

ENGR-E484/E584 | Fall 2018

# Scientific Visualization

Instructor: William R. Sherman, [shermanw@indiana.edu](mailto:shermanw@indiana.edu)

Monday/Wednesday 4:00–5:15 p.m.

Visualization Lab, Luddy Hall 4012

This 3-credit course teaches basic principles of human cognition and perception; techniques and algorithms for designing and critiquing scientific visualizations in different domains (neuro, nano, bio-medicine, IoT, smart cities); hands-on experience using modern tools for designing scientific visualizations that provide novel and/or actionable insights; 3D printing and augmented reality deployment; and teamwork/project management expertise.

## Topics covered:

- Scientific visualization: Past, present, and future trends
- Human cognition and perception
- Techniques and algorithms for neurological sciences, nanotechnologies, bio-medicine, IoT, etc.
- Virtual and augmented reality visualizations
- 3D printing deployment
- Choosing and working with clients
- User and task analysis
- Client-oriented projects

## When students complete this course, they will have:

- An understanding of issues involved in designing effective scientific visualizations
- Hands-on laboratory experience designing advanced scientific visualizations
- Knowledge of research challenges and important application areas that drive research and development
- Skills in teamwork with peers working on real-world client projects

