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SCHOOL OF ENGINEERING

DEPARTMENT OF FIRE PROTECTION ENGINEERING

2016-2020 Strategic Plan



1. Introduction

The Department of Fire Protection Engineering (FPE) is a unique campus, state and national resource. The department was initially established in 1956 and the undergraduate program in the department has been accredited by ABET since 1976. It is the lone FPE undergraduate program accredited by ABET and one of the top fire research groups in academia. Several of the ongoing research projects within the department have the potential to transform portions of fire protection engineering. A graduate degree program in the department was initiated in 1989, which was expanded to offer classes via an online mode in 2003. Since its first BS graduate in 1962, the department has had more than 1,100 graduates from the undergraduate program and more than 400 graduates from the graduate program (with MS or MEng degrees). The department faculty has supervised about 30 PhD graduates, with virtually all of them having been since 2005, at a graduation rate of approximately 0.4 PhD's per FPE faculty FTE per year over the last 10 years. Currently, a total of approximately 200 students are enrolled in the department degree programs or working with FPE faculty (as PhD students).

The department faculty consists of six full-time, tenure track faculty (including the chair), one full-time, professional track faculty, and one tenure track faculty member who has a joint appointment with the Department of Mechanical Engineering. In addition, there are two part-time research faculty. There are also several adjunct faculty who assist with a portion of the on-campus undergraduate and graduate courses. Most of the on-line graduate courses are taught by adjunct faculty with the exception of two courses taught by two of the full-time, tenure track faculty in the department.

The department staff consists of five full-time positions, staffing and supporting financial management and business operations, student services and laboratory operations. The College also allocates to the department two individuals, shared with other engineering departments, to assist with development and communications.

The base budget for the department from the state supports all of the tenure track faculty positions, approximately two of the department staff and the two positions provided by the College. All other positions and operating budget items are supported by assistance from the Dean's office, entrepreneurial programs, endowments or contributions.



2. Strategic Initiatives, 2016-2020

The department has advanced in several respects. It continues to be recognized as a leader in the international fire protection community. The department's education programs have long been recognized as being world class. In recent years, the department's research capabilities have received an increasing and significant amount of respect, being recognized for contributions to the advancement of fire safety science and several of its faculty having received awards for those contributions.

Strategic initiatives to further enhance the department's programs and reputation are divided into four areas:

- Undergraduate program
- Graduate program
- Research
- Entrepreneurial Programs and Financial Support

Undergraduate Program

The initiatives in this section are intended to grow the number of undergraduate students enrolled as well as to maintain the high quality level of the degree program.

1. *Enrollment in the BS program*

A continual challenge for the department is making high school and university-age students aware of the existence and content of the field of fire protection engineering.

Initiatives:

- Expand recruiting activities and FPE Design Challenge for high school students.
- Develop and offer FPE course in Terp Young Scholars Program
- Expand contacts with UMD engineering students (outside of FPE) and Letters and Science students



2. *Permanence of the Clinical Professor position*

Addition of the Clinical Professor provides balance to the BS Program, including the design and analysis of fire protection systems as well as courses on the fundamentals of fire science. The Clinical Professor needs to explore activities indicated in the initiatives.

Initiatives:

- Pursue short course development.

- Advise students engaged in applied research topics, recruiting
- Mentor students on career paths in applied sectors of FPE



3. *Mentoring and retention*

Identifying new methods to demonstrate the successful achievement of student outcomes is important to keep pace with increasing ABET expectations and recently proposed changes in ABET criteria.

Initiatives:

- Formalize and improve upon the existing college-wide CARE Program for students in academic distress
- Involve faculty to mentor students in academic distress.

4. *High quality curriculum*

The department monitors student progress in the curriculum as well as changes in the field.

Initiatives:

- Expand support of MATLAB usage in classes via teaching assistant and increased discussion.
- Explore long-term solution for MATLAB presentation with College and other engineering departments.
- Monitor student performance in the Building Information Modeling (BIM) course in Civil and Environmental Engineering relative to industry needs.
- Initiate a course in Process Safety Management as a senior-level elective.
- Pursue the use of contemporary methods of course delivery.

Graduate Program

The initiatives in this section are intended to increase the number of students in the department's graduate program and initiate a formal PhD program in the department.

1. *Enrollment in MS program*

An increase in enrollment in the MS program is important as a likely feeder for a potential PhD program and to fill the teaching and research assistantships need to support the operations of the department.

Initiatives:

- Expand recruiting activities to undergraduate engineering students internationally.
- Initiate and grow hosting of IMFSE students.

2. *Diversity of students in the MS program*

The proportion of under-represented minorities, including women and students of color, needs to be improved.

Initiative:

- Expand recruiting activities to maintain high proportion of women graduate students and improve ethnic diversity.

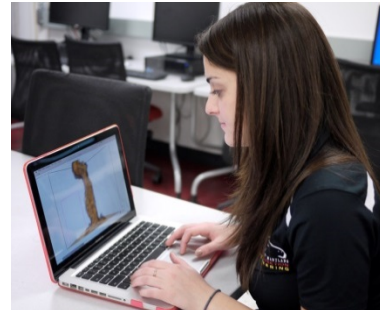


3. *Enrollment in online MEng program*

The number of students in the online MEng program has been stable.

Initiative:

- Expand recruiting activities for the online program via videos, virtual open houses, and other outlets.



4. *Proposal for PhD program in the Department*

The proposal for a PhD in FPE has been initiated. The PhD proposal will identify the need for increased research and at least two more full-time faculty, one senior individual and one junior.

Initiatives:

- Continue the search for a senior faculty member to occupy the Bryan Chair.
- Expand research support and activities (see separate strategic area).

Research

Initiatives in this section are intended to grow the research opportunities available to the department.

1. *Maintain a balance between fundamental and applied research*

A balance in the research programs is needed to sustain a diverse program and a high level of activity despite budget variations in funding organizations.

Initiative:

- Pursue opportunities in a range of topics from both public and private sponsors.



2. *Position the department as a leader in the field of fire science*

To market the department's research capabilities, FPE should position itself as a leader in fire science and hub for research communication.

Initiatives:

- Pursue opportunities to host conferences and workshops.
- Establish knowledge sharing academia-industry consortia to enhance corporate partner relationships; develop an on-line fire science knowledge sharing resource (based in the department).

3. *Search for Bryan Chair*

An eminent fire researcher to become the next Bryan chair is needed to assist in the enhancement of funded research and serve as a mentor to faculty and PhD students.

Initiative:

- Continue to actively search for next Bryan Chair.

4. *Promotion of FPE faculty brand and unique nature of our expertise among professionals working on a wide range engineering problems*

Various research programs on campus either already have fire safety components or could be enhanced if a fire safety component was included.

Initiative:

- Improve the visibility of the department research program and capabilities to encourage more collaborative research with other faculty on campus, as well as at other institutions.

5. *Research opportunities for freshman and sophomore engineering majors, including those from other departments.*

These programs help to recruit UMD students from all engineering disciplines to consider graduate study in the department.

Initiative:

- Expand research opportunities for undergraduates.

6. *Research collaborations with product manufacturers*

FireTEC has become an important means of connecting with industry as well as to provide a useful service.

Initiative:

- Increasingly utilize FireTEC projects as relationship builders for subsequent collaborations with industry.

Entrepreneurial Programs and Financial Support

The initiatives in this section are intended to increase non-state resources for operational support to compensate for declining state support.

1. *Additional State resources for PhD program.*
Seek additional support to manage the increased advising and administrative load associated with a PhD program.

Initiative:

Seek lines for an additional junior faculty and one staff member to assist with the workload associated with a PhD program.

2. *Revenue from Online Graduate Program*
Expanding the income from the online program is needed.

Initiatives:

- Continue to develop new, innovative recruiting initiatives.
- Review content of the online curriculum to identify new courses with broad appeal, e.g. wildfires or process safety.



3. *FireTEC*
The level of activity associated with FireTEC needs to stabilize and grow.

Initiative:

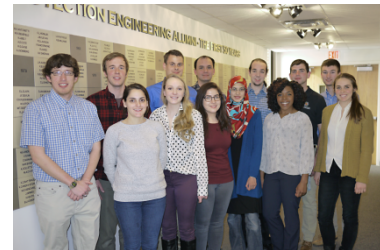
Expand marketing of FireTEC, e.g. by issuing press releases of recent activity (while preserving any proprietary aspects).

4. *Philanthropic Program*

Philanthropic contributions are a critical resource for the department to maintain its high quality educational program.

Initiatives:

- Increase FIRE Center memberships to a minimum of 6 full members on a long-term basis.
- Increase the number of endowed scholarships, as well as the level of support in scholarships available for FPE students.



- Increase the level of support in the two endowed professor funds.



5. *Training and Continuing Education*
Short courses could be an additional revenue source as well as a means to increase the visibility of the department.

Initiative:

- A set of short courses should be developed for on-campus or distance delivery, either unilaterally based on perceived needs of the fire protection professional or via collaboration with industry partners.