

Dimitrios Stroumbakis, PE
Assistant Professor
Queensborough Community College
The City University of New York
Department of Engineering Technology, Rm. T-20
222-05 56th Ave
Bayside, New York 11364
Phone: 718-631-6207
Email: dstroumbakis@qcc.cuny.edu

Title of Presentation:

**APPLYING PROJECT MANAGEMENT METHODS
TO THE DEVELOPMENT OF A
MATLAB-BASED GAIN EQUALIZER FILTER**

Category to be considered: **FORMAL PAPER, ELECTRICAL / ELECTRONICS**

Key Words:

Experiential Learning, Project Management, Filters, Equalization, MATLAB

Abstract:

In any engineering technology curriculum, students must become adroit in applying engineering design principles as this is a basic, but not exclusive, requirement for industry hiring and future success. Engineering courses are commonly taught in silos of academic learning, often bereft of any authentic industry product design exposure which the job market highly values and demands---an exposure which can give students pronounced advantages during the entry-level hiring process.

In fact, to support this industry desired exposure to real-life product development, CUNY has implemented several grant awards^[1] across its 17 schools for faculty to better align industrial and experiential learning to the project-based learning (PBL) initiatives already embedded in coursework. Specifically, such 2018 grant initiatives are the “CUNY Career Success Initiative” and the “CUNY Career Success Course Innovation”. These grant funds are used to rupture the academic silos by augmenting courses with “industry-specific applied learning” in partnership with employers and professional associations.

Toward this end, project management is essential for the success of any product engineering development with key components being the optimization of design solutions against customer requirements and the all-important customer schedule for deliverables.

In this paper, we present our case study of introducing industry-accepted project management techniques (PERT, critical path scheduling) to enhance student experiential learning in the design of a software based, 3-Band gain equalizer filter using MATLAB. The deliverable of the effort is to use the software to adjust the audio tonality of any audio .mp3 music file provided by a wide

range of interdisciplinary students (Liberal Arts, Economics, and Social Sciences) during QCC's Annual Honor's Conference, thereby exposing non-technical students to technology.

Our outcome shows the students became acutely aware of the importance of meeting customer schedules, managing schedule slack and altering their design approach to mitigate risk of failure as defined by a missed deadline. Trading off 'schedule risk' with 'design solution risk' became a priority and led to multiple design options pursued in parallel (concurrent engineering). Lastly, students were exposed to interactions with industry technical consultants of MATLAB which also contributed to a timely deliverable of software equalizer under challenging schedule constraints.