

Low Enrollment in Civil Engineering Departments: Challenges and Opportunities

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Abstract : There is a recurring issue of low enrollments across many civil engineering departments in postsecondary institutions. While there have been moments where enrollments begin to increase, civil engineering departments find themselves facing low enrollments at around 60% over the last five years across the Middle East. There are many reasons that could be attributed to this decline, such as low entry-level salaries, over-saturation of civil engineering graduates in the job market, and a lack of construction projects due to the impending or current recession. However, this recurring problem alludes to an intrinsic issue of the curriculum. The societal shift to the usage of high technology such as machine learning (ML) and artificial intelligence (AI) demands individuals who are proficient at utilizing it. Therefore, existing curriculums must adapt to this change in order to provide an education that is suitable for potential and current students. In this paper, In order to provide potential solutions for this issue, the analysis considers two possible implementations of high technology into the civil engineering curriculum. The first approach is to implement a course that introduces applications of high technology in Civil Engineering contexts. While the other approach is to intertwine applications of high technology throughout the degree. Both approaches, however, should meet requirements of accreditation agencies. In addition to the proposed improvement in civil engineering curriculum, a different pedagogical practice must be adapted as well. The passive learning approach might not be appropriate for Gen Z students; current students, now more than ever, need to be introduced to engineering topics and practice following different learning methods to ensure they will have the necessary skills for the job market. Different learning methods that incorporate high technology applications, like AI, must be integrated throughout the curriculum to make the civil engineering degree more attractive to prospective students. Moreover, the paper provides insight on the importance and approach of adapting the Civil Engineering curriculum to address the current low enrollment crisis that civil engineering departments globally, but specifically in the Middle East, are facing.

Keywords : artificial intelligence (AI), civil engineering curriculum, high technology, low enrollment, pedagogy

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