2004

Design, Development, and Delivery of Certificate Programs for Funding Opportunities and Industry Collaboration

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Original Publication Citation

Considine, C., & Kauffmann, P. (2004). *Design, development, and delivery of certificate programs for funding opportunities and industry collaboration.* Paper presented at the 2004 ASEE Annual Conference, Salt Lake City, Utah.

Design, Development, and Delivery of Certificate Programs for Funding Opportunities and Industry Collaboration

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Abstract

Many engineering technology departments have four general areas that are used for evaluation of tenure and promotion. These areas include teaching, research and scholarly activities, service, and other professional activities. Although teaching is the primary mission in most engineering technology programs, external funding as part of the research area is playing a larger role in tenure decisions at many universities. Many faculty members in engineering technology programs come from an industrial background and do not have a specific research area of interest and contacts within the research community. These faculty members must look at other avenues to develop the external funding necessary for tenure.

Departments and faculty must think in an entrepreneurial way to consider and value all types of external funding options. One possibility that produces a wide range of ancillary benefits is continuing education programs. This paper describes a model that was developed for continuing education programs in an engineering technology department. It details the problems associated with the implementation of the model for the first series of courses and outlines future plans to implement additional course series.

Introduction

The requirements for faculty in engineering technology programs are changing and external support requirements have become a key component in tenure decisions. Departments and faculty must think in an entrepreneurial way to consider and value all types of external funding options. One possibility that produces a wide range of ancillary benefits is continuing education programs. Our department has developed an agreement to design, develop, and deliver professional development and continuing education programs in the field of engineering, engineering technology and related disciplines. The certificate programs are based upon core courses in the existing engineering technology curriculums and thus do not require a great deal of faculty time to prepare.

These programs will help build and maintain relationships between engineering educators and industry in our region and facilitate keeping our faculty current in their teaching fields. Participants are typically employed in industry and interested in developing new skill sets or

updating existing skill sets. These classes serve industry requirements for life long learning opportunities in a cost effective way.

Planned certificate programs include Construction Management, Surveying, AutoCAD, Control Systems, Advanced Manufacturing, Power Systems, Power Quality, and Six-Sigma Quality. The agreement for the programs includes the responsibilities of both parties (continuing education and faculty) in regard to logistics, assessment, course materials, registration, marketing, and revenue sharing. This paper outlines the model that was developed for the programs, details the problems associated with the implementation of the model for the first series of courses, and outlines future plans to implement additional course series.

Professional Development/Continuing Education Program Model

The model for the professional development/continuing education programs was developed as a teaming agreement between the Department of Engineering Technology (DET) and the Center for Continuing Engineering Education (C2E2), which is an organization responsible for professional and community education for the Batten College of Engineering and Technology at Old Dominion University. This agreement combined C2E2's expertise for the organization of professional development programs with the content and delivery expertise from DET. The initial agreement was for a term of two years and covered party responsibilities, extension terms, amendment terms, course offerings, revenue sharing formulas, training performance criteria and identified program coordinators.

Figure 1 below outlines the responsibilities of each of the parties to the agreement.

Party	Center for Continuing Education (C2E2)	Department of Engineering Technology (DET)
Responsibility	• Logistics - course scheduling, facilities acquisition, catering and student support • Registration • Marketing • Collection of fees and distribution of revenues • Professional Certificates	• Instructors • Assessment of logistics, instruction and materials • Provide all course materials • Identification of C2E2 as partner for all marketing of classes • Reporting of consulting or related outcomes as resulting from courses

Figure 1. Party Responsibilities

The agreement extension and amendment terms were based upon mutual consent to any proposed revisions to the original agreement. The initial course offerings were based upon the current DET program offerings as indicated in Figure 2. Since the program offerings were founded on existing department course offerings, faculty are able to deliver programs utilizing existing course materials with minor modifications and revisions. This limits the amount of time required by faculty for the course preparation.

Civil Engineering Technology (CET)	Electrical Engineering Technology (EET)	Mechanical Engineering Technology (MET)
Construction Management Surveying	Control Systems Power Systems Power Quality	AutoCAD Advanced Manufacturing Six-Sigma Quality Series

Figure 2. Initial Program Offerings

The revenue sharing formula provided that all net revenue from the courses is split evenly between the two parties. It also provided for C2E2 to be paid 10% of contract labor costs for any work contracted by DET as a result of the program offerings. The timeline for all payments was outlined in the agreement. Training performance criteria covered instructor qualifications, which was the responsibility of DET, and program quality monitoring, which was the responsibility of both parties [1].

Implementation of the Model

Construction Management was the first program offered as a result of this agreement. The Construction Advisory Board had strongly encouraged the development and delivery of these courses and it was felt there would be a large demand for the course series. The construction series included the following course offerings:

- Construction Cost Estimating
- Construction Project Management
- Planning and Scheduling
- Construction Contract Law and Negotiation

The initial offering of the program in spring 2003 was not well received and registration was limited so the course series was cancelled. However, upon evaluation of marketing efforts, it was determined that the effort had been limited and had not been directed at the appropriate audience. The mailing list was modified and industry specific publications for advertisement were identified in an effort to increase the visibility of the construction course series. The series was then offered again in fall 2003 with greater success. The first course offered in the series had twelve participants, of which six continued with the program series and completed all four classes receiving a certificate for the program.

For the programs to be financially viable, eight participants are required in each course. C2E2 felt that since this was a new program offering, that they needed to proceed with the program series even though enrollment was not at required levels. They felt that the program filled a market niche and that after the first series of courses was successfully offered, word of mouth within the construction industry would boost enrollment in future offerings. Based on the revenue sharing model developed for the program, DET did not receive any financial benefit from the first program offering. However, both C2E2 and DET recognize the future potential of this program and are committed to continuing with future offerings.

The assessment of the construction program has been completed with the following results:

- Instruction – DET faculty taught one of the courses, with the other three courses being taught by industry representatives. All the instructors were well received and found to be knowledgeable, enthusiastic and effective. However, plans are to pursue additional instructors for at least one of the courses.
- Course content and materials – Course content was found to be on target in all classes with the exception of planning and scheduling. The planning and scheduling class was too focused on software usage and needed more scheduling theory and application examples. Students in the construction project management course were provided detailed PowerPoint outlines for each course topic. These course outlines were well received and will be incorporated into all classes in the future.
- Logistics – The classes were held in a mediated classroom at one of the local higher education centers and the facilities were excellent. Course dates were modified after the series was underway due to scheduling conflicts, which created problems for some of the participants. Future classes will be held in the same location, but course dates will not be modified in the future once the program series begins.
- Marketing – Although the marketing efforts clearly improved between the spring and fall of 2003, additional trade publications have been identified and will be used during future marketing efforts. Marketing efforts are focused on webpage announcements, direct mailings and advertisement in trade magazines.

Future Plans for Professional Development/Continuing Education Programs

Both C2E2 and DET are excited about the potential for the programs tied to this agreement. The first program, Construction Management, which is the focus of this paper, has been well received and will be offered again in spring 2004. The power systems program has also been delivered with success in the last year.

Currently, the Surveying and Power Quality programs are in the preliminary stages. However, the Control Systems, AutoCAD, Advanced Manufacturing, and Six-Sigma Quality series programs are all in their final development stages, with the first offerings to be scheduled within the 2004 calendar year.

These programs have the potential to provide an excellent source of external funding for the DET, and in the process help faculty meet the requirement of external funding required for tenure. Additional benefits provided by these programs include:

- Industry recognition of the University programs and faculty as a source of expertise in professional development offerings
- Faculty interaction with industry –
  - gaining insight/confirmation of the current state of industry through interaction with program areas
  - building and maintaining relationships between engineering educators and industry in the region

- serving industry requirements for life long learning opportunities in a cost effective way

- Consulting opportunities for faculty within industry through development of company specific training programs
- Fulfillment of a public service component of the tenure model
- Industry participants gain new skill sets or update existing skill sets

Conclusion

Development and delivery of professional development/certificate programs based on core courses in existing engineering technology curriculums provides economical opportunities for engineering technology faculty and departments to meet external support requirements and fulfill public service requirements. This paper outlines the model that was developed for the professional development/continuing education programs, details the problems associated with the implementation of the model for the first series of courses, and outlines future plans to implement additional course series. It also highlights additional benefits that can be gained by offering these types of programs.

Although there are growing pains, our experience indicates this is a viable tool to be integrated into the strategic initiatives of engineering technology departments. Future research in this area will focus on the transportability of this model from a large urban market to a more rural university environment such as eastern North Carolina.

Bibliography

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