

# **Lawrence Technological University**



## **Transportation Design Program**

**College of Architecture & Design**  
in cooperation with the College of Engineering

# Collaboration with the College of Engineering to create Certificate in Transportation Design Program



## Background

U.S. OEM's no longer dominate the world market. Offshore manufactures are challenging the status-quo in the global economy. The efficiency of the product development process to market, dictates the winners by being first in catering to customer wants and needs. This competitive advantage has a direct correlation to corporations which institute a closer bond between design and engineering. This program is designed to fulfill a major gap in the transportation industry. By completing this program, the students will develop an awareness of the interactions between design and engineering.

## Program Scope

The automotive design certificate program is intended for automotive or transportation engineers to garner knowledge and an appreciation of design. Specifically, the program promotes better communication among engineers and designers. This 15 credit hour program of study covers the background, theories, and principles that govern design decisions. Students will also be introduced to basic skills and techniques used by contemporary designers.

The certificate program is intended for practicing automotive engineers, senior level undergraduate and graduate level students. As a post-graduate certificate, applicants must either possess a college degree or be concurrently enrolled in a first degree program. For students who are concurrently enrolled in a first degree program, the certificate will be granted upon completion of that degree.

## Certificate Objective

This 15 credit hour program of study will cover the background, theories, and principles that govern design decisions in the transportation industry.

*Upon the successful completion of the five core courses listed below, a certificate will be awarded in "Transportation Design".*

## Core Curriculum Description

### 1. Product Principles & Ergonomics

Transportation principles are influenced by relationships among product design, human interface, and engineering requirements. A variety of principles that influence contemporary design practice, including cultural and social trends that define aesthetics and customer ergonomics will be examined. Automotive systems and components will be individually evaluated and critiqued to uncover strengths and weaknesses. The interface between user and product will be considered not only as a product attribute, but as a tool for branding and marketing differentiation.

### 2. Design Theory Fundamentals

An introduction to transportation design fundamentals and theoretical interactions, including design composition, proportion, color, form, material, texture, line, and space. Focus will be on the characterization of the building blocks of aesthetic appeal and harmony. The course will survey the impact of other industry trends to include fashion, furniture, consumer electronics, architecture, and technology.

### 3. Studio Visual Communication

This course will introduce the process of developing two-dimensional design representing product form and surface highlights. Students will gain an understanding of how designers develop concepts through the various sketching and illustration techniques from live demonstrations. Perspective fundamentals and sketching methodology will be covered.

## Core Curriculum Description

### **4. Materials, Tooling, and Manufacturing Processes**

Students will gain an awareness of materials and tooling processes with respect to manufacturing and the impact on design. This course surveys the use of design principles governing materials such as metal, wood, plastic, composites, glass, textiles, and hybrids. The student will be introduced to design and manufacturing constraints relative to production processes. Fabrication, production and installation techniques will also be reviewed. Students will have the opportunity to investigate design and engineering improvements on a transportation product.

### **5. Design Feasibility Development**

Students will gain an understanding and appreciation of transportation challenges through industry scenarios facing designers and engineers as they develop concept and production models. The course will examine an OEM studio and demonstrate the required steps to provide creative solutions while maintaining design integrity. Review of constraints in developing class-A surfaces in conventional and alternative materials with direct relationship to craftsmanship will be addressed. Through this process, students will expand their knowledge in developing technical sections and structural hard-point constraints to support the design intent.