

## **Can Senior Capstone Project Course provide Real-world Work Experience?**

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### **ABSTRACT**

Generally most of the engineering programs have senior capstone design course(s) as a part of their curriculum with the intent that the students demonstrate that they can use their mathematics & science, general education, foundational and core major courses to solve one or more real world problems. Often civil engineering programs use these courses to demonstrate employers and industries that students have accomplished all six levels achievements including knowledge, comprehension, application, analysis, synthesis and evaluation and they are ready to enter into professional practice.

The Civil Engineering curriculum at the University of the District of Columbia includes two capstone design courses offered during the senior year. These courses have been comprehensively revised over last several years and this research paper will share some of the outcomes and faculty observations. The capstone design course has been designed based on three considerations – (i) exposure to real world problems they are relevant to Washington DC Metropolitan area, (ii) students should able to use their foundational knowledge, technical skills from the courses previously taken and progressively develop understanding to grasp the complexity, and (iii) effort to develop student design competence and confidence such that they can potentially become entrepreneur. Over the two semesters, students go through the following sequence: (1) understanding of civil engineering systems including problem, planning, analysis, design, construction, and operation & maintenance through reading article and presentation, (2) small project such as getting a permit for a client through a small site development, (3) two medium size projects such as hydraulic analysis of a culvert and a design of multi-storey building using the technical principles from structural engineering, and (4) one large project such as development of a land of 30 acres including layout of a sub-division and associated designs including stormwater management, storm sewer system design, sanitary sewer system design and water supply system design. The paper will share the student outcomes, challenges, and opportunities from students and faculty instructor's perspective.