



ESRI Australia

Putting knowledge into place

Training

Course Description

Hydrologic and Hydraulic Analyses Using ArcGIS

Description

ArcGIS and Arc Hydro provide a strong foundation for support of hydrologic and hydraulic (H&H) analyses. This five-day course presents GIS techniques that can be used for terrain analysis, hydrologic and hydraulic characteristics extraction, numerical model input and output, modeling process automation, and result mapping. HEC's GeoHMS and GeoRAS and USGS's StreamStats—each built upon foundation methodologies, data model, and toolset provided by Arc Hydro—form the modeling backbone for H&H analyses used in this course. The class will take full advantage of ArcGIS and its extensions in order to support a variety of requirements that H&H analyses pose to GIS technology.

Students will gain hands-on experience in developing HMS and RAS model inputs through use of GIS and analyzing and mapping of model results. Utilization of GIS infrastructure for support of other H&H models will be discussed as well. While H&H analyses are at the core of this class, the focus is on what functionality GIS provides to H&H modeling, not on performing H&H analyses. Opportunities for GIS use in post-model analyses such as mapping and flood damage estimation will also be discussed.

Topics

- Understand core GIS functionality and data models used in H&H analyses.
- Understand Arc Hydro as the foundation for H&H analyses and database design.
- Use TIN and GRID data structures for efficient terrain surface representation.
- Implement GIS as spatial and temporal integrator.
- Create hydrologic statistical modeling—NSS and StreamStats.
- Create hydrologic physical modeling—HMS and GeoHMS.
- Create hydraulic modeling—RAS and GeoRAS.
- Perform Floodplain mapping.
- Process automation and integration.

Audience

This course is geared towards H&H professionals and GIS professionals supporting H&H analyses. The class will cover the essentials of both H&H and GIS, to provide background material needed to complete and understand the class. The lectures and exercises do not require extensive GIS or H&H background. Advanced H&H or GIS users will have an opportunity to work with their own data during the class exercises.

Prerequisites and recommendations

Familiarity with ArcGIS (ArcMap in particular) and/or RAS and HMS is desirable but not required. Arc Hydro training or experience with H&H and GIS technology is recommended.

Duration: Five days