

FY-46

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Emergency Vehicle Passing Through Intersections

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Type: Design Problem
Time: 1-2 hours
Location: Take home

Summary

This is a brain-storm type project for freshmen. The student groups are required to propose at least two different ways to help an emergency vehicle passing through intersections. They also need to draw their designs and present them in the class. This project will help students improve their creativity and learn the basic elements of a engineering design.

ABET Descriptors

Engr. Sci. Content: First Year
Type: Component, System
Elements: Analysis, establish objectives, synthesis.
Features: Problem formulation, consideration of alternatives, feasibility, open-ended, creativity, design methodology
Constraints: Cost, reliability
Effort: Individual

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Problem Statement

How many ways do you have to help an emergency vehicle quickly and safely passing through intersections? Pick up an intersection that you are familiar with; investigate the neighborhood of that particular area; investigate the traffic situation in that intersection; Come up with at least two different ways to do the job.

Expected Output

Each student group should provide at least two different solutions, then draw the designs and orally present them in the class.

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Engineering Notes:

1. At the first stage, inspire students to create as many solutions as possible, no matter how crazy they may be. Sample solutions: installing legs on the emergency vehicle; design a electrical device so that the driver of the emergency vehicle can control the traffic lights;
2. After students present their ideas, the instructor must help students add more constrains based on the particular intersection they choose, then let them think which one is the best under those constrains. For instance, the constrains could be: the emergency vehicle is not allowed to make lousy noise as they usually do, and/or, the patient may not tolerate the vehicle suddenly changes its direction or speed, and/or the total manufacture cost must be limited to \$1000, etc. This is a very important stage, because it helps students understand what are the natures of engineering design.

Objectives/Comments:

This is a project that is designated to help students improve their creativity and learn the basic elements of a engineering design.