

# APPLYING GEOSPATIAL AND ENGINEERING TECHNOLOGY

INSTITUTE FOR ENVIRONMENTAL AND SPATIAL ANALYSIS  
UNIVERSITY OF NORTH GEORGIA

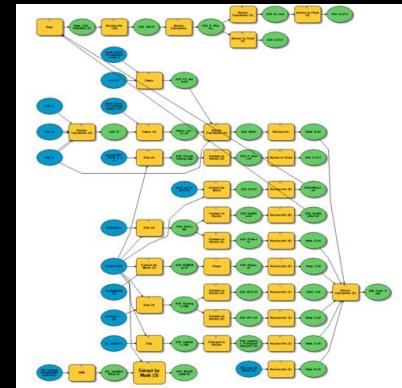
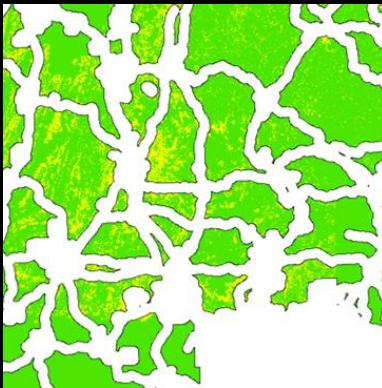
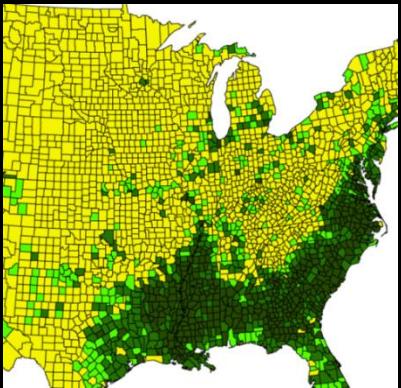
National Science Foundation Advanced Technological Education Program

Award #1700568



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FOR ENVIRONMENTAL AND  
SPATIAL ANALYSIS





# FACULTY GIS TRAINING

Friday, Mar 6, 2020. Science Room 264

Walk-ins Welcome!

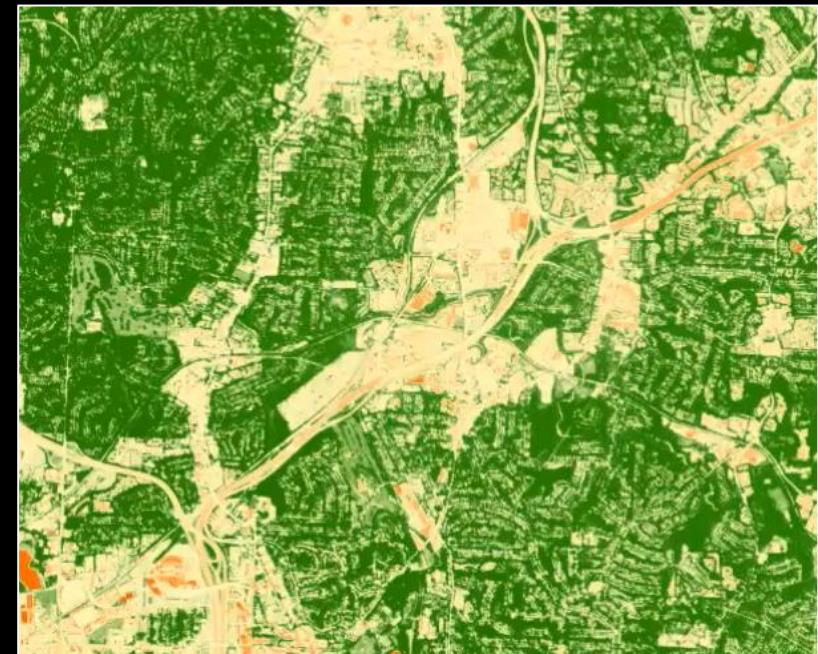
Multiple Break-out Sessions from 12:00-3:00

Demo a GIS Lab to use in your classes:

- Hall County Land Cover Change Analysis
- Gainesville City Ground Water Contamination Vulnerability
- Wildlife Habitat Analysis
- Demographics, Change Detection, and Spatial Distribution
- Remote Sensing of Deforestation



APPLYING GEOSpatial  
AND ENGINEERING  
TECHNOLOGY GRANT  
AWARD #170563



# web development

## VISUAL ECO GEO

A place to share projects & exploration of environmental data visualization.

IESA NSF ATE RESEARCH CONTACT ABOUT



## APPLYING GEOSPATIAL AND ENGINEERING TECHNOLOGY

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An increasing percentage of the nation's technician workforce will use geospatial technologies in the future. The demand for technicians who possess geospatial skills. To meet this emergent need, the Institute for Environmental and Spatial Analysis (IESA) at the University of North Georgia (UNG) is applying geospatial and engineering technology to prepare highly skilled technicians for the workforce. The curriculum will promote an integrated use of geospatial and engineering technologies in areas such as remote sensing, land cover change, and hydrology.

**REMOTE SENSING OF DEFORESTATION**  
Examine Landsat satellite imagery to investigate deforestation across Earth's surface.

- Module 1: Google Earth Timelapse (20-35 minutes)
- Module 2: Global Forest Watch (10-15 minutes)
- Module 3: Reforest. Bark Spatial Analytics. Requires ArcPro Software (30-45 minutes)

Labs generated by Dr. Amber Ignatius

**PROCEDURES**

**DOWNLOAD DATA (14MB)**

**HALL COUNTY LAND COVER CHANGE**  
Conduct Land Cover change study of Hall County using the National Land Cover (NLCD) dataset of 1973 and 2011.

Requires ArcMap Software. (30 minutes)

Labs generated by Dr. Sudhamoni Pandit

**PROCEDURES**

**DOWNLOAD DATA (1MB)**

**I. GENERAL INFORMATION**

Instructor's Name
Office Number
Office Phone
Cell Phone
Office Address
Office Hours

**II. TEXT AND OTHER MATERIALS**

- Reynolds, Karl S., Interlandi, J., Hontanja, A., *Environmental Science for a changing world*, 3<sup>rd</sup> Edition, McGraw-Hill Education, 2016.
- Walling, D., *Introduction to Hydrology*, Steve Margolis, <http://mapsgroup.graham.college/9780333136977/>, - Optimal

**III. COURSE DESCRIPTION**

This course will focus on a fundamental understanding of water resources, soil science and basic environmental science. Students will learn the physical, chemical, and biological properties of soil and water that will be introduced. Water sources, water properties and uses, soil science topics such as soil formation and morphological weathering, soil texture and classification, soil classification, soil pollution, soil and biological properties, hydrology and remediation methods will be addressed. Hydrology including hydrologic cycle, hydrology and remediation methods, watershed hydrology, soil conservation, and remediation methods will be introduced. Students will be introduced to surface and subsurface hydrology, soil water interactions, saturated and unsaturated flows in soils, soil erosion, and soil and water conservation.

**IV. COURSE OBJECTIVES, EXPECTED OUTCOMES, ASSESSMENT**

The mission of University of North Georgia is to further the well-being of students by providing a college of academic excellence, a student-focused environment that includes quality education, academic service, research, and leadership. This is accomplished through broad access to undergraduate academic and co-curricular programs that develop students into leaders for a diverse and global society.

**This course contributes to this mission by:**

- providing a course as part of a UNG-degree program or transfer program
- allowing the science and technology skills of the students to be developed
- developing students' motivation, and propensity to participate effectively in groups engaged in the development of scientific knowledge and solving problems
- developing students' knowledge of systematic methods of inquiry and applying these principles and procedures to investigate scientific problems

An important need has therefore emerged for well-qualified technicians who possess geospatial skills. To meet this emergent need, the Institute for Environmental and Spatial Analysis (IESA) at the University of North Georgia (UNG) is applying geospatial and engineering technology to prepare highly skilled technicians for the workforce. The curriculum will promote an integrated use of geospatial and engineering technologies in areas such as remote sensing, land cover change, and hydrology.

**Applying Geospatial & Engineering Technology (AGET)**  
A National Science Foundation Grant Project  
Grant # 1700568

Principal Investigator: H. Jeff Tuck, Ph.D.  
Co-Investigator:  
Sudhamoni Pandit, Ph.D.  
Amber Ignatius, Ph.D.  
Yu Sun, Ph.D.  
Zac Miller, M.S.

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[iesa.ung.edu](http://iesa.ung.edu)

# evaluation

EVALUATION OF AGET	YEAR 1	YEAR 2	YEAR 3
<b>Quantitative Sources</b>			
Institutional records of student enrollment and performance	✓	✓	✓
Institutional records of retention and completion		✓	✓
<b>Qualitative Sources</b>			
Stakeholder interviews	✓	✓	✓
Site visits	✓	✓	✓
Project records, artifacts, and meeting notes	✓	✓	✓
Articulation agreements		✓	✓
Curriculum and supplementary materials	✓	✓	✓
<b>Participant Surveys</b>			
Student course surveys	✓	✓	✓



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