

GIFTS: Incorporating Patent Review into First-Year Student Design Projects to Support Ideation, Concept Selection, and Commercialization

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Campbell University requires every engineering student to take a rigorous 3-credit semester-length design course, typically in their second semester of study. Student teams of 3-5 pursue a design problem of their selection from problem finding through prototyping and the presentation of prototypes and the results of testing to engineers from local industry. Integration of patent review into the course presented the opportunity to enhance design instruction and project outcomes by providing students with 1) an additional source of potentially relevant mechanisms and design inspiration, 2) additional direction in concept selection to avoid active patents, and 3) a strong entry point for follow-up efforts in technology licensing and commercialization for teams who develop suitable IP.

To assist in the implementation of patent review instruction, free materials aimed at undergraduate patent review instruction were sought in collaboration with campus STEM librarians. Despite extensive searches and inquiries with STEM librarians across the country, limited results were found, none of which had the scope and detail desired. Therefore, Campbell University STEM librarians and faculty collaborated to produce 1) templates and assignments suitable for basic patent review by undergraduate students, and 2) detailed instructional videos totaling about 45 minutes in length that walk student teams through the process. These materials and some other resources such as links to other video tutorials found and the recommended patent databases were incorporated into a publicly available webpage of the Wiggins Memorial Library at Campbell University.

These materials have been used for several first-year design course offerings, with the patent materials typically co-taught by both the course faculty and STEM librarians. Course faculty focus on the connection and utility of the information to the design process, and grade student work. The STEM librarians introduce the material and provide support to student teams performing the patent reviews. The patent materials have been introduced at different points in the course over time and are currently used in an initial review during brainstorming and ideation followed by a second review coinciding with concept selection to better orient the student teams to the different uses of the patent review findings. Several teams have elected to build on the patent review materials by completing the University's IP disclosure forms for a later contract-graded portion of the course.

Overall, the integration of patent review into the first-year design course has been smooth, with student teams often conducting rigorous reviews and meaningful analyses of their findings. These materials and assignments are seen as potentially helpful to engineering design classes across the undergraduate curriculum, including first-year design, along with other classes or extracurricular activities where undergraduate students might engage with the patent review process.