Chapter 4
Interdisciplinary Curriculum for Engineering Graduates: A Constructive Alignment With Career Competency

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ABSTRACT

Interdisciplinary teaching combines multiple subjects. Business, communication, and sustainability may be part of an interdisciplinary engineering curriculum. An interdisciplinary curriculum can help engineering students learn more. Students can prepare for more careers by combining engineering with other subjects. Employers value interdisciplinary skills and competencies. Interdisciplinary coursework helps students develop critical thinking, problem-solving, communication, and collaboration skills. Effective interdisciplinary engineering curricula align. This means the curriculum should match employers' career competencies so students can succeed. Interdisciplinary education helps engineering graduates develop career-ready skills. An interdisciplinary curriculum aligns with employer needs to prepare students for engineering careers.

INTRODUCTION

In the evolving landscape of higher education, there is an amplified need to equip students with skills that resonate with real-world job demands. This has spurred numerous initiatives to revamp curricula, ensuring that they not only impart academic knowledge but also enhance career readiness (Stoner and Milner, 2010). The two fields at the crossroads of this transformation are Engineering and Accounting.

For engineers, the mandate is clear: they must possess competencies that allow them to devise solutions addressing both local and global challenges. Their role is pivotal, as society relies on their expertise to innovate, design, and implement solutions that cater to diverse societal needs (Lavadia et al., 2018). However, a gap exists. Research indicates that students might not fully nurture these competencies un-

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less they are explicitly educated about their significance and the methodologies used to develop them (Rhee et al., 2020; Lavadia et al., 2018; Choi et al., 2018).

However, the Accounting and Finance sectors witnessed a surge in the value of critical reflection. This competency empowers students to dissect the foundational principles of their field, fostering a deeper and more critical understanding of their societal implications (Rhee et al., 2020).

This chapter delves into the pivotal role of interdisciplinary curricula in bridging this gap. This underscores the challenges and rewards of integrating critical reflection into the Accounting and Finance syllabus. Furthermore, it emphasizes the alignment of academic outcomes with industry demands and advocates for educators to champion the development of holistic competencies, ensuring that students are not just job-ready but future-ready. In conclusion, this chapter serves as a roadmap for educators, guiding them towards curricular excellence that aligns with the dynamic demands of today's professional landscape.

IMPORTANCE OF INTERDISCIPLINARY EDUCATION

The engineering field demands technical expertise and analytical skills, yet traditional engineering curricula often overlook the importance of interdisciplinary knowledge (Hall and Seth, 2022). Consequently, engineering graduates may struggle to meet the expectations of their prospective employers. This chapter critically examines the profound impact of an interdisciplinary curriculum designed through intentional alignment with career competencies desired by employers on students' skills, knowledge acquisition, and readiness for diverse career paths in the engineering industry.

An interdisciplinary curriculum broadens engineering students' skill sets beyond their core discipline, empowering them with multifaceted problem-solving abilities, critical thinking, creativity, and adaptability (Zhang, 2021). By integrating various disciplines such as business, communication, analytics, humanities, and social sciences, students acquire well-rounded expertise that enables them to tackle complex challenges from diverse perspectives. Employers actively seek engineers with diverse proficiencies, recognizing their versatility and ability to holistically address intricate problems.

Interdisciplinary education facilitates the exploration of diverse fields, fostering a comprehensive understanding of the interconnected nature of engineering and other domains. By appreciating the social, ethical, economic, and environmental dimensions of their work, graduates have emerged as well-rounded professionals capable of effectively addressing real-world complexities. This broader perspective equips them with acumen to navigate the multifaceted challenges and develop sustainable solutions that positively impact society.

The CA ensures that the interdisciplinary curriculum precisely aligns with the competencies desired by employers, ensuring that students are well prepared for the workforce. By incorporating industry-relevant projects, internships, and cooperative educational experiences, the curriculum provides students with practical exposure to authentic engineering challenges. This experiential learning enhances their readiness for the industry, making them highly sought-after candidates with both theoretical knowledge and practical skills. Tailoring their education to career goals through specialized programs further augments their expertise and employability.

An interdisciplinary curriculum nurtures agility and adaptability among engineering graduates, enabling them to thrive in the rapidly evolving engineering landscape. By acquiring knowledge from various disciplines, graduates possess the flexibility to seamlessly integrate insights and techniques