

2019 Middle School Summer Engineering Technology Program FMRI Summer Camp

Traffic Simulation Games and GIS

VISUALIZE ● ANALYZE ● SIMULATE



Instructors: Ramesh Teegavarapu, PhD., P.E. (Dr. T.), Dr. Dan Liu, Transportation
Graduate Students
Teaching Assistant: TBA

This course introduces geographical information systems (GIS) and traffic simulation games.

By getting involved in this course you will get to:

- Learn about geographical information, take real-life data and visualize, query and analyze to obtain useful results for real-world problems
- Work on a geographical information system (GIS) tool. Find out nearest location of a school, bus stop, library, land fill. Identify right place for a playground or chemical factory, etc.
- Work on understanding traffic simulation to understand congestion, accidents and delays and operate signals according to your preferences.
- Involve in traffic simulation games to improve efficiency of travel by cars. These online games designed to help teens and young adults understand the importance of concentrating on driving.

This course uses an abundance of manipulative including video presentations, illustrations, power point presentations and hand-on laboratory excurses. Students will get the opportunity to express their curiosity through discussion groups and hand-outs.

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

This one-week program is designed to promote successful completion of the tasks provided to each student where the students will gain confidence and knowledge that will spark their desire to learn more. This course is designed with the intent to create a life-long passion for engineering and help students become the next-generation leaders in the field of Civil, Environmental and Geomatics Engineering.

