

# 2018 Middle School Summer Engineering Technology Program

## Transportation Systems Engineering

Introduction to geographical information systems (GIS) and traffic simulation games.

Offered: Week 3: June 25 – 29

Instructors: Ramesh Teegavarapu, Ph.D. (Dr. T.) & Transportation Graduate Students

**Schedule:**

| Day       | Morning Session  | Afternoon Session   |
|-----------|--|---|
| Monday    | <ul style="list-style-type: none"> <li>• Introduction to geographical information system (GIS) tool.</li> <li>• Look at different components of the tool.</li> <li>• Bring data into the system and modify</li> </ul>  | <ul style="list-style-type: none"> <li>• Explain how data is represented in an information system and show students how to get data from internet</li> <li>• Students begin to work in the lab (hands on exercises), on putting together their data and start looking at layers of information</li> </ul>   |
| Tuesday   | <ul style="list-style-type: none"> <li>• Learn to create own data sets and data types; The combination of creates a new output vector dataset, several maps of the same region</li> <li>• Learn to combine different data layers.</li> <li>• Visualize and analyze different layers</li> </ul> | <ul style="list-style-type: none"> <li>• Learn more about GIS tool. Work with a group of students to obtain vector and pixel (raster data sets) from different sources (from internet).</li> <li>• Create your own data, map of your neighborhood, school, etc.</li> <li>• Visualize the data, modify the data, create own maps and work on project ideas. Simulation applications</li> </ul> |
| Wednesday | <ul style="list-style-type: none"> <li>• Introduction to transportation simulation software</li> <li>• Learn to design an intersection</li> <li>• Learn about traffic signals</li> <li>• Discussion about various traffic inputs and their importance.</li> </ul>                              | <ul style="list-style-type: none"> <li>• Introduce the Intersection Analysis <b>InterSanal</b>; is a traffic control game based on tools and ideas that actual traffic control engineers use in their everyday work</li> </ul>  |
| Thursday  | <ul style="list-style-type: none"> <li>• Learn more about simulation software; AIMSUN.</li> <li>• Create your own intersection</li> <li>• Discuss Geographical information. Interesting projects related to GIS and traffic simulation. Animation examples</li> </ul>                          | <ul style="list-style-type: none"> <li>• Introduction to Simulation Game: Street game, and online game designed to help students to understand transportation operations and the importance in our society</li> </ul>   |
| Friday    | <ul style="list-style-type: none"> <li>• Each student will present their work and experience summary</li> <li>• Students to write a summary of their design experience</li> </ul>  | <ul style="list-style-type: none"> <li>• TBA</li> </ul>   |