs may be limited. Except in exceptional circumstances, institutions should request such funds for no more than three years (e.g., for start-up equipment, new faculty positions, etc.), at which time enrollment increase funds should be adequate to support the new program. Therefore it will be assumed that requests (in the "New Allocations" columns of the following worksheet) are for one, two, or three years unless the institution indicates a continuing need and attaches a compelling justification. However, funds for new programs are more likely to be allocated for limited periods of time.

See Appendix A for detailed budget information.

XII. EVALUATION PLANS

All new degree program proposals and degree program track descriptions must include an evaluation plan which includes: (a) the criteria to be used to evaluate the quality and effectiveness of the program, (b) measures to be used to evaluate the program, (c) expected levels of productivity of the proposed program/track for the first four years of the program (numbers of graduates), (d) the names, addresses, and telephone numbers of at least three persons…qualified to review this proposal and to evaluate the program once operational, and (e) the plan and schedule to evaluate the proposed new degree program prior to the completion of its fifth year of operation once fully established.

A. Criteria to be used to evaluate the proposed program (not in an order of priority).

The Department will employ its existing robust continuous improvement assessment process to this proposed program. The existing programs are assessed by an integrated program and course assessment process which external consultants have described as outstanding based upon their evaluation of our programs and processes. For the MFPA program, the process will begin by establishing assessment measures and tools (i.e. primarily student work activities) that are directly tied to the established program educational outcomes. The assessment tools will be administered as part of the Department's Individual Course Assessment Process (ICAP). Data collected through the ICAP process will be evaluated by a Focus Area Improvement Team (FAIT) that will be established for the MFPA program. The FAIT team will then, based on the student performance data, make any recommendations for course and curricular improvement that may be deemed necessary to ensure continued program quality and improvement.

Other external criteria which will be utilized to evaluate the program include but are not limited to the:

1. ability to attract students
2. quality of instruction
3. quality of program faculty
4. ability to produce graduates
5. quality and competence of graduates
6. career mobility and success
7. satisfaction of construction industry employers

8. quality of research and scholarly activity

B. Measures to be used to evaluate the program:

Various measures, both direct and indirect, are currently utilized to evaluate our existing programs. Those same measures will be applied to the proposed MFPA program. Those measures include, but are not limited to:

1. student enrollments
2. scores on student course evaluations
3. annual and post tenure reviews of faculty
4. number of graduates produced
5. graduate grade point averages and results of nationally-normed tests where applicable
6. satisfaction of alumni on surveys
7. satisfaction of employers on surveys
8. level of research and scholarly activities
9. recruitment of graduates to academic research and doctoral training

C. Projected productivity levels (numbers of graduates):

	Year 1 (2009-2010)	Year 2 (2010-2011)	Year 3 (2011-2012)	Year 4 (2012-2013)	TOTALS
B					
M	0	2	10	10	22
I/P					
D					

D. Recommended consultants/reviewers: Names, titles, addresses, e-mail addresses, and telephone numbers. May not be employees of the University of North Carolina.

Franklin Hart, Dean, College of
Engineering Technology and Computer Science
Bluefield State University
219 Rock Street, Bluefield, WV 24701
E-mail: frankh@bluefieldstate.edu
Office Phone: (304) 327-4121

Warren Hill, Dean, College of Applied Science and Technology
Weber State University
1801 University Circle
Ogden, UT 84408-1801
Email: whill@weber.edu
Phone: 801-626-6303

E. Plan for evaluation prior to sixth operational year.

Normal department level assessments will occur as outlined in the Strategic Plan. Maturation of the proposed program is expected to take several years. The measures for evaluating program success, as described above, are not likely to be fully realized in four years. Evaluation of the program must therefore assess progress toward the steady-state goals.

From the inception of the program, we will maintain a database of enrollment and student outcome data for students entering the MFPA program. Application, admission, graduation, and post-graduate placement data will be collected. College of Engineering and Department of Engineering Technology staff will track the progress of alumni and their satisfaction with their employment outcomes for up to five years after graduation, when possible, by using mailed or e-mailed surveys. Staff will encourage self-reporting for alumni over longer periods by creating a self-service alumni website that encourages graduates to submit their contact information and current employment information, network via online discussion, and contact other alumni.

Based on employment data supplied by graduates, staff will make contact with frequent employers of our graduates and initiate formal or informal surveys of employer satisfaction. Feedback from the program's Industrial Advisory Board concerning the program and its educational outcomes will be solicited.

Fourth year milestones are listed below.

1. During the fourth year of the proposed program, enrollment will be assessed to determine whether it is meeting projections. Full-time enrollment in the program should approach 15 students by the fourth year.
2. The program should have produced approximately 12 graduates by the fourth year of operation.
3. Educational program outcomes should be satisfactorily met for 85 percent of graduates.
4. A panel of external evaluators will visit the UNC Charlotte campus to assess the overall success of the program. The evaluation report prepared by the evaluators will be reviewed by the Department of Engineering Technology Chair, by the Dean of the College of Engineering, and by the Provost.
5. Necessary changes in the program will be implemented based on the review to ensure that program goals are achieved.

REPORTING REQUIREMENTS

Institutions will be expected to report on program productivity after one year and three years of operation. This information will be solicited as a part of the biennial long-range planning revision.

Proposed date of initiation of proposed degree program: August 2010

This proposal to establish a new program has been reviewed and approved by the appropriate campus committees and authorities.

Chancellor Phil J. Mahon **Date** 12/1/09

Appendix A:

Budget projections for the first three years of program operation

Projected Funding for New Degree Program
Master of Fire Protection and Administration
Regular Term 2010-2011
(Based on 2009-2010 Change in Student Credit Hours)

Program Category	Change in Student Credit Hours			Instructional - Position Funding Factors			Instructional Positions Required		
	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral
Category I				708.64	169.52	115.56	0.000	0.000	0.000
Category II				535.74	303.93	110.16	0.000	0.000	0.000
Category III				406.24	186.23	109.86	0.000	0.000	0.000
Category IV				232.25	90.17	80.91	0.000	0.000	0.000

Fringe rates for staff
FICA @ 7.65%
Retirement @ 8.75%
Medical @ $4,527

Fringes for faculty salaries

FICA @ 7.65%	*$0*
Retirement @ 11.86%	*$0*
Medical @ $4,527	*$0*
	$0

Total Positions Required			**0.000**
Instructional - Position Salary Rate			$79,891
101-1310 Instructional Salary Amount			$0
Other Academic Costs	44.89300%		0
Purpose 101 Total Academic Requirements			$0
Purpose 151 Library	11.48462%		0
Purposes 152, 160, 170 180 General Instit Support	54.04980%		0
Neg Adj Factor	50.00000%		n/a
In-state SCHs	0		
Financial Aid (in-state)	67.99800%		0
Total Requirements			**$0**

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

Institution **UNC Charlotte** *Date* **November 19, 2009**

Program (API#, Name, Level) **43.0299 Fire Protection, Other**

Degree(s) to be Granted **M.F.P.A.** *Program Year* **2010-11**

	ADDITIONAL FUNDING REQUIRED - BY SOURCE				
	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal/State or Other Non-state Funds (Identify)	New Allocations	Total
101 Regular Term Instruction					
1210 SPA Regular Salaries	$0				$0
1110 EPA Non-teaching Salaries					0
1310 EPA Academic Salaries	0	0	0		0
Program Coordinator Stipend					
Adjunct Faculty (backfill)					
Graduate Teaching Assistants (2)					
1810 Social Security	0		0		0
1820 State Retirement	0		0		0
1830 Medical Insurance (3432*X)	0				0
2000 Supplies and Materials	0				0
2300 Educational Supplies					0
2600 Office Supplies					0
3000 Current Services	0				0
3100 Travel					
3200 Communications					
3400 Printing & Binding					
5000 Capital Outlay (Equipment)	0				0
5100 Office Equipment					
5200 EDP Equipment					
TOTAL Regular Term Instruction	**$0**	**$0**	**$0**	**$0**	**$0**
151 Libraries					
5000 Capital Outlay (Equipment)	500	0			500
5600 Library Book/Journal	500				
TOTAL Libraries	**$500**	**$0**	**$0**	**$0**	**$500**
189 General Institutional Support					
2000 Supplies and Materials					0
2600 Office Supplies					
3000 Current Services					0
3200 Communications					
3400 Printing & Binding					
5000 Capital Outlay (Equipment)					0
5100 Office Equipment					
5200 EDP Equipment					
TOTAL General Inst. Support	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL ADDITIONAL COSTS	**$500**	**$0**	**$0**	**$0**	**$500**

NOTE: Accounts may be added or deleted as required.

Projected Funding for New Degree Program
Master of Fire Protection and Administration
Regular Term 2011-2012
(Based on 2010-2011 Change in Student Credit Hours)

Program Category	Change in Student Credit Hours			Instructional - Position Funding Factors			Instructional Positions Required		
	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral
Category I				708.64	169.52	115.56	0.000	0.000	0.000
Category II				535.74	303.93	110.16	0.000	0.000	0.000
Category III		180		406.24	186.23	109.86	0.000	0.967	0.000
Category IV				232.25	90.17	80.91	0.000	0.000	0.000

Fringe rates for staff
FICA @ 7.65%
Retirement @ 8.75%
Medical @ $4,527

Fringes for faculty salaries

FICA @ 7.65%	*$5,907*
Retirement @ 11.86%	*$9,158*
Medical @ $4,527	*$4,376*
	$19,441

	Total Positions Required		**0.967**
	Instructional - Position Salary Rate		$79,891
101-1310	Instructional Salary Amount		$77,218
	Other Academic Costs	44.89300%	34,666
Purpose 101	Total Academic Requirements		$111,884
Purpose 151	Library	11.48462%	12,849
Purposes 152, 160, 170 180	General Instit Support	54.04980%	60,473
	Neg Adj Factor	50.00000%	n/a
	In-state SCHs	0	
	Financial Aid (in-state)	67.99800%	0
	Total Requirements		**$185,206**

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

Institution **UNC Charlotte** *Date* **November 19, 2009**

Program (API#, Name, Level) **43.0299 Fire Protection, Other**

Degree(s) to be Granted **M.F.P.A.** *Program Year* **2011-12**

	ADDITIONAL FUNDING REQUIRED - BY SOURCE				
	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal/State or Other Non-state Funds (Identify)	New Allocations	Total
101 Regular Term Instruction					
1210 SPA Regular Salaries					$0
1110 EPA Non-teaching Salaries					0
1310 EPA Academic Salaries	0	77,218	0		77,218
1810 Social Security	0	5,907	0		5,907
1820 State Retirement	0	14,363	0		14,363
1830 Medical Insurance		4,527			4,527
2000 Supplies and Materials		2,000			2,000
2300 Educational Supplies		1,000			
2600 Office Supplies		1,000			
3000 Current Services		5,000			5,000
3100 Travel		2,000			
3200 Communications		2,000			
3400 Printing & Binding		1,000			
5000 Capital Outlay (Equipment)		2,869			2,869
5100 Office Equipment		500			
5200 EDP Equipment		2,369			
TOTAL Regular Term Instruction	**$0**	**$111,884**	**$0**	**$0**	**$111,884**
151 Libraries					
5000 Capital Outlay (Equipment)		12,849			12,849
5600 Library Book/Journal		12,849			
TOTAL Libraries	**$0**	**$12,849**	**$0**	**$0**	**$12,849**
189 General Institutional Support					
2000 Supplies and Materials		20,200			20,200
2600 Office Supplies		20,200			
3000 Current Services		20,200			20,200
3200 Communications		10,100			
3400 Printing & Binding		10,100			
5000 Capital Outlay (Equipment)		20,073			20,073
5100 Office Equipment		10,000			
5200 EDP Equipment		10,073			
TOTAL General Inst. Support	**$0**	**$60,473**	**$0**	**$0**	**$60,473**
TOTAL ADDITIONAL COSTS	**$0**	**$185,206**	**$0**	**$0**	**$185,206**

NOTE: Accounts may be added or deleted as required.

Projected Funding for New Degree Program
Master of Fire Protection and Administration
Regular Term 2012-2013
(Based on 2011-2012 Change in Student Credit Hours)

Program Category	Change in Student Credit Hours			Instructional - Position Funding Factors			Instructional Positions Required		
	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral	Undergrad	Masters	Doctoral
Category I				708.64	169.52	115.56	0.000	0.000	0.000
Category II				535.74	303.93	110.16	0.000	0.000	0.000
Category III		135		406.24	186.23	109.86	0.000	0.725	0.000
Category IV				232.25	90.17	80.91	0.000	0.000	0.000

	Total Positions Required		**0.725**
	Instructional - Position Salary Rate		$79,891
101-1310	Instructional Salary Amount		$57,914
	Other Academic Costs	44.89300%	25,999
Purpose 101	Total Academic Requirements		$83,913
Purpose 151	Library	11.48462%	9,637
Purposes 152, 160, 170 180	General Instit Support	54.04980%	45,355
	Neg Adj Factor	50.00000%	n/a
	In-state SCHs	0	
	Financial Aid (in-state)	67.99800%	0
	Total Requirements		**$138,905**

Fringe rates for staff
FICA @ 7.65%
Retirement @ 8.75%
Medical @ $4,527

Fringes for faculty salaries

FICA @ 7.65%	*$4,430*
Retirement @ 11.86%	*$6,869*
Medical @ $4,527	*$3,282*
	$14,581

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

Institution **UNC Charlotte** *Date* **November 19, 2009**

Program (API#, Name, Level) **43.0299 Fire Protection, Other**

Degree(s) to be Granted **M.F.P.A.** *Program Year* **2012-13**

	ADDITIONAL FUNDING REQUIRED - BY SOURCE				
	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal/State or Other Non-state Funds (Identify)	New Allocations	Total
101 Regular Term Instruction					
1210 SPA Regular Salaries					$0
1110 EPA Non-teaching Salaries					0
1310 EPA Academic Salaries	0	57,914	0		57,914
1810 Social Security	0	5,907	0		5,907
1820 State Retirement	0	6,869	0		6,869
1830 Medical Insurance		4,527			4,527
2000 Supplies and Materials		2,446			2,446
2300 Educational Supplies		1,500			
2600 Office Supplies		946			
3000 Current Services		3,250			3,250
3100 Travel		2,500			
3200 Communications		500			
3400 Printing & Binding		250			
5000 Capital Outlay (Equipment)		3,000			3,000
5100 Office Equipment		1,000			
5200 EDP Equipment		2,000			
TOTAL Regular Term Instruction	**$0**	**$83,912**	**$0**	**$0**	**$83,912**
151 Libraries					
5000 Capital Outlay (Equipment)		9,637			9,637
5600 Library Book/Journal		9,637			
TOTAL Libraries	**$0**	**$9,637**	**$0**	**$0**	**$9,637**
189 General Institutional Support					
2000 Supplies and Materials		15,100			15,100
2600 Office Supplies		15,100			
3000 Current Services		15,100			15,100
3200 Communications		7,550			
3400 Printing & Binding		7,550			
5000 Capital Outlay (Equipment)		15,155			15,155
5100 Office Equipment		7,600			
5200 EDP Equipment		7,555			
TOTAL General Inst. Support	**$0**	**$45,355**	**$0**	**$0**	**$45,355**
TOTAL ADDITIONAL COSTS	**$0**	**$138,904**	**$0**	**$0**	**$138,904**

NOTE: Accounts may be added or deleted as required.

Appendix B:

Faculty Curriculum Vitas

AIXI ZHOU

Degrees & Professional Registrations

- Ph. D. in Engineering Mechanics, Virginia Tech, 2002
- M.S. in Mechanical Engineering, Lanzhou University of Technology, 1999
- B.S. in Mechanical Engineering, Shenyang Institute of Aeronautical Engineering, 1996

Numbers of years service on this faculty, including date of original appointment and dates of advancement in rank:

1 year, Department of Engineering Technology, Fire Safety Engineering Technology
Original appointment August 2007 at the rank of Assistant Professor

Related Teaching and Other Work Experience

- Postdoctoral Associate, Department of Engineering Science and Mechanics, Virginia Tech, 2006 – 2007
- Lecturer & Senior Scientist, School of Architecture, Civil & Environmental Engineering, Swiss Federal Institute of Technology-Lausanne (EPFL), 2003 – 2006
- Research Associate, Department of Structural Engineering, University of California-San Diego, 2002 – 2003
- Research and Teaching Assistant, Department of Engineering Science and Mechanics, Virginia Tech, 2000 – 2002
- Research and Teaching Assistant, Department of Mechanical Engineering, Lanzhou University of Technology, 1996 - 1999

Active Membership in Professional and Scientific Societies

- Society of Fire Protection Engineers (SFPE)
- American Society of Civil Engineers (ASCE)
- American Society for Engineering Educators (ASEE)

Honors/Awards/Recognitions

- Who's Who in Science and Engineering, 2007
- International Association of Bridge and Structural Engineering (IABSE) Young Engineer Travel Award, Zurich, Switzerland, 2004
- Excellent Science and Technology Development Award in Higher Education, the Government of Gansu, China, 2002
- Science and Technology New Star Award, the Government of Gansu, China, 1999
- Excellent Thesis Award, Lanzhou University of Technology, 1999
- Outstanding Graduate Student Award, Lanzhou University of Technology, 1996-1999
- Outstanding Student Award, Shenyang Institute of Aeronautical Engineering, 1992-1996

Selected Recent Publications/Presentations/Grant Awards

- "*Structural Fire Resistance of Fiber Reinforced Polymer Composites*", supported by the UNC Charlotte Faculty Research Grant, 1/2008-5/2009, $6,000, PI
- "*Standard for Load Resistance Factor Design of Pultruded Fiber-Reinforced Polymer Structures (Chapter 7-Plates*", supported by the American Society of Civil Engineers (in collaboration with Virginia Tech and the University of Maine), 10/2007-9/2010, $138,896, Co-PI.
- "*Development and Application of Fire Resistive Models for Naval Composite Structures*", supported by the Office of Naval Research through the Naval International Cooperative Opportunities in Science and Technology Program (NICOP), 7/2007-6/2010, $385,759, PI.
- "*Fire Integrity in Advanced Ship Structures (SBIR)*", supported by the Office of Naval Research, 08/2007-03/2008, $5,000. Co-PI.
- "*Equipment for Soft Tissue/Soft Material Characterization*", supported by the State Council of Higher Education for Virginia, 11/2006, $63,550, Co-PI.

- "*Fiber Reinforced Polymer Composites under Elevated and High Temperatures*", supported by the Swiss National Science Foundation, 10/2005-09/2007, CHF 90,160 ($72,000), Co-PI.
- "*Fatigue of Adhesively Bonded Joints from Pultruded GFRP Composites (Phases I and II)*", supported by the Swiss National Science Foundation, ", 05/2004-04/2008, CHF 234,881 ($188,000), Co-PI. [Additional equipment funding of €142, 600 ($240,000) was also awarded.]
- Lesko JJ, Peairs DM, Zhou A, Moffitt RD, Mutnuri B, Zhang W. (2008). Rapid prototyping and tooling techniques for pultrusion development. SAMPE Journal, 41(1): 65-68.
- Zhou A, Post N, Pingry R, Cain J, Lesko J, Case S. (2007). Durability of Composites under Fatigue Loads. Durability of Composites for Civil Structural Applications, Karbhari VM, editor, Woodhead Publishing: 126-149.
- Keller T, Riebel F, Zhou A. (2006). Multifunctional hybrid GFRP/steel joint for concrete slab structures. *ASCE Journal of Composites for Construction*, 2006; 10(6): 550-560.
- Keller T, Tracy C, Zhou A. (2006). Structural response of liquid-cooled GFRP slabs subjected to fire: Part II. Thermo-chemical and thermo-mechanical modeling. *Composites Part A: Applied Science and Manufacturing*, 37(9): 1296-1308.
- Keller T, Tracy C, Zhou A. (2006). Structural response of liquid-cooled GFRP slabs subjected to fire: Part I. Material and post-fire modeling. *Composites Part A: Applied Science and Manufacturing*, 37(9): 1286-1295.
- Keller T, Zhou A. (2006). Fatigue behavior of adhesively bonded joints composed of pultruded GFRP adherends for civil infrastructure applications. *Composites Part A: Applied Science and Manufacturing*, 37(8): 1119-1130.
- Keller T, Zhou A, Tracy C, Hugi E, Schnewlin P. (2005). Experimental study on the concept of liquid cooling for improving fire resistance of FRP structures for construction. *Composites Part A: Applied Science and Manufacturing*, 36(11):1569-1580.
- Zhou A, Colemen JT, Temeles AB, Lesko JJ, Cousins TE. (2005). Laboratory and field performance of cellular fiber reinforced polymer composite bridge deck systems. *ASCE Journal of Composites for Construction*, 9(5): 458-467.
- Zhou A, Keller T. (2005). Joining techniques for fiber reinforced polymer composite bridge deck systems. *Composite Structures*, 2005; 69(3): 336-345.
- Zhou A, Wei Y, Lang F. (2000). Theoretical investigation of controllable and regular fracture theory. *Key Engineering Materials*, 183 (1): 55-60.
- Yu Z, Zhou A, Bose, K. (2009). Modeling of composite panel under fire and compression. *COMPOSITES & POLYCON 2009*, Tampa, Florida, January 15-17, 2009.
- Peairs DM, Zhou A, Case SW, Lesko JJ, Post NL, Cain JJ. (2008). Monitoring of fatigue damage of marine composites using image analysis. *Society for Experimental Mechanics IMAC XXVI Conference Exposition*, Orlando, FL, February 4-7, 2008.
- Zhou A, Keller T. (2005). Structural responses of FRP elements under combined thermal and mechanical loadings: experiments and analyses. *4th Int. Conf. on the Response of Composite Materials to Fire*, Sep. 15-16, 2005, Newcastle, U.K.
- Zhou A, Bai Y, Keller T. (2005). Dynamic characteristics of bridge superstructures with FRP composite structural elements. *Composites in Construction*, July 11-13, 2005, Lyon, France.
- Keller T, Tracy C, Zhou A. (2005). Fire resistance of cellular GFRP slabs for building and bridge construction. *Composites in Construction*, July 11-13, 2005, Lyon, France.
- Keller T, Tracy C, Zhou A. (2004). A study on the fire behavior of multifunctional and fire resistant FRP building components. *Proceedings of the 2nd Int. Conf. on FRP Composites in Civil Engineering*, Adelaide, Australia, Dec. 8-10, 2004: 897-904.
- Zhou A, Keller T. Connections of fiber reinforced polymer bridge decks. *Proceedings of IABSE 2004 Symposium*, Sept. 22-24, 2004, Shanghai, China.
- Zhou A, Riebel F, Keller T. (2004).FRP element for thermal insulation and load transfer in concrete structures. *Proceedings of the 4th Int. Conf. on Advanced Composite Materials in Bridges and Structures*, July 20-23, 2004, Calgary, Canada.
- Zhou A, Vallée T, Keller T. (2004).Behavior of adhesively bonded joints from pultruded GFRP laminates under quasi-static loadings. *Proceedings of the 4th Int. Conf. on Advanced Composite Materials in Bridges and*

Structures, July 20-23, 2004, Calgary, Canada.

- Zhou A, Tirelli T, Keller T. (2004).Fatigue behavior of double-lap joints from pultruded GRFP laminates. *Advanced Polymer Composites for Structural Applications in Construction*, Woodhead Publishing Ltd., Cambridge, UK; 2004: 641-648.
- Zhou A, Brestel D, Karbhari VM. (2003). Effects of cutout on the performance of FRP cylindrical shells. *Proceedings of International SAMPE Symposium and Exhibition*, Long Beach, California, USA, 2003; 48(2): 2479-2492.
- Zhou A, Lesko JJ. (2003). Fiber-reinforced polymer decks for bridge systems: stiffness and strength. *Lightweight Bridge Decks, Proceedings of the European Bridge Engineering Conference*, March 27-28, 2003, Rotterdam, Netherlands, Paper 9.
- Zhou A, Lesko JJ, Coleman JT, Cousin TE. (2002). Failure modes and failure mechanisms of fiber reinforced polymer composite bridge decks. *Proceedings of the 3rd Int. Conf. on Composites in Infrastructure.* June 10-12, 2002, San Francisco, California, USA.
- Zhou A, Coleman JT, Lesko JJ, Cousins TE. (2001). Structural analysis of FRP bridge deck systems from adhesively bonded pultrusions. *Proceedings of the Int. Con. on FRP Composites in Civil Engineering*, Hong Kong, China, December 2001: 1413-1420.
- Zhou A, Lesko JJ, Davalos JF. (2001). Fiber reinforced polymer decks for bridge systems. *Proceedings of the Composites Fabricators Association COMPOSITES 2001 Convention*, October 3-6, 2001, Tampa, Florida, USA.
- Zhou A, Lesko JJ, Coleman JT, Cousins TE. (2001). Behavior of multi-cellular orthotropic FRP composite bridge deck under static loadings. *Proceedings of the American Society for Composites 16th Annual Conference.* September 10-12, 2001, Blacksburg, Virginia, USA

Institutional and Professional Service (last five years)

- Editorial Advisory Board Member, *Recent Patents on Materials Science*, Bentham Science Publishers.
- Associate Editor and Editorial Advisory Board Member, *International Handbook of FRP Composites in Civil Engineering*, CRC Press.
- Co-chairman, "Infrastructure" Session, SAMPE 2007 Conference and Exhibition, June 3-7, 2007, Baltimore, Maryland.
- Co-chairman, "Soft Composites" Session, 3rd International Conference on Composite in Construction (CCC 2005), Lyon, France, 11-13 July 2005.
- Reviewer for Journal of Composites for Construction
- Reviewer for Engineering Fracture Mechanics
- Reviewer for International Journal of Fatigue
- Reviewer for Composites Science and Technology

JOE URBAS

Degrees & Professional Registrations

- Ph.D. in Chemical Sciences, University of Ljubljana, Slovenia, 1992
- MS in Chemical Engineering, University of Zagreb, Croatia, 1983
- BS in Chemistry, University of Ljubljana, Slovenia, 1975

Number of years service on this faculty, including date of original appointment and dates of advancement in rank

Two years, Department of Engineering Technology, Fire Safety Engineering Technology
Original Appointment August 2007 at the rank of Associate Professor

Related Teaching and Other Work Experience

- Chilworth Pacific Fire Laboratories, Kelso, WA, Technical Director, Fire Sciences, 2006-2007
- Pacific Fire Laboratory, Inc., Kelso, WA, President / Fire Scientist, 1996-2006
- Western Fire Center, Inc., Kelso, WA, Fire Scientist / Laboratory Manager, 1994-1996
- Weyerhaeuser Fire Technology Laboratory, Longview, WA, Scientist / Engineer, 1992-1994
- University of Ljubljana, Faculty for Chemistry and Chemical Technology, Fire Scientist, 1987-1991
- Izolirka - Fire Engineering and Consulting Group, Head of Fire Protection Engineering Department, 1986-1987
- Institute for Testing and Research of Structures and Materials, Ljubljana, Head of Fire Technology Laboratory, 1981-1986

Active Membership in Professional and Scientific Societies

- American Society of Engineering Education (ASEE), Member
- Society of Fire Protection Engineers, Member
- International Association of Fire Safety Science, Member
- ASTM, E5 Committee, Member
- ISO, TC 92, SC1, U.S. Assigned Expert

Honors/Awards/Recognitions

Yugoslav Department of Commerce, Inventor of the Year Award
Academy of Sciences, Slovenia, Award for the Highest Achievement in the Field of Chemical Sciences (Boris Kidric Award)

Selected Recent Publications/Presentations/Grant Awards

- J. Urbas, William J. Parker, Impact of Air Velocity on Ignition in the Intermediate Scale Calorimeter (ICAL), Fire and Materials, an International Journal, 21, 143-151 (1997).
- V. Babrauskas, James A. White, Joe Urbas, Testing for Surface Spread of Flame: New Tests to Come into Use, Building Standards, March-April 1997.
- Use of Modern Test Methods in Fire Engineering and Litigation, Fire & Arson Investigator, Volume 48, Number 2, December 1997.
- J. Urbas, William J. Parker, Using the ICAL to Determine the Lateral Flame Spread Constants for a Wall Material, INTERFLAM'99, 8th International Fire Science & Engineering Conference, Proceedings, Edinburgh, Scotland, UK, June 1999.
- BDMC Interlaboratory Test Programme, Fire and Materials, an International Journal, 2002; 26: 29-35.
- J. Urbas, William J. Parker, Gerald E. Luebbers, Surface Temperature Measurements on Burning Materials Using an Infrared Pyrometer: Accounting for Emissivity and Reflection of External Radiation, Fire and Materials an International Journal, 2004; 28: 33-53.
- Effects of Retainer Frame, Irradiance Level, and Specimen Thickness on Cone Calorimeter Test Results, Fire and Materials, an International Journal, 2005; 29: 1-13.
- J. Urbas, William J. Parker, Surface Temperature Measurement in a Fire Environment Using an Infrared Pyrometer, Proceedings of the 8th IAFSS conference, Beijing, September 2005.
- W. J. Parker, J. Urbas, Heat of Gasification of Char Forming Materials, Proceedings of the 8th IAFSS conference, Beijing, September 2005.
- J. Urbas, W. Parker, Measuring the Effective Heat of Gasification, Proceedings of the 11th International Fire Science and Engineering Conference (Interflam 2007), Royal Holloway College, University of London, 3-5th September 2007.
- J. Urbas, Glowing Connection Experiments with Alternative Currents below 1 A, IEEE, Electrical Contacts – 2008, Proceedings of the Fourth IEEE Holm Conference on Electrical contacts, 27-29 October 2008.

- J. Urbas, W.J. Parker, Techniques for Obtaining and Using the Property Data Needed to Calculate the Boundary Conditions in the CFD Fire Models, U.S. Department of Commerce Award No.: 70NANB3H1113 (197,000).
- Effectiveness of Pre-Applied Wetting Agents in Prevention of UWI Fires, DHS/FEMA Award No.: EMW-2007-FP-02372 ($456,249).

Institutional and Professional Service (last five years)

- Reviewed several papers for major fire science journals
- Reviewed two papers for the IAFSS Conference in Karlsruhe in 2008
- Reviewed six grant proposals for DHS/FEMA grants in 2009
- ASTM E-5 Committee U.S. Tag assigned expert for "Reaction to Fire" in ISO TC 92, SC1

Professional Development Activities (last five years)

- Attended workshops on WebCT and web-based course delivery
- Attended professional conferences as referenced above
- Attended various on-campus faculty training workshops and seminars
- Attended and presented at various fire litigation related conferences and seminars

Curriculum Vitae for Jeff Kimble

Degrees & Professional Registrations/Certifications

- UNIVERSITY OF KENTUCKY — Ed.D Instructional Systems Design (Doctoral Candidate)
- Eastern Kentucky University — *M.S. Industrial Training, 1997*
- Eastern Kentucky University — *B.S. Fire Safety Engineering Technology, 1995*
- Wytheville Community College — *A.A.S. Police Science, 1988*
- Firefighter I, II, & III; Fire Instructor I, II, III; Adjunct Instructor - Virginia Department of Fire Programs; Rescue Specialist - Virginia Department of Fire Programs; Emergency Medical Technician; Cardiopulmonary Resuscitation Instructor – American Heart Association; Defensive Driving; Emergency Vehicle Operations; Radiological Monitoring; Fire Investigator

Teaching and Other Work Experience

- UNIVERSITY OF NORTH CAROLINA CHARLOTTE — *Associate Professor 1999-Present*
- EASTERN KENTUCKY UNIVERSITY — *Adjunct faculty, 1999*
- UNIVERSITY OF KENTUCKY, DEPARTMENT OF MECHANICAL ENGINEERING — *Research Assistant, 1997- 1999*
- VIRGINIA DEPARTMENT OF FIRE PROGRAMS — *Adjunct Instructor, (NFPA Instructor III) 1988- Present*
- LAUREL FORK VOLUNTEER FIRE DEPARTMENT — *Firefighter and officer, 1981- present*

Selected Recent Publications/Presentations/Grant Awards

- Co -Pi *Quantification of Effectiveness of Pre-Applied Wetting Agents in Prevention of UWI Fire Spread to Structures, Research Proposal to the Department of Homeland Security, Fiscal Year 2007 Assistance to Firefighters Grant Program, Fire Prevention and Safety Grants, submitted.* ($449,609 Funded 36 mos)
- *Proposal for the Design and Constructions of a Prototype Heat of Gasification Measurement Apparatus. The National Science Foundation ($580,124 not funded)*
- *A Proof-of-Concept Project for the Development of Laboratory Exercises and an Accompanying Electronic Laboratory Manual for a Course in Fire Behavior and Combustion*. National Science Foundation ($74,999.00) Funded FY 05 -06
- PI- *Investigation Development of Laboratory Experiments and an Electronic Lab Manual for a Course in Fire Behavior and Combustion*, National Science Foundation ($100,000.00) not funded
- PI – *Development of a Bi-Lingual Home Fire Safety Brochure*, Phillip Morris Employee Community Fund, ($22552.00) Pending
- *PI-* Spring 04 Flammability Testing for Wellman Inc. *($1,000.00 FY 2003-2004)*
- *Development of Fire Data Management Systems Tools to generate Data for Fire Safety Engineering and Modeling*. National Institute of Standards and Technology ($65,000.00 FY 2001 –2002)
- *Low Flammability of Non-Halogenated Vinyl Ester Resin Containing Nanofillers for Production of RTM Composite Structures* Office of Naval research ($31,000.00 FY 2001-2002)
- *Fire test system for measuring heat release, smoke production, and flame Spread characteristics of materials and assemblies* – Office of Naval Research ($222,000.00 FY 2001-2002)
- *Is There a Need For Web Based Education Program in the Fire Service?*, The Fire Department Instructors Conference, Indianapolis, April 2003
- *The Development of the Web Based Fire Safety Engineering Technology Program at the University of North Carolina at Charlotte.* Association for Educational Communications and Technology Conference, Dallas, TX, Nov. 2002
- Investigation on Flashover Conditions in Compartment Fires Using Scale Models, 2nd International Symposium on Scale Modeling, May 1997, Lexington, KY
- Janssens, M., Kimble, J., Murphy, D., (2003) *Computer Tools to Determine Material Properties for Fire Growth Modeling from Cone Calorimeter Data,* Proceedings from the Materials and Flammability Conference, San Francisco, CA., Jan., 2003

David L. Murphy, Associate Professor, UNC Charlotte FSET, Smith 310.

Degrees & Professional Registrations

May 2000 **Eastern Kentucky University** **Richmond, Kentucky**
Master of Science/Loss Prevention and Safety

May 1996 **Eastern Kentucky University** **Richmond, Kentucky**
Bachelor of Science/Fire and Safety Engineering Technology, Industrial Risk Option

Number of years service on this faculty, including date of original appointment and dates of advancement in rank:

2001 – Present **University of North Carolina** **Charlotte, North Carolina**
Graduate Faculty (Regular member) – The University of North Carolina at Charlotte (2009 to present)
Associate Professor (tenured) – Department of Engineering Technology – Fire Safety (2007 to present)
Assistant Professor – Department of Engineering Technology – Fire Safety (2001-2007)

Related Teaching and Other Work Experience

2001 **Eastern Kentucky University** **Richmond, Kentucky**
Adjunct Faculty – Department of Loss Prevention and Safety

1993 – 1998 **Central Kentucky Technical College** **Lexington, Kentucky**
Vocational Instructor – Division of Fire and Rescue Training

Active Membership in Professional and Scientific Societies

Fire Department Safety Officers Association. Ashland, MA
National Fire Protection Association. Quincy, MA
American Society of Engineering Educators. Washington, DC
Society of Fire Protection Engineers. Charlotte, NC
American Society of Safety Engineers. Des Plaines, IL

Honors/Awards/Recognitions - N/A

Selected Recent Publications/Presentations/Grant Awards/Patents, etc.

Peer Reviewed Publications

a. Murphy, David L. **"Incident Safety Officer Certification Academy Student Booklet, Vol. I."** . Fire Department Safety Officers Association. October 2006.
b. Murphy, David L. and Larry R. Collins. **"The History and Organization of the Incident Command/Management in the United States"**. Proceedings of the CTIF (EMERCON) International Conference. St. Petersburg, Russia. October 2005.

PRESENTATIONS

International

a. Murphy, David L. **"Safety Gumbo – Making Changes Back Home"**. Fire Department Safety Officers Association Annual Safety Conference. Orlando, FL. October 30, 2008.
b. Kimble, Jeff and David L. Murphy. **"So … What's the Problem?"** International Association of Fire Chiefs. Atlanta, GA. August 2007.

c. Murphy, David L**.** and Larry R. Collins. **"The History and Organization of the Incident Command / Management in the United States"**. CTIF (EMERCON) Conference. St. Petersburg, Russia. October 14, 2005.

RESEARCH and PATENTS

Patent Information

a. Murphy, David L. (inventor). Provisional patent granted for **"Ladder Safe Angle Indicator"**. June 2003.
b. Murphy, David L. (inventor). Provisional patent granted for **"Friendly Seatbelt Grips"**. March 2003.

Funded Research

a. Urbas, Josef, Zhou, Aixi, Kimble, Jeff and David L. Murphy. **"Quantification of Effectiveness of Pre-Applied Water Spray, Foam and Gel in Prevention of UWI"**. Fire Prevention & Safety Grant. United States Department of Homeland Security. ($496,000.00). FY 2008-2011.
b. Kimble, Jeff, David L. Murphy and Joseph Woodall. **"A Proof-of-Concept Project for the Development of Laboratory Exercises and an Accompanying Electronic Laboratory Manual for a Course in Fire Behavior and Combustion."** National Science Foundation. ($74,999.00) FY 2005-2007.

Institutional and Professional Service (last five years)

a. International - Director (Eastern United States) – Fire Department Safety Officers Association (2005-2008)
b. National - Principal Member – National Fire Protection Association Technical Committee 610 – Safety at Motorsports Venues. (2004-present)
c. University -
Member – UNC Charlotte University Faculty Council , Engineering Technology Rep. (2007)
Member - UNC Charlotte Fire and Rescue Management Institute Advisory Board (2005-present)
Member – UNC Charlotte University Safety and Health Committee (2004 - present)
Fire Department Safety Officers Association. Ashland, MA
National Fire Protection Association. Quincy, MA
American Society of Engineering Educators. Washington, DC
Society of Fire Protection Engineers. Charlotte, NC
American Society of Safety Engineers. Des Plaines, IL

Other Related Service

a. Assisted in the establishment of the FSET fire safety lab located at the Charlotte Fire Department Training Academy in South Charlotte. Several weeks have been realized in the design, procurement, transportation and setup of lab equipment (ongoing).
b. Assisted fellow colleagues in the development of another fire protection undergraduate tract and a graduate program (both pending legislativeapproval).

Professional Development Activities (last five years)

I have attended thirty-five teaching improvement/delivery related sessions while employed at UNC Charlotte (examples listed below):

a. "Teaching the Large Lecture". FACTEL sponsored weeklong seminar at UNCC, May 2008.
b. Attended 40 hour advanced seminar entitled "Teaching Freshman Students in Large Classrooms". UNC Charlotte.

PETER L. SCHMIDT

Degrees & Professional Registrations

- Ph.D. in Mechanical Engineering, Vanderbilt University, 2006
- M.S. in Mechanical Engineering, Rose Hulman Institute of Technology, 1991
- B. S. in Mechanical Engineering, University of Louisville, August 1986
- Mechanical Engineer, State of Tennessee, License Number 102087
- Mechanical Engineer, State of Georgia, License Number 24125

Numbers of years service on this faculty, including date of original appointment and dates of advancement in rank:

1 year, Department of Engineering Technology, Mechanical Engineering Technology
Original appointment August 2007 at the rank of Assistant Professor

Related Teaching and Other Work Experience

- Lecturer / Research Associate, Department of Mechanical Engineering, Vanderbilt University, August 2006 – July 2007
- Graduate Research Assistant, Department of Mechanical Engineering, Vanderbilt University, January 2003 – August 2006
- Sr. Mechanical Engineer, United Technologies/Carrier, June 2001 – December 2002
- Sr. Consultant, Cape-Dixson Associates, December 1996 – May 2001
- Sr. Applications Engineer, Wynn's International/Parker Hannifin, May 1992 – October 1995
- Mechanical Engineer, Dept. of Defense, Naval Surface Warfare Center, October 1986 – April 1992

Active Membership in Professional and Scientific Societies

- Institute of Noise Control Engineers
- American Society of Mechanical Engineers
- American Society of Heating, Refrigeration and Air Conditioning Engineers
- Acoustical Society of America
- American Society for Engineering Education

Selected Recent Publications/Presentations/Grant Awards

- S.M. Williams, P.L. Schmidt, I.E. Amundson and K.D Frampton, "Source localization using regularized inversion", *Applied Acoustics*, Volume 67, pp 996-1008, 2006.
- P.L. Schmidt and K.D. Frampton, "Effects of in-plane forces on convected, fluid loaded plates", *Journal of Vibration and Acoustics*, Accepted for publication / In press.
- P.L. Schmidt, D.G. Walker, D. Yuhas and M. Mutton, "Thermal measurements of harsh environments using indirect acoustical pyrometry", accepted for 2007 Fall ASME IMECE conference.
- I.E. Amundson, P.L. Schmidt and K.D. Frampton, "Acoustic source localization with a distributed sensor network", 2004 ASME IMECE conference.
- James Conrad, William Heybruck, Daniel Hoch, Martin Kane, Peter Schmidt, Frank Skinner, and Linda Thurman, "Working with Industry Sponsors in a Multidisciplinary Senior Design Program," *Proceedings of the 2008 ASEE Conference*, Pittsburgh, PA, June 2008.
- P.L. Schmidt, K.D. Frampton, "The effect of in-plane loading on sound radiation from convected fluid loaded plates", submitted to the 151st Meeting of the Acoustical Society of America, Providence, Rhode Island. June 2006.
- P.L. Schmidt, S.M. Williams, I.E. Amundson and K.D. Frampton, "Self Localization of a distributed sensor network using Tihkinov Regularization", presented at the 149th Meeting of the Acoustical Society of America, Vancouver, British Columbia, May 2005.

- P.L. Schmidt, I.E. Amundson and K.D. Frampton, "Localization of acoustic sources with a distributed sensor network", presented at the 147th Meeting of the Acoustical Society of America, New York, New York. May 2004.

Institutional and Professional Service (last five years)

- Reviewer for American Society of Mechanical Engineers, IMECE Conference, Fall 2006
- Reviewer for American Society of Mechanical Engineers, Journal of Vibration and Acoustics
- Reviewer for Journal of the Acoustical Society of America
- Reviewer for American Society of Engineering Education
- NCJets Trebuchet Competition Judge and Referee, October 2007
- Mechanical Engineering Tutor, Vanderbilt Athletic Department, 2006/2007
- Vanderbilt Student Volunteers for Science, Team Leader 2005/2006

Professional Development Activities (last five years)

- Attended 2004 Acoustical Society of America, New York NY, USA
- Attended 2005 Acoustical Society of America, Vancouver BC, Canada
- Attended 2006 Acoustical Society of America, Providence, RI, USA

AHMAD K. SLEITI

Degrees & Professional Registration

- Ph.D. in Mechanical Engineering, University of Central Florida (UCF), Orlando, FL, 2004
- M.S., Mechanical Engineering, University of Jordan (UJ), Amman, Jordan , 2001
- B.S. and M.S. in Mechanical Engineering, Rostov State Building University (RISI), Rostov on Don, Russia, 1991
- Certified Energy Manager (CEM), http://www.aeecenter.org/certification/CEMpage.htm
- Certified Energy Auditor, (CEA), USA

Number of years service on this faculty, including date of original appointment and dates of advancement in rank

- University of North Carolina at Charlotte, Assistant Professor, Department of Engineering Technology, and Member, Energy Production and Infrastructure Center (EPIC), May 2009 to Present

Related Teaching and Other Work Experience

- University of Central Florida (UCF), Assistant Professor – Director of Hydrogen and Fuel Cell/Energy Systems Technology Program, Mechanical, Materials and Aerospace Engineering & Engineering Technology Departments, 2007-2009
- University of Central Florida (UCF), Research Associate, Project Manager and Adjunct Professor, Mechanical, Materials and Aerospace Engineering Department (MMAE), 2004-2007
- Electrodynamics Associates, Inc., Oviedo Florida, USA, Senior Mechanical Engineer, Thermal and mechanical design and testing of high-speed rotating electric machines, 2003-2004
- University of Central Florida (UCF), Research and Teaching Assistant and Instructor, Department of Mechanical, Materials and Aerospace Engineering (MMAE), 2001-2004
- Penta Group Engineering Co, Jordan, Project Engineer & Project Manager, Thermal Management, Heat Transfer, Energy Systems, HVAC, 1995-2001
- SIGMA Consulting Engineers, Jordan, Design and Consulting Engineer, Energy Systems, Thermal Management, Heat Transfer, HVAC, 1993-1995
- BETA Engineering Industries Co, Jordan, Research and Development Engineer, Design, Manufacturing and Development of Boilers, Compressors and Burners, 1991-1993

Active Membership in Professional and Scientific Societies

- Member of American Society of Mechanical Engineers (ASME), Since 2001
- Member of American Institute of Aeronautics and Astronautics (AIAA), Since 2003
- Member of American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE)
- Member of The American Society of Engineering Education (ASEE), since 2008
- Florida Renewable Energy Producers Association (FREPA), since 2008

Selected Recent Publications/Presentations/Grant Awards

- A.K. Sleiti, “Multiscale Thermal Transport Phenomena in Dielectric Composites” in preparation.
- E.J. Naimaster and A.K. Sleiti, “Effects of Electrode Microstructure on Intermediate Temperature Solid Oxide Fuel Cell Performance” Accepted by ASME Journal of Fuel Cell Science Technology, 2009.
- A.K. Sleiti, “"Transient Flow of Air through Rectangular Vents in Horizontal Partition", Accepted by HVAC&R Research, American Society of Heating, Refrigerating and Air-Conditioning Engineers, 2009.
- A.K. Sleiti and A. Mehrabian, "Case Study of Cost Effective Small Wind Turbine", Accepted by Energy Sources, Part B Economics, Planning, and Policy, 2009.
- A.K. Sleiti, “Advancement of Renewable Energy Engineering Technologies”, Submitted to International Journal of Engineering Education, 2009.
- A.K. Sleiti, “Computational Tool for Optimizing Turbine Cooling Design-1” Submitted to the Technology Interface Journal,2009.
- A.K. Sleiti, “Engineering Technology Hydrogen and Fuel Cell Education Program Concentration – I”, Submitted to International Journal of Engineering Education, 2009.
- A.K. Sleiti, “Design and Pressure Loss Reduction in the Hydrogen Flow Heat Exchanger with Tube Bundles”, *the Technology Interface Journal*, Volume 9 No. 2, Spring 2009, ISSN# 1523-9926, http://technologyinterface.nmsu.edu/Spring09/
- K. Sleiti “ Effect of Vent Aspect Ratio on Unsteady Laminar Buoyant Flow Through Rectangular Vents in Large Enclosures”, International Journal of Heat and Mass Transfer 51 (2008) 4850–4861.
- Quan Liu, A. K. Sleiti, and J. S. Kapat, “Application of Pressure and Temperature Sensitive Paints for Study of Local Heat Transfer to a Circular Impingement Air Jet” International Journal of Thermal Sciences 47 (2008) 749–757.
- K. Sleiti and J. S. Kapat, 2008, “ Effect of Coriolis and Centrifugal Forces on Turbulence and Transport at High Rotation and Density Ratios in Rib-Roughened Channel”, International Journal of Thermal Sciences 47 (2008) 609–619. http://authors.elsevier.com/offprints/THESCI2673/995f6101c4f59e8f69bf70701d7bb440

- K. Sleiti and J. S. Kapat, 2006, "Effect *of Coriolis and Centrifugal Forces at High Rotation and Density Ratios*", AIAA Journal of Thermophysics and Heat Transfer), Volume 20, No. 1, pp. 67-79.
- K. Sleiti , 2007, "Advanced cooling technology for rotors of high-power low-duty cycle generators using polyalphaolefins" Journal of Synthetic Lubrication, Vol. 24, No.2, pp. 77-90, March 2007.
- R. Kumar, A. K. Sleiti and J. S. Kapat, 2006" *Unsteady Laminar Buoyant Flow Through Rectangular Vents in Large Enclosures*", AIAA Journal of Thermophysics and Heat Transfer, Vol. 20, No.2, pp. 276-284, April-June 2006.
- K. Sleiti and J. S. Kapat, 2006 "*An Experimental Investigation of Liquid Jet Array and Single Phase Spray Impingement Cooling Using Polyalphaolefin*", Experimental Heat Transfer Journal, Volume 19, No. 2, pp. 149-163 April 2006.
- K. Sleiti and J. S. Kapat, 2006" Comparison Between EVM and RSM Turbulence Models in Predicting Flow and Heat Transfer in Rotating Rib-Roughened Channels". Journal of Turbulence, Volume 7. No.29, pp. 1-21, 2006.
- K. Sleiti and J. S. Kapat, 2006 " *Heat Transfer in Channels in Parallel-Mode Rotating at High Rotation Numbers* ", AIAA Journal of Thermophysics and Heat Transfer, Vol. 20, No.4, pp. 748-753, October-December 2006.
- N R Nagaiah, A. K. Sleiti, S Rodriguez, J S Kapat, L. An and L. Chow, 2006 "A Novel Design and Analysis of a MEMS Ceramic Hot-Wire Anemometer for High temperature Applications". J. Phys.: Conf. Ser. 34, pp. 277-282.
- K. Sleiti and J. S. Kapat, 2005, " Fluid Flow and Heat Transfer in Rotating Curved Duct at High Rotation and Density Ratios ", ASME Journal of Turbomachinery, Volume 127, Issue 4, pp. 659-667.
- Orlovskaya, N., Sleiti, A., Naimaster, E., Bonadies, M., Kapat, J., and Johnson, C., "Impact of Temperature and Porosity on Sc2O3-CeO2-ZrO2 Intermediate Temperature Solid Oxide Fuel Cell Performance," 47th AIAA Aerospace Sciences Meeting, AIAA-2009-1207, Orlando, FL, 2009.
- A.K. Sleiti, "Bachelor of Science - Engineering Technology Hydrogen and Fuel Cell Education Program Concentration – I", ASME 2008 International Mechanical Congress and Exposition (IMECE) IMECE2008-69090, October 31 2008 - November 06 2008, Boston Massachusetts , USA
- K. Sleiti, "Effect Effect of reduced Temperature and Cathode Porosity on the performance of Tubular Solid Oxide Fuel Cell". Proceedings of ASME 2008 Summer Heat Transfer Conference, HT2008-56447, August 10-14, 2008 Jacksonville, Florida, USA.
- "Computational Fluid Dynamics Study of High Performance Low Temperature Planar Solid Oxide Fuel Cell (SOFC) using Sc_2O_3-CeO2-ZrO_2 Electrolyte". Fuel Cell Science, Engineering and Technology Conference, June 18 – 20, 2007, New York, USA.
- Hydrogen and fuel cell/Energy Systems technologies Program Development, PI, 09/08-09/10, US Department of Energy FSEC, $499K
- Instrumentation for Multiscale Thermal Transport of Dielectric Composites, PI, 05/09-06/10, AFSOR, $94K
- Thermal/fluids transport processes in High Power-Low Density El. Machines, PI, 12/07-12/09, DOD, through Electrodynamics, $89K
- Advancement of Renewable Energy Engineering Technologies, PI, 11/09-10/11, NSF, $250K
- Intermediate Temperature SOFCs: A comprehensive approach to designing materials for superior functionality, Co-PI, 03/07-06/08, NASA, $130K
- Optimization of ThermoElectric/Control Design for Advanced Motor/Generator, Co-PI, 12/05–01/08, DOD SBIR II, Electrodynamics, $176K
- Computational Fluid Dynamics Study for Design and Pressure Loss Reduction in the Omega Cooler - Phase I, 07/05–11/05, Senior Investigator, Siemens Power Generation (SPG)/ Generator, $60K
- Integration of High Speed Compact Efficient Generator for DEW Applications, 01/05–08/05, Senior Investigator, DOD (Air Force) – Electrodynamics, $70k
- Impingement Film Coupling Project – Phase I AND II , 02/04–05/06, Senior Invest. & Project manager, Siemens Power Generation (SPG / Gas Turbine, $185K
- Development of Physics Based Cooling Feasibility Tool, 04/04–02/05, Senior Invest. & Project manager, Siemens Power Generation (SPG), $65K
- Advanced cooling technology: Basic Film Cooling- Phase II, 03/05–03/06, Senior Invest. & Project manager, Siemens Power Generation (SPG / Gas Turbine, $89K
- Shroud Film Cooling, Shroud Cooling Test (SCT), 03/04–02/06, Senior Invest. & Project manager, Siemens Power Generation (SPG / Gas Turbine, $277K

Professional Development Activities (last five years)

- (ABET a-k criteria): develop assessment tools to evaluate student learning outcomes in the classroom.
- Information Fluency Initiative Grants Conference, UCF 2008
- Workshops in Technology Entrepreneurship (2006, 2007)
- SBIR/STTR Grant preparation workshop (2006, 2007)
- Fuel Cell Workshop (2006); Leadership Excellence Certificate, (2006); Supervisory Skills Series Certificate, (2006); Teamwork Series Certificate, (2005)
- Computational Fluid Dynamics (CFD) Training series (2002, 2003)

CHUNG-SUK CHO

Degrees & Professional Registrations

- Ph.D. in Civil Engineering, University of Texas at Austin, May 2000
- M.S. in Civil Engineering, University of Hawaii at Manoa, July 1997
- B.S. in Civil Engineering, Sung Kyun Kwan University, February 1995

Numbers of years service on this faculty, including date of original appointment and dates of advancement in rank:

Original appointment August 2008 at the rank of Assistant Professor
Department of Engineering Technology, Civil Engineering Technology

Related Teaching and Other Work Experience

- Assistant Professor, North Carolina A&T State University, Department of Construction Management and Occupational Safety & Health, 2004 – 2008
- Research Assistant, University of Texas at Austin, 1998 –2000
- Research Assistant, University of Hawaii at Manoa , 1996 –1997
- Project Manager/Associate Project Control Specialist, Fluor Corporation, 2000 –2004

Active Membership in Professional and Scientific Societies

- Member, American Society of Civil Engineers
- Member, National Association of Industrial Technology
- Member, Academic Committee, Construction Industry Institute (CII)
- Member, Risk Committee, Construction Institute (CI)

Honors/Awards/Recognition

- Certificate of Appreciation – "OSHA 10-Hour Construction Safety & Health Course", 39th
- NAIT Convention
- Certificate of Appreciation – NAIT Presenter, Panama City Beach, FL. 2007
- Certificate of Appreciation – NAIT Presenter, Cleveland, OH. 2006
- Chair for NAIT Construction Focus Group

Selected Recent Publications/Presentations/Grant Awards

- Chung-Suk Cho (2007). "Comparative Evaluation of Bead-to-Bead and Top-Cap Retread Tires by way of Analysis of Data Available with North Carolina Department of Transportation." TA2007-02, North Carolina Department of Transportation Equipment & Inventory Control, Raleigh, North Carolina.
- Chung-Suk Cho (2007). "Comparative Evaluation of Bead-to-Bead and Top-Cap Retread Tires by way of Survey of Literature and State of Practice in North America, Europe and Elsewhere." TA-2007-03, North Carolina Department of Transportation Equipment & Inventory Control, Raleigh, North Carolina.
- G. Edward Gibson, Yu-Ren Wang, and Chung-Suk Cho, (2006). "What is Preproject Planning Anyway?" *J. of Management in Engineering*, ASCE, 22(1), January, pp 35-42.
- Cho, C. S., and Gibson, G. E., Jr., (2001). "Scope Management Using Project Definition Rating Index for Building Projects." *J. Architectural Engrg*., ASCE, 7 (4), 115-125.
- Cho, C. S., and Gibson, G. E., Jr. (2000). "Development of a Project Definition Rating Index (PDRI) for General Building Projects." Refereed Proceedings, ASCE, *Constr. Congress VI*, 343-352.
- Cho, C. S., Furman, J. C., and Gibson, G. E., Jr., (2000). "Development of the Project Definition Rating Index (PDRI) for Building Projects." Research Report *155-11*. Construction Industry Inst., Austin, Texas. 296 pages.
- Cho, C. S., and Gibson, G. E., Jr., (1999). "Project Definition Rating Index for Buildings." Proceedings, 1999, *CPI Conf*., 77-97, Austin, Texas.

- Cho, C. S., and Gibson, G. E., Jr., (1999). "Project Definition Rating Index for Buildings." Proceedings, 1999, *Construction Industry Institute Annual Conf*., 133-155, San Antonio, Texas.
- Cho, C. S. (1997). "Falling Rock Hazard Analysis and Mitigation for Temporary Construction Excavation Rock.", MSc. Thesis. Department of Civil Engineering, University of Hawaii at Manoa, Honolulu, Hawaii.
- Cho, C. S., and Singh, A. (1997). "Rockfall Hazard Index Evaluation and Mitigation for Temporary Excavations in Volcanic Rock at Construction Sites.", Research Report UHM/CE/97-04, University of Hawaii at Manoa, Honolulu, Hawaii.
- Cho, C. S. and Lee, S. H. "Impact of Project Environments on Project Change Management Best Practice" National Association of Industrial Technology, Panama City Beach, Florida, October 25, 2007.
- Cho, C. S. and Foust, D. "Advancement of Global Positioning System (GPS) Application in Construction Industry" National Association of Industrial Technology, Panama City Beach, Florida, October 25, 2007.
- Cho, C. S. and Shofoluwe, M. "Integration of "LEED" concepts into a CM Program" National Association of Industrial Technology Convention, Cleveland, Ohio, November 23, 2006.
- Cho, C. S. "OSHA 10-Hour Construction Safety & Health Course" NAIT Conference, Cleveland, Ohio, November 24, 2006.
- Cho, C. S. "PDRI for Building Projects – Development Process Using Metrics." Guest lecturer in CE 395 R.4, Metrics, a graduate course at the University of Texas at Austin, February 28, 2000.
- Cho, C. S. "Development of the Project Definition Rating Index (PDRI) for Building Projects" Dissertation Defense at the University of Texas at Austin, February 28, 2000.
- Cho, C. S. "Development of a PDRI for General Buildings." ASCE, Construction Congress VI, Orlando, Florida, February 22, 2000.

Industrial and Professional Service (last five years)

- Faculty Council, School of Technology, 2006 – 2008
- Distance Learning Committee, School of Technology, 2007 – 2008
- Admission, Suspension, & Probation Policy Review Committee, 2006 – 2007
- University Senates, 2005 – 2007
- Graduation and Retention, School of Technology, 2004 – 2007
- Curriculum Committee, School of Technology, 2005 – 2006
- Grades Appeal Board, School of Technology, 2004 – 2005

ROSIDA COOWAR

Degrees & Professional Registrations

- Ph.D. in Industrial Engineering, University of Central Florida, 2001
- M.S. in Electrical Engineering, University of Massachusetts, 1992
- Diploma in Telecommunications and Electronics, South London College,UK, 1972
- Six Sigma Black Belt Certification, 2005

Numbers of years service on this faculty, including date of original appointment and dates of advancement in rank:

1 year, Department of Engineering Technology, Electrical Engineering Technology
Original appointment August 2007 at the rank of Associate Professor and Assistant Chair

Related Teaching and Other Work Experience

- Associate Professor/Assistant Chair/Program Coordinator, Engineering Technology Department, University of Central Florida, 1992 – 2007
- Visiting Professor, Department of Electrical Engineering Technology, University of Massachusetts, 1982 – 1992
- Professor, Institut National de Petrole, 1981 – 1982
- Professor, Institut National D'Electricite et D'Electronique, 1979 – 1981
- Lecturer, School of Industrial Technology, University of Mauritius, 1972 – 1973
- Production Control Manager, Integrated Technology Applications and Components, 1976 – 1978
- Process Engineer, Litronix, 1973 - 1976

Active Membership in Professional and Scientific Societies

- American Society of Engineering Education, Member
- Institute of Electrical and Electronics Engineers, Senior Member
- Tau Alpha Pi Honor Society for Engineering Technology, Member
- American Society for Quality, Senior Member

Honors/Awards/Recognitions

- Senior Faculty Fellowship (2004-2005) from UCF
- Recipient of the Teaching Incentive Program (TIP) Award from the State of Florida (2002)
- Certificate of Recognition from IEEE Education Activities Board (1997-2000)
- Advisor of the Year, Department of Engineering Technology (1997)
- Teacher of the Year, Department of Engineering Technology (1996)
- Advisor of the Year, Department of Engineering Technology (1995, 1996)
- Recipient of the Teaching Incentive Program (TIP) Award from the State of Florida (1995)
- Member of Tau Alpha Pi, the National Engineering Technology Honor Society
- Pride in Performance Certificate of Recognition from the State of Massachusetts (1990)

Selected Recent Publications/Presentations/Grant Awards

- "The Development of a Network Analysis Course for a High-Tech classroom", R. Coowar, *ASEE Annual Conference Proceedings* June 2000
- "The Impact of Industrial Digital Design on Courses, Labs and Project Development", R. Coowar and H. Biggelaar, *ASEE Annual Conference Proceedings* June 2000
- "Accreditation of two-year institutions", R. Coowar and W. Buchanan, *ASEE SE Conference Proceedings* ASEE SE April 2002

- "Screening Designs for Large Numbers of Variables" R. Coowar – Dissertation Bell & Howell 2002
- "ASM Charts in VHDL", R. Coowar and H. Biggelaar, *Computers in Education*, October 2004
- "Framework Development Using Six Sigma and Quality Tools to Achieve Operational Excellence in Higher Education", S. Furterer and R. Coowar, *ASEM Annual Conference Proceedings*, October 2005
- "Design of On-Line Self-Regulated Controller Using PC Matlab", A. Rahrooh and R. Coowar, *Computers In Education* 2006
- "Lean Six Sigma as an Improvement Tool in Academia", R. Coowar and S. Furterer, ASEE 2006
- "Comprehensive Engineering Tech education Using Interactive Compressed Video" $20,000, Co-Pi, SPIA, funded, 1994-1995
- "Grant-Aid Scholarship", $10,000, Funded, UCF, Fall 1997
- "Grant-Aid Scholarship", $10,000, Funded, UCF, Fall 1998
- "PLC_Robotics Undergraduate Teaching Laboratory Equipment" Provost's Office, $19,931, Pi, funded, 2003-2004
- "CNC-CIM Undergraduate Teaching Laboratory Equipment" Provost's Office, $19,977, Co-Pi, funded, 2004-2005

Institutional and Professional Service (last five years)

- IEEE Representative on TAC of ABET Commission
- Reviewer for the IEEE Transactions on Education
- Reviewer for Brooks/Cole publishing company
- Reviewer for the NSF ILI proposals FY 1996
- Reviewer for ITP and Prentice Hall

ANTHONY L. BRIZENDINE

Degrees & Professional Registrations

- Ph.D. in Civil Engineering, West Virginia University (GPA 4.0/4.0)
- M.S. in Civil Engineering, Virginia Polytechnic Institute and State University
- B.S. in Civil Engineering Technology, Summa Cum Laude, Bluefield State College
- REGISTERED PROFESSIONAL ENGINEER, Virginia & West Virginia
- PROFESSIONAL SURVEYOR, West Virginia

Teaching and Other Work Experience

- University of North Carolina at Charlotte, Professor & Department Chair, July 2002 to present
- Fairmont State University, School of Technology, Chair, 2000 – 2002
- West Virginia Transportation Technician Certification & Training Program, Director, 1999-2002
- Fairmont State University, Director of Engineering Technology, 1999 - 2000
- Fairmont State University Honors Program, Director, 1994 – 1999
- Fairmont State University, Department of Civil Engineering Technology: Professor w/ tenure, 1991-2002; Dept Coordinator, 1995-99
- Valley Falls Public Service District: Elected Chairman in 1997, 1998, 1999, 2000, 2001, 2002; Board of Directors, 1996-2002
- West Virginia University, Dept of Civil & Environmental Engineering: Adjunct Prof, 1998-2000; Guest Lecturer, 1995-1997
- West Virginia University Institute of Technology, Department of Civil Engineering, Visiting Professor, 1998
- U.S. Army Corps of Engineers, Waterways Experiment Station (WES), Vicksburg, Mississippi, Research Faculty/Civil Engineer on IPA Contract, 5/94 - 8/94, 5/93 - 8/93, 5/92 - 8/92, followed by contracts through December 1997

Active Membership in Professional and Scientific Societies

- Accreditation Board for Engineering & Technology - TAC Commissioner since 1998
  - TAC Executive Committee since 2002; Seats held: Vice-Chair for Policy; Criteria Committee Chair; Vice-Chair for Training; Operations Executive 2004-05; Chair-Elect 2005-06; TAC Chair, 2006-07.
- American Society of Engineering Education (ASEE)
  - Elected to serve two-year term on ETD Executive Committee as Treasurer, 2003-2005; Annual Conference Session Moderator, 1998, 1999, 2000, 2001, 2002; CIEC Conference Session Moderator, 1998, 1999, 2000, 2001
- Technological Education Initiative (TEI); NSF/ABET/Industry-sponsored program
  - *Facilitator,* Technological Education Initiative, NSF, 2001-2004
- American Society of Civil Engineers (ASCE)
  - ASCE National Committee on Technology Curricula and Accreditation (1996-2001), Chair (1998-99, 1999-2000), Secretary (1997-98)
  - Excellence in Civil Engineering Education (EXCEEd) Program Design Team/Consultant (1999) & Senior Mentor (2001)
  - Appointed ASCE TAC/ABET Liaison for 1998, re-appointed 1999, 2000, 2001, 2002; ASCE Technology Accreditation Commission Convenor, 1999, 2000, 2001.
  - 2000 Engineering Technology Program Chair for Second National Civil Engineering Education Congress, Seattle, WA; 1999 Engineering Technology Program Chair for First National Civil Engineering Education Congress, Charlotte, NC; 1998 Engineering Technology Program Chair for Civil Engineering Conference, Boston, MA

- West Virginia Section ASCE President, 1996-97; Section Treasurer, 1997-1999; Section Continuing Education Committee Chair, 1995-96; Section Board of Directors, 1995-2000; National Management Conference Delegate '99
- Northern West Virginia Branch President, 1996; Branch President-Elect, 1995; Branch Vice President, 1994, 1998; Branch Secretary, 1992, 1993; National Management Conference Delegate, 1995; Branch Activities & Planning Committee Chair, 1993- 1996.; Fairmont State ASCE Student Advisor, 1991– 2002; principal advisor 1991 – 1998

- International Society of Soil Mechanics & Foundation Engineers (ISSMFE) Member

Honors / Awards / Recognitions

- Senior Mentor, ASCE Excellence in Civil Engineering Education (ExCEED) Program, 2001
- Bluefield State College 1999 Commencement Speaker; "Bearer of the Mace" - Distinguished Faculty, 1997-2000.
- 1998-99 William A. Boram Award for Teaching Excellence
- Excellence in Civil Engineering Teaching Award; Department of Civil and Environmental Engineering at West Virginia University, 1999
- 1997 Fairmont State University Excellence in Academic Advising Award (one award for university)
- 1997 Fairmont State University Outstanding Faculty Achievement Award (one of 3 university-wide)
- West Virginia Young Engineer of the Year, 1994, American Society of Civil Engineers
- FSU "Breaking Down Barriers for Students with Disabilities" Award, 1994; West Virginia Great Teachers Award, 1993

Selected Publications / Presentations / Grant Awards

- Co-PI, Diversity in Engineering Technology, NSF ($898,000), 2003-2006; Enhancing Diversity, NSF ($810,000), 2006-2009.
- PI, Transportation Certification & Training Programs, WV Dept. of Transportation ($456,000), 2002; ($397,000), 2001; 2000; ($76,000), 1999; Ruskin Manufacturing Grant, 2001; NSF/WV EPSCOR Grants; Global Positioning, 2000; Penetration Resistance & Kinematic Viscosity, 1994; Direct Shear & Data Acquisition, 1993; Permeability & Consolidation, 1992
- ASCE Public Relations Merit Grant, 1999; Government Relations Grants, 1997, 1998, 1999; NASA Software Assurance Grant, Project Co-Director, 1996 – 1997; US Army Corps of Engineers, Waterways Experiment Station, Hydraulic Conductivity, 1994-1997; Fairmont State Foundation, Geoenvironmental Studies, 1993
- Invited Plenary Speaker, "What Have We Learned from Recent Experiences with the Accreditation of Engineering Technology Programs Under the New Outcomes Assessment Criteria?," The 2004 Assessment Institute, Indianapolis, IN.
- Nicholas, Brizendine & Stilgenbauer, "MicroStation Applications for Highway and Transportation Structures Design," *Proceedings of the 2003 American Society for Engineering Education Annual Conference & Exposition*, Nashville, TN.
- Engineering Technology Council Task Force on ET Scholarship, "The Scholarship Horizons in Engineering Technology: Choosing the Best Path," *Proceedings of the 2003 American Society for Engineering Education Annual Conference & Exposition*, Nashville, TN, June 2003. **This paper, co-written with Task Force members, won a PIC Best Paper Award.**
- Invited Panelist, "Transition Visits Using TC2K – The Team Chair Perspective," Engineering Technology Division, ASEE Annual Conference, American Society for Engineering Education, Nashville, TN, June 2003
- TAC of ABET Evaluator Training, 2003 CIEC Conference, American Society for Engineering Education, Tuscon, AZ; 2002 CIEC Conference, American Society for Engineering Education; 2003 ASEE Annual Conference, Nashville, TN; 2002 ASEE Annual Conference, Montreal, Canada; 2001 ASEE Annual Conference, Albuquerque, NM.

- "Developing an Outcomes-Based Model Curriculum", Tennessee Community College Engineering Technology Consortium, February 2003
- Stilgenbauer, Nicholas & Brizendine, "Scheduling Transportation Projects Using Primavera® Project Planner As Part of the Software Series in Civil Engineering Technology Independent Learning Experiment at Fairmont State College," *Journal of Engineering Technology*, Spring 2001
- Brizendine, A.L., "Developing Innovative Curriculum Models & Certification Programs To Meet the Needs of the West Virginia Department of Highways: Transportation Technician Certificate and Associate of Applied Science Programs", 2001 ASEE CIEC Conference, San Diego, CA, January 2001
- Brizendine, A.L., "Transportation Technician Certification: A Two-Year Perspective," *Proceedings of the 2001 American Society for Engineering Education Annual Conference & Exposition*, Albuquerque, NM, June 2001
- Brizendine, A.L., "Workforce Training Issues in the New Millennium," West Virginia DOH Contracts Conference, Morgantown, WV, April 2001; "Professional Development for the New Millennium," West Virginia DOH Design Engineering Conference, Pipestem, WV, March 2001; "Technician Training & Certification: Necessity in the New Millennium," West Virginia DOH Construction Management Conference, February 2001
- Brizendine, & Nicholas, "Global Positioning: Multi-Programmatic Initiatives," NSF/WV EPSCoR Conference, Charleston, WV, February 2001
- "Excellence in Teaching & Learning," Conversations In Teaching, Fairmont State Faculty Development Program, Sept 2000.
- Brizendine, A.L., "Architectural, Civil, and Construction Engineering Technology Industrial Advisory Committees: Perceptions of Industry Advisors, Faculty and Administrators," 2000 CIEC Conference, (ASEE), Orlando, Florida.
- PDW Participants, "A Model For Faculty Development: The ExCEEd Teaching Workshop," Consultant Report to the ASCE Board of Directors, September 1999
- Brizendine, A.L., & Brizendine, L.D., "Redefining Scholarship: A Win-Win Situation for Engineering & Technology," (Nominated for Conference BEST PAPER AWARD); "An Independent Learning Experiment: Software Series in Civil Engineering Technology," *Proceedings of the 1999 American Society for Engineering Education Annual Conference & Exposition*, Charlotte, NC, June 1999
- "TAC of ABET Program Criteria Changes: 2000 and Beyond," "TAC of ABET Program Evaluator Training: 1999-2000," "Defining Faculty Work," 1999 ASCE Education Congress, Charlotte, NC, October 1999
- Brizendine, & Riley, "Case History: An Innovative Curriculum Model for Workforce Development in Engineering Technology," 1999 CIEC Conference Proceedings, Palm Springs, CA, February 1999;
- Brizendine, and Copley, "A Model Curriculum for A Multidisciplinary Baccalaureate Degree in Civil & Mechanical Engineering Technology (CMET)," 1999 CIEC Conference Proceedings, Palm Springs, CA, February 1999
- Computer Controlled Data Acquisition Laboratory Experiences in Civil Laboratories," "Continuing Professional Development for Engineering, Engineering Technology, and Industry Personnel," (Nominated for BEST PAPER AWARD), *Proceedings of the 1998 American Society for Engineering Education Annual Conference & Exposition*, Seattle, WA, July 1998
- Brizendine, A.L., "Collaboration for Improved Laboratory Experiences: Capitalizing on Applied Research Opportunities, 1998 CIEC Conference Proceedings," ASEE, Savannah, GA, February 1998
- Brizendine, A.L., Risk Based Analysis of Levees, Doctoral Dissertation, West Virginia University, August 1997
- "Probabilistic Analysis of Hydraulic Conductivity in Woody Vegetation," U.S. Army Engineer Corps, Waterways Experiment Station, Vicksburg, Mississippi, December 1997

- Gabr, Wolff, Brizendine & Taylor, "Underseepage Analysis of Levees on Two-Layer & Three Layer Foundation", *Computers and Geotechnics Journal*, March 1996
- Brizendine, Gabr, and Taylor, "LEVSEEP: Analysis Software for Levee Underseepage and Rehabilitation," *Technical Report GL-95-10*, Department of the Army, Waterways Experiment Station, Corps of Engineers, Vicksburg, Mississippi, July 1995
- Gabr, Brizendine and Taylor, "Comparison Between Finite Element Study and Simplified Analysis of Levee Underseepage," *Technical Report GL-95-11*, Department of the Army, Waterways Experiment Station, Corps of Engineers, Vicksburg, Mississippi, July 1995
- Gabr, Taylor, Brizendine, and Wolffe, "LEVEEMSU: Analysis Software for Levee Underseepage and Rehabilitation," *Technical Report GL-95-9*, Department of the Army, Waterways Experiment Station, Corps of Engineers, Vicksburg, Mississippi, June 1995
- Klaus, Chisolm, Brizendine & Taylor, "Seepage Analysis Under Probable Maximum Flood (PMF)Conditions," Dam Safety '94, The Association of State Dam Safety Officials, Boston, MA, September, 1994
- Brizendine, and Taylor, *Warfleigh Levee Project Analysis Report*, Louisville District Corps of Engineers, January, 1994.
- Brizendine, and Gabr, "Transient Seepage Analysis of Sardis Dam Under Probable Maximum Flood Event," *Technical Report GL-93-83*, US Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi, December 1993

Appendix C:

Supporting Letters

SFPE
EDUCATIONAL and SCIENTIFIC FOUNDATION

April 18, 2008

Anthony L. Brizendine, PhD, PE
Chair & Professor, Department of Engineering Technology
University of North Carolina at Charlotte
9201 University City Blvd
Charlotte NC 28223-0001

Re: The UNCC Department of Engineering Technology
Proposed Master of Fire Protection and Administration (MFPA)
Degree Program.

Dear Dr. Brizendine

This correspondence is to express support for the proposed Master of Fire Protection and Administration (MFPA) degree program. I am currently the Chairman of the Board of Governors for the Society of Fire Protection Engineers (SFPE), Educational & Scientific Foundation. A primary purpose of the Foundation is to support higher education of fire protection professionals. By this correspondence I am expressing the Foundation's Board of Governors support for the proposed program.

By all demographic studies and surveys of fire protection engineering employers, the SFPE has determined that there is a significant shortage of fire protection engineering and technology professionals. Our information is that all graduates of fire protection engineering and technology programs typically receive multiple employment offers upon graduation.

The proposed common courses and fire protection core courses will prepare the program graduates for employment in fire protection design, analysis, research, consulting and program management. I frequently hear about job opportunities in North Carolina, throughout the south and the nation concerning these job opportunities. The demand for these graduates continues to grow as the fire protection profession becomes more scientifically based.

SFPE feels so strongly about the need for additional fire protection higher education programs, that the Society has established a Higher Education Initiative to increase the number of fire protection programs. The Higher Education Initiative task group is working to identify potential universities and to determine how the Society can assist with the development and support of the program. I believe that UNCC would be a candidate for support.

If I may be of assistance in the development of the program, please let me know.

Very Truly Yours

Doug Brandes

Doug Brandes P.E., FSFPE
Chair, Board of Governors
SFPE Educational & Scientific Foundation

7315 Wisconsin Avenue ▲ Suite 620E ▲ Bethesda, Maryland 20814 USA ▲ (301) 718-2910 ▲ Fax: (301) 718-224

United States Fire Administration
U.S. Department of Homeland Security
16825 South Seton Avenue
Emmitsburg, Maryland 21727

FEMA

April 17, 2008

Professor Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223-0001

Dear Professor Kimble:

I recently learned that the University of North Carolina at Charlotte is considering establishing a Master's degree program in Fire Protection and Administration. I want to commend you and the University for this exemplary effort. The United States Fire Administration's National Fire Academy has been encouraging the professional development of the fire and emergency services in this country since its founding in 1974.

This could not come at a more opportune time. As a nation, we will begin to face serious challenges attendant to the aging of the "baby-boom" generation. This group of citizens began turning 62 in January, 2008, and the end of the generation turns 85 years old in 2050. This 62+ age group is well known to be at high risk for fire death and injury and accidents and will place a tremendous demand on the delivery of emergency medical services for the next 42 years! Currently, there seems to be little interest in the demand that this age group will place on the emergency services. This demand will be equal to (and in some cases exceed) the demand they placed on maternity hospitals and school systems when they were young. This advanced degree program could not have come at a more opportune time.

As a former member of the faculty in the Steinhardt Graduate School of Education at New York University, and the retired fire chief of Jersey City NJ, I can assure you that this kind of education will have value for communities across the nation for decades to come.

Two local experts that I might recommend you contact are Chief Luther Fincher, the retired Fire Chief of Charlotte, NC and Timothy Bradley, the North Carolina State Fire Training Director. Both are known nationally as leaders in fire service education. They may be able to provide you with guidance, insight or support as you move toward.

I wish the University and it's future students much success.

Sincerely,

Denis Onieal, Superintendent
National Fire Academy
U.S. Fire Administration

cc: Chief Luther Fincher
Tim Bradley, State Fire Training Director

The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223-0001
The William States Lee College of Engineering
Fire Protection Engineering Technology
Attention: Jeff Kimble
Associate Professor, Program Coordinator

Subject: Need for Higher Education in Fire Protection Engineering

Dear Professor Kimble:

I am Chair of the Society of Fire Protection Engineer's (SFPE) Higher Education Task Group. I am writing to support your proposed master's program in Fire Safety and Administration.

There is currently a great shortage of fire protection engineers in the United States. There are few schools that offer a bachelor's or master's program in fire protection or fire safety. Many engineers that work in this field now have degrees in other engineering disciplines, and are trained in fire protection on the job by their employers.

A great effort has just begun to heighten the awareness of, and the interest in, fire protection engineering. In partnership with SFPE, Discovery Education has sent a DVD and Teacher's Kit entitled, "The Chemistry of Fire", to *every high school chemistry department in the country*. Efforts are also being made to improve on existing information for high school counselors on careers in fire protection engineering.

In addition, The National Council of Examiners for Engineering and Surveying (NCEES) has changed their model law effective in the year 2015. At that time, engineers desiring to sit for the P.E. exam will be required to have a B.S. degree plus an additional 30 credits. A recent survey conducted by SFPE has shown that Fire protection engineers who have a P.E. license earn between $10,000.00 and $15,000.00 more per year than their counterparts without a P.E. license, but with similar length of experience. This will encourage many students to continue education at the graduate level as an avenue to pursue professional licensure.

The timing for such a program has never been better. Speaking on behalf of SFPE, we strongly support your proposed program and wish you every success. If there is anything SFPE can do to help you, please contact me.

Very truly yours,
Richard J. Davis, P.E., FSFPE
President-elect, SFPE

Charlotte Fire Department
Jon B. Hannan
Fire Chief
Homeland Security Director
228 E. 9th Street
Charlotte, NC 28202

April 17, 2008

Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223-0001

Dear Mr. Kimble,

I am writing this letter in support of the proposal for the establishment of a Master of Fire Protection and Administration (MFPA) degree program at UNC Charlotte.

Over the years, several members of the Charlotte Fire Department have graduated from UNC Charlotte with a Bachelor of Science degree in Fire Safety Engineering Technology. I have been extremely pleased with the program and the caliber of students that have been produced. The creation of a Master's degree program would grant our members an additional opportunity to further their education in the field of fire protection and/or administration, which in turn would greatly benefit the department.

As the Charlotte Fire Department searches for additional opportunities to further prepare our firefighters, we will continue to look upon UNC Charlotte as our partner in this endeavor. The objective of the UNC Charlotte MFPA program appears to closely mirror the recommended skill set that we look for in our members; therefore I offer my support to you and the Fire Safety Engineering Technology program as you seek to create the Master of Fire Protection and Administration Degree.

Sincerely,

Jon B. Hannan

Jon B. Hannan
Fire Chief

Mr. Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte

Dear Mr. Kimble

I hope this email would be sufficient to express our support for the master's program being proposed at UNC Charlotte. Reliable Automatic Sprinkler Company is an eighty plus year old company who is a manufacturer of sprinkler devices and control valves for the sprinkler industry. We have been located in New York State for many years before moving our manufacturing operations to Liberty, South Carolina about three years ago. Reliable is one of the four major manufacturers of these products in the US and overseas.

Chris McCameron of Carolina Sprinkler sent me a copy of the information that you sent out, hoping that we might commit to supporting your program at UNC Charlotte. Reliable Automatic Sprinkler Company would be very supportive of the proposed master's program and would be very interested in persons who might have their graduate degrees in Fire Protection and Administration in the future for potential employment with our company. Our Product Development Group at Reliable consist of about twenty people which includes development engineers, technicians and solid modeling CAD designers for sprinkler and valve design and development. We have over 600 people employed at the Liberty plant alone, and we have sales offices and distribution centers all over the world. We have a "state of the art" manufacturing facility and hydraulic laboratory that is surpassed by none in the sprinkler industry. The possibility exist that Reliable may offer opportunities to your graduates because of the excellent hydraulic lab in Engineering that we use extensively in preparation for testing and approvals at Underwriters Laboratories, Factory Mutual and other approval agencies all over the world.

Please accept our support and expertise in any way to help promote this program at UNC Charlotte. If I can be of additional help or need to be contacted, please call me at (864) 843-5245 or email me at dstewart@reliablesprinkler.com.

Sincerely,

Doug Stewart
V. P. of Engineering
The Reliable Automatic Sprinkler Company, Inc.
1470 Smith Grove Road
Liberty, South Carolina 29657
(864) 843-5245

April 17, 2008

Mr. Jeff Kimble, Associate Professor. Program Coordinator
Fire Safety Engineering Technology
The University Of North Carolina at Charlotte

Dear Mr. Kimble,

Since 1986, I have served the Charlotte Fire Department in the position of Chief Fire Investigator. Before being appointed to that position, I observed all aspects of the fire service continue to develop in new technology for better service delivery to the citizens we serve. As you are keenly aware, the demands to keep pace with this scientific development place broader more technological requirements on all fire service professionals. For this reason, the Charlotte Fire Department and the surrounding region's fire service community continue to support the University's four year Fire Safety Engineering Technology Program.

The science behind the basic principles of fire investigation now requires both forensics and engineering to solve the simplest of cases. Continuing State and Supreme court decisions not only require but demand fire investigation professionals both public and private to support their theories concerning fire origin, growth and development using scientific and engineering methodology. If we are to keep pace with these requirements we must provide additional educational opportunities to the personnel that are to perform these tasks. I firmly believe that creating a Masters level Program will help to satisfy the demands required in the fire investigation profession and improve the service of fire professionals throughout the state.

I support the establishment of the Master's program in Fire Protection and Administration at our University and am excited about the opportunity to provide educational opportunities and learning experiences to students enrolled in the program through the Charlotte Fire Investigation Task Force.

Sincerely,

David A. Lowery
Chief Fire Investigator
Charlotte Fire Investigation Task Force

April 18, 2008

Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte

Dear Jeff,

It is good news to hear that UNCC is proposing to establish a master's program in Fire Protection and Administration. The discipline of fire protection engineering is vital in our every day existence for ensuring safety in our homes as well as work places. The pursuit of advancement in this field is critical in maintaining an understanding of how our changing environment impacts our safety.

As a fire protection engineer working in the nuclear industry, I realize that each day offers new opportunities to utilize the training I've received from college as well as on-the-job. As fire protection professionals, it is critical that modern methodologies, techniques and tools for fire protection design, fire investigation, industrial fire safety, etc. are available through local universities such as UNCC. Many times I've utilized more well-informed individuals to assist me in determining resolutions to issues. But like myself, these well-informed individuals are adding years and looking forward to retirement. Without trained replacements, those that take my place in the workforce will not have the benefits I had.

I applaud UNCC's foresight in the development of this master's program.

James A Oldham

James A. Oldham
Duke Energy
Fleet Lead Fire Protection Engineer

PhilipMorrisUSA
an Altria Company

Cabarrus Manufacturing Center
2321 Concord Parkway South
Concord, NC 28027

April 16, 2008

Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte
9201 University City Blvd
Charlotte NC 28223

Professor Kimble:

This letter is submitted in support of the Department of Engineering Technology at UNC Charlotte proposed creation of a Master of Fire Protection and Administration (MFPA) degree program.

The implementation of a MFPA program would provide an opportunity to enhance the skills and capabilities of those engaged in the field of fire protection and/or administration, as well as other safety and emergency services related occupations. A strong MFPA program would be a cornerstone in the development of potential leaders in these fields, to support communities and commerce.

I look forward to the opportunities and emergency leadership this UNC Charlotte MFPA program will provide.

Sincerely:

William C. Ours, CPE
Safety Manager
Cabarrus Manufacturing Center
Philip Morris USA

tyco / Fire & Building Products

Chris Sharp
Business Development
Manager - Southeast

Tyco Fire & Building Products
5249 Murrayhill Road
Charlotte, NC 28210

chris.sharp@tycofp.com

April 16, 2008

Professor Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223

Re: Master of Fire Protection and Administration (MFPA) Degree Program

Dear Professor Kimble:

I am writing to offer my support of your proposal for the establishment of a master's program in Fire Protection and Administration. As president of the Carolinas Chapter of the Society of Fire Protection Engineers, I am contacted with increasing frequency by various firms looking for experienced Fire Protection Engineers and Designers.

The lack of well trained fire protection designers is posing a significant challenge for both fire protection contractors and engineering firms alike. The increased acceptance of and code requirements for automatic sprinkler systems has led to rapid growth in the fire protection and the industry is beginning to outgrow its skilled workforce.

Additionally, with the advancements in fire protection technologies and design approaches, it is extremely important to have individuals entering the workforce that are well trained in the new design methodologies and applications of the latest technology.

Please do not hesitate to contact me if I may be of further assistance in support of your efforts to establish this much needed program.

Best regards,

Chris Sharp
Chapter President
Society of fire Protection Engineers – Carolinas Chapter

TRAVELERS

Travelers Fire Investigation Unit
11440 Carmel Commons Blvd.
Charlotte, North Carolina 28247
Office (704) 948-5838

Jeff Kimble
Associate Professor / Program Coordinator
The University of North Carolina at Charlotte
Fire and Safety Engineering Technology
9201 University City Boulevard
Charlotte, North Carolina 28223

Dear Mr. Kimble,

I am writing you this letter to show my support for the establishment of the Masters Program in Fire Protection and Administration. This program is greatly needed not only in the private sector but also in the public sector as well.

I have spoken with several of my professional contacts with public fire departments throughout the Carolinas as well as the private sector, which includes the fire protection industry, industrial risk management consulting firms, insurance companies, and fire and explosion investigation experts. All have voiced to me great interest in this new proposed program.

On a personal note I would like to be one of the first students in the program. I attained my Bachelors of Science from Eastern Kentucky University in Fire and Safety Engineering Technology. Since graduating I have been searching for this type graduate level program and feel that it would greatly assist me in furthering my knowledge in the field of fire protection.

Please let me know if I can do anything else to assist you with this matter.

Best regards,

Jonathan G. Byers, Jr. CFI, CFEI, CFII, CVFI
Fire Investigator
Travelers Fire Investigation Unit

April 17, 2008

Mr. Jeff Kimble
Associate Professor
The University of NC at Charlotte
9201 University City Boulevard
Charlotte, NC 28223

RE: Fire Protection and Administration – Master's Program

Dear Mr. Kimble:

I have heard through the fire protection community about UNCC's desire to offer a master's program in Fire Protection and Administration. As an insurance program manager, RelMark fully supports this very important endeavor.

As a loss control professional with over twenty years experience in fire safety, I understand the importance of having qualified individuals with formal degrees in the fire protection arena. I believe graduates from your program will be sought after candidates for jobs in both the public and private sectors. There is also a need among individuals currently involved in the fire protection industry to obtain ongoing formal training and advanced degrees.

I wish you luck in establishing the master's degree program.

Sincerely,

Nacia May Lipton
Loss Control Manager

Ludwig's Corner Professional Center
961 Pottstown Pike Chester Springs PA 19425-3510

610-321-101 610-321-1011 fax www.relmark.net

Rimkus Consulting Group, Inc.
5900 Northwoods Business
Parkway, Suite J
Charlotte, North Carolina 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile

April 17, 2008

Prof. Jeff Kimble
Associate Professor / Program Coordinator
The University of North Carolina at Charlotte
Fire and Safety Engineering Technology
9201 University City Boulevard
Charlotte, North Carolina

Re: Masters Program and in Fire Protection and Administration

Dear Prof. Kimble:

It was recently brought to my attention that The University of North Carolina at Charlotte was considering the creation of a Masters Degree program in Fire Protection and Administration. I believe the creation of this program would be an excellent addition to your school and of great benefit to the members of the Fire Protection/Investigation field.

Being an active fire investigator with a BS degree in Mechanical Engineering, I feel that being able to obtain a Master Degree in Fire Protection would greatly increase my knowledge and credibility. I was also excited to note that you would be including online course for busy professionals.

Best Regards,

Mark Nelson, P.E., ACTAR, CFEI, CVFI
Senior Consultant

Professor Jeff Kimble
UNC Charlotte
9201 University City Blvd
Charlotte NC 28223-0001

April 18, 2008

Professor Kimble,
It is with much enthusiasm that I provide this letter of support for the proposed Masters of Fire Protection and Administration. Having been involved with the fire safety program at UNC Charlotte since the earliest stages of its planning, it is exciting to see the baccalaureate program prosper and moreover, expand with the addition of a Master's degree.

Having served as president of the International Association of Fire Chiefs and now as a member of the National Fire Protection Association board, I can attest to the fact the need for higher education programs for the fire field are remains strong and largely unmet. There are very few graduate level programs for those in the fire protection field in the U.S. and no programs in the southeast. Having a master's degree program at UNC Charlotte will once again uniquely position UNC Charlotte ahead of the curve in helping meet the demand for qualified individuals to work in North Carolina and the southeast in the fire protection industry.

Even though I have now retired from the fire department, my belief in the benefit of higher education and my commitment to promote higher education remains strong. Please do not hesitate to call upon me if I can be of assistance. I look forward to seeing the proposed Masters of Fire Protection and Administration approved and going strong in the very near future.

Sincerely,

Luther L. Fincher

Luther L Fincher
Chief (ret)

April 17, 2008

Mr. Jeff Kimble
Associate Professor
The University of NC at Charlotte
9201 University City Boulevard
Charlotte, NC 28223

RE: Fire Protection and Administration – Master's Program

Dear Mr. Kimble:

I have heard through the fire protection community about UNCC's desire to offer a master's program in Fire Protection and Administration. As a risk management consulting company, Myers Risk Services fully supports this very important program. We regularly work with fire officials, the fire protection community, insurance companies, and business owners. There is not only a need for individuals with advanced degrees in the specialty areas of Fire Protection and/or Administration, but even more importantly, there is a need for a set standard of qualifications that your degree program will offer to employers.

Sincerely,

Top Myers
Miles G (Top) Myers

LUDWIG'S CORNER PROFESSIONAL CENTER
961 POTTSTOWN PIKE CHESTER SPRINGS PA 19425-3510

610-321-2415 610-321-2418 FAX WWW.MYERSRISK.COM

SCHIRMER ENGINEERING
125 Floyd Smith Drive, Ste. 170
Charlotte, NC 28262
Phone (704) 295-1300 Fax (704) 295-1302
Fire Protection ■ Code Consulting ■ Risk Control ■ Security Consulting

April 18, 2008

Mr. Jeff Kimble
Associate Professor, Program Coordinator
Fire Safety Engineering Technology
The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223-0001

Dear Mr. Kimble

Schirmer Engineering is pleased to know that the University is considering a master's program in Fire Protection and Administration. Fire Protection is the core business of our firm and has been for over 70 years. We interact with fire marshals and fire department representatives on a daily basis, and we recognize the need and their desire for continued education. Schirmer Engineering encourages your efforts to enhance knowledge and opportunities in Fire Protection and Fire Administration. As you know, one of our employees (Charles Carriker) is currently enrolled in your program for the Bachelor's degree in Fire Safety Engineering Technology. Please keep us advised regarding the status of the program and contact me if we can offer any assistance.

Sincerely,

Lisa Bossert

Lisa Bossert, P.E.
Manager, Charlotte Office
Schirmer Engineering