

Syllabus  
BIO 580 fall ADVANCED ECOLOGY GIS

**INSTRUCTOR**

Justin K. Williams, Ph.D.

Office hours MW 2-3 Lee Drain 140. Other times available on request

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Class Time M: 5-8 p.m. (subject to change)

Attendance is mandatory

Text: **GIS for Ecology: An Introduction. Publisher:** Prentice Hall. **ISBN-10:** 0582246520. by Richard Wadsworth, Jo Treweek.

**GRADING**

Test

Lecture test	20%
Data accumulation	10%
Project 1	20%
Project 2	10%
Participation	15%
Pop Quizzes	25%

The purpose of this class is to introduce students to the applied and theoretical aspects of Global Information Systems (GIS) and Global Positioning Systems (GPS). Applications of these skills include remotely producing vegetation maps, GAP analysis; predicting theoretical spread and habitat of rare and invasive species, predicting potential outcomes global catastrophes (i.e. deforestation, Global Warming). Students will gain a familiarity with the tools of GIS and GPS. Students will learn to produce vegetation maps, analyze accuracy of maps and detail their methodology as well as display their product. The primary project will be assigned by Dr. Williams the secondary project will be of the student's choice but must be approved by Dr. Williams. Student's are encouraged to ask other faculty for project ideas that may benefit their research. If a student does not have their own project, then one will be assigned by Dr. Williams. 15 minute presentations of the project results are required at the end of the semester (see attached calendar).

## Calendar

August 27	First Day Introduction/ Class Room; ARC View vs. ARC MAP(ARC GLOBE)
September 10 <sup>th</sup>	Shapefiles vs. Rasters; Grids, Pixels, 256 colors
September 17 <sup>th</sup>	Aerial vs. Satellite imaging; DOQ's, DOQQ's, DEMS, LANDSAT, IKONIS
September 24 <sup>th</sup>	Finding Biological data; searching known databases and USGS Files; Seamless; TNRIS; TX parks and wildlife GIS labs
October 1 <sup>st</sup>	Creating points, lines, shapes; transferring rasters to shapes and vice versa
October 8 <sup>th</sup>	Coordinate systems; Datum's and Geo-references; UTM, Decimal Degrees, Lat Long; State Plane
October 18 <sup>th</sup>	Incorporating GPS files; geo-referencing museum specimens.
October 25 <sup>th</sup>	Remotely sensing the hierarchical levels of the National Vegetation Classification Standard (NVCS)
November 5 <sup>th</sup>	Accuracy assessment; Kappa Index; User vs. Producer Accuracy
November 12 <sup>th</sup>	Supervised vs. Unsupervised Classifications; Running clustering analysis of images.
November 19 <sup>th</sup>	Lecture Test; Help from Dr. Williams working on your projects
November 26 <sup>th</sup>	Work on your projects
December 3 <sup>rd</sup>	15 minute presentation to class on projects 1 & 2.