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## **AC 2011-1732: SMOOTHING THE TRANSITION: DESIGN, IMPLEMENTATION AND ASSESSMENT OF A "PREPARING FUTURE PROFESSIONALS" COURSE FOR GRADUATE STUDENTS**

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# Smoothing the Transition: Design, Implementation and Assessment of a “*Preparing Future Professionals*” Course for Graduate Students

## Abstract

It is important that graduate students become citizen scholars in our knowledge-based economy. Beyond the development of their technical and research expertise, graduate students must be prepared for diverse career opportunities and be able to respond to the many challenges facing the world. Graduate schools serve an important role in the professional development of graduate students. Recognizing the important role that graduate education serves in preparing students for diverse careers beyond academia, a professional development course for graduate students was designed, implemented and assessed. *Preparing Future Professionals* is a doctoral-level course that facilitates the transition of doctoral students to careers in business, government, and non-profit organizations. PFP is a mentorship course designed to support doctoral students in their exploration of diverse professional environments and to understand their roles and responsibilities as global citizens.

## Project Rationale

There exist many challenges facing the global society. These challenges are significant and require the technical knowledge of scientists and engineers with advanced degrees to address them<sup>1,2</sup>. Criticisms lodged against doctoral education state that doctoral students do not develop the skills needed during their doctoral education to succeed outside of the academy and, thus, are not prepared for careers outside the academy<sup>2-4</sup>. Thune (2009) identified the important role that doctoral students play in the university-industry partnership through knowledge generation and transfer as well the competencies and training needed to work in sectors beyond academia<sup>5</sup>. To prepare for roles beyond the academy, doctoral students should be able to work across disciplines as well as within their own discipline<sup>6</sup>. Current challenges facing graduate education call for the development of multiple professional skills and attributes.

The Carnegie Foundation launched the Carnegie Initiative on the Doctorate to determine the purpose of doctoral education<sup>2</sup>. The Carnegie Foundation introduced the concept that doctoral holders are “stewards of the discipline” and that the doctorate conveys that the holder is capable of “generating new knowledge”, of “conserving the most important ideas”, and finally, “transforming knowledge” to apply to a broad range of challenges<sup>2</sup>. The concept of “stewards of the discipline” along with efforts on other initiatives provides opportunities for doctoral students in their development of professional skills and their transitions to different roles as professionals.

Several components of the *Preparing Future Professionals (PFP)* course were informed from the literature on graduate education. Recognizing the important role that graduate education serves in preparing students for diverse careers beyond academia, a professional development course for graduate students was designed, implemented and assessed. *Preparing Future*

*Professionals* is a graduate course that facilitates the transition of doctoral students to careers in business, government, and non-profit organizations. PFP is a mentorship course designed to support doctoral students in their exploration of diverse professional environments and to understand their roles and responsibilities as global citizens. Using a pass/no pass grading system, PFP is a two-credit course that meets weekly for 2 hours. PFP is posted to the transcript and cannot be used to fulfill Plan of Study requirements.

*Preparing Future Professionals* serves as a pilot course in the field of professional development for the transition of graduate students to become future professionals. The lessons learned from the design, implementation and assessment of this course provide direct impact to the professional development progress of graduate students on campus and also broader impact to the launching of similar professional development courses, workshops and programs in this field.

## **Methods**

### *Description of Preparing Future Professional Course*

During PFP graduate students are introduced to diverse topics which facilitate their transition to future careers in business, government, and nonprofit organizations. The main topics covered include: the job search process and application materials; professional skills for success in the 21st century workplace; understanding business organizations, cultures, and working in interdisciplinary teams; strategies for balancing work and personal life; and what it means to be successful in today's global society.

Student learning outcomes include 1) assembling a professional portfolio, 2) generating strategies for success in career advancement, 3) networking with career professionals, 4) developing a career strategic plan, and 5) relating their career goals and skill sets to various institutional missions and values, company cultures, and expected job functions.

Assessment of learning outcomes occurs through both formative and summative formats. Formative assessment is based on student responses to weekly discussion questions focused on three key areas: items of interest or significance based on the session topic, actions or strategies they will implement, and areas for further inquiry. Summative assessment occurs through students' final submission of portfolios (curriculum vitae, résumé, cover letter, research statement, and leadership philosophy) at the end of the semester.

### *Participants*

Thirty-nine students took part of this course with one student auditing. Among the thirty-nine students, thirty of them were from Science or Engineering programs. Most student were advanced doctoral students with a few of them were in their pursuits of masters' degrees. By enrolling in PFP, students self-identified as interested in careers in industry, small business, government or non-profit organizations.

### *Course Format*

The first two sessions of the course focused on developing career portfolios that included a professional identity map, networking narratives, curriculum vitae, résumé, cover letter, research statement, and leadership philosophy. Additionally, students participated in Speed Networking

and Portfolio Peer Review activities. The next two sessions focused on creating a career development framework and the importance of career planning.

The remainder of the course focused on invited presentations from alumni and doctoral student recruiters, both technical recruiters and human resource recruiters. Speakers were selected based on their roles, ensuring that the broad spectrum of employment sectors was represented (i.e., large corporations, small businesses, nonprofit organizations, and government agencies).

### *Data Collection & Analysis*

Formative assessment of students' learning outcomes occurred through student responses to weekly discussion questions via an online system. The discussion questions included:

1. *Please describe 3-5 ideas that you learned or found very significant to your professional development in this week's session.*
2. *Based on what you learned from this week's topic, what specific actions are you going to take to initiate or advance your professional development?*
3. *What would you like to see added or think is missing in this week's session?*

Following the weekly sessions, responses from each session were read and re-read by researchers. Summaries of each session were documented as references for future sessions. Student responses to question one served as the primary data in understanding student learning outcomes. There were 13 sessions in which discussion questions were posted. There were 329 discussion question responses by students in all. On average, 25 out of 39 participants submitted responses to the discussion questions each week.

Open-coding and content analysis was used to analyze student responses to question one in order to interpret their learning outcomes. Open-coding is an analytical process to fracture and label the data to obtain a more abstract representation of the data<sup>7</sup>. Content analysis was used to identify the most prominent learning outcomes among the students from the first two sessions. Content analysis is useful when interpreting the content of text and identifying the key themes by the categorization of codes<sup>7</sup>. Open-coding was used for the remaining 11 sessions which were invited talks by different speakers with different educational backgrounds and working experiences. Once the open-coding was completed, the coded responses were grouped into different categories to identify the main themes of learning outcomes.

## **Results**

During the first two sessions, the course instructor presented on professional skill enhancement, career development and related topics. The first two presentation topics were highly focused on professional development skills. Content analysis was used to determine student responses to question one. The top three learning outcomes identified from the first two sessions are summarized in Table 1.

	<b>Session 1</b>		<b>Session 2</b>	
	Key points	Counts	Key points	Counts
<b>1</b>	Emphasis of Impact	17	CV& Resume	29
<b>2</b>	CV& Resume	17	Networking skills	12

<b>3</b>	Job searching strategy	10	Communication skills	10
	Professional identity	10		

**Table 1.** Major learning outcomes from the first two sessions.

Invited speakers were provided with the common themes for the course and to discuss their perspectives based on the diverse educational backgrounds, companies, & organizations. Student learning outcomes were mapped based on knowledge, skills, and attitudes in Table 2, according to the distributions of students’ self-identified learning outcomes,

<b>Area</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Attitudes</b>
Learning outcome mapping	Career planning frameworks; Structure of non-profit organizations; Structure and functions of NSF; The importance of choosing a mentor;	Communication skills; Prioritizing; Networking skills; Time-management skills; Project-management skills; CV/Resume preparation; Interviewing skills; Business etiquette;	Work-life balance; Interest, goal & purpose evaluations;

**Table 2.** Major learning outcomes from sessions by invited speakers.

## **Discussion**

From the findings, students obtained focused information and learned about professional development skills over the first two weeks’ sessions. The skills learned include communication skills, networking skills, and CV/resume preparation skills. They also learned the importance of developing a professional identity and emphasizing their impact in career statements (either in CV/resume or networking occasions).

The learning outcomes students’ identified from sessions presented by invited speakers represented a wide range of information. Nevertheless, these learning outcomes centered on professional development and career advancement by 1) providing relevant knowledge for professional development, for example, the knowledge of different career planning frameworks; 2) emphasizing different professional skills by providing their own perspective; and 3) promoting professional attitudes. Although speakers may discuss the same skills, such as communication and networking skills, speakers provided different perspectives on the common topics based on their particular educational background and professional experiences. Therefore, the benefits provided from the speakers’ different perspectives and experiences were demonstrated in the student responses.

## **Conclusion**

Based on student feedback, the *Preparing Future Professionals* course provided focused information regarding different aspects of professional skill development. Additionally, graduate students enhanced their knowledge, skills, and attitudes regarding professional development and career advancement through interactions with invited speakers and exposure to diverse perspectives. Through the development of different professional skills and attributes, this course facilitates the smooth transition of doctoral students into careers in business, government, and non-profit organizations. Beyond the design and implementation of a course, other professional development efforts, such as workshops, seminars, online learning modules, and online professional communities, will also provide further opportunities for graduate students.

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