



# EXPERIENTIAL LEARNING IN LILLY BRANCH AT UGA

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# LEARNING OUTCOMES

## **LAND 6390: Ecological Landscape Restoration - 3 Credit Hours**

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### **Course Description:**

Introduction to landscape restoration, with an emphasis on restoration of natural function, diversity and aesthetic character of degraded landscapes. This course includes readings, discussions and site visits to understand the history and philosophy of enhancement and restoration techniques for rehabilitation of ecosystems.

- No prerequisites, co-requisites or cross-listings

### **Course objectives and learning outcomes:**

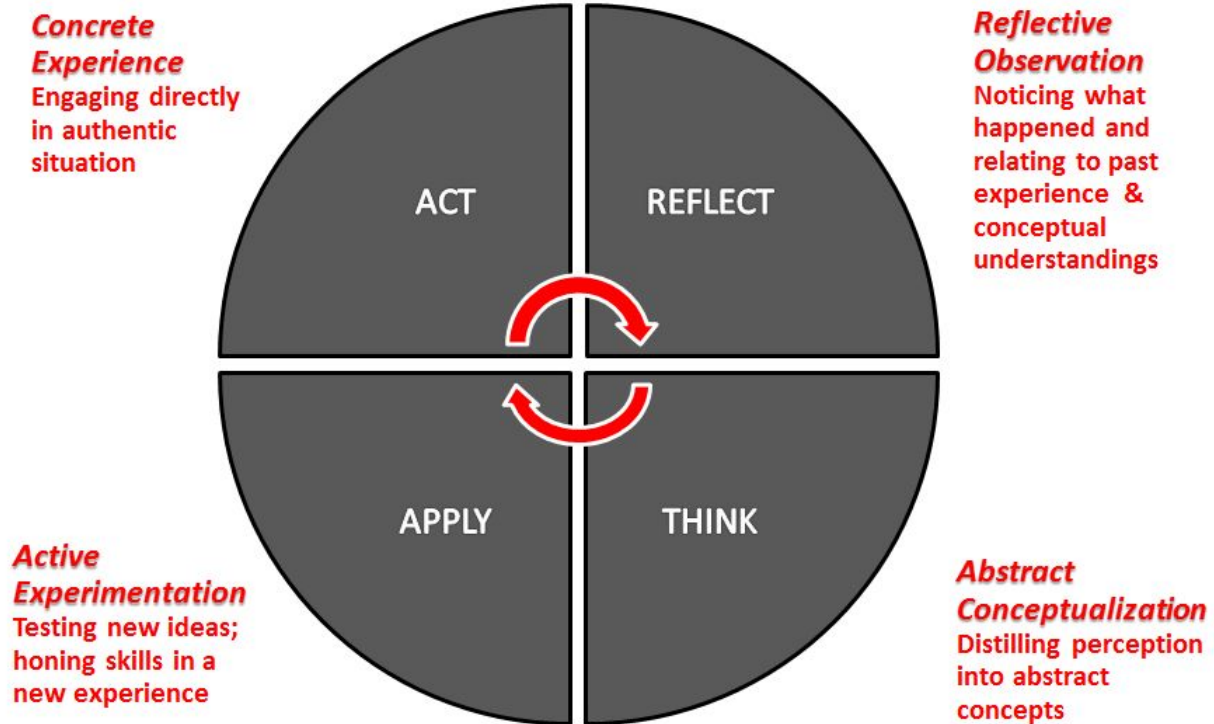
At the completion of the course, students will be able to:

- Summarize and justify ecological benefit of enhancement or restoration case studies of grassland, savanna, forest, stream and wetland areas.
- Explain principles of landscape restoration and techniques of restoration design.
- Recognize and describe the aesthetic values that contribute to ecological design.
- Read the landscape to classify and explain ecological functions.
- Prioritize interventions to improve ecological function.
- Combine the science and art of landscape restoration and human dimensions to underpin designs

# WHAT IS EXPERIENTIAL LEARNING?

- “LEARNING BY DOING” KOLB (1984)
- EXPERIENTIAL LEARNING GENERATES KNOWLEDGE THROUGH REFLECTION
- EXPERIENTIAL EDUCATION INVOLVES EXPERIENTIAL LEARNING THROUGH ACTIVITIES STRUCTURED BY OTHERS, OFTEN OUTSIDE OF THE TRADITIONAL CLASSROOM (NEILL, 2006).

# THEORETICAL UNDERPINNINGS



# COLLABORATIVE ASSIGNMENTS AND PROJECTS

- COOPERATIVE PROJECTS AND RESEARCH
  - LEARNING TO WORK AND SOLVE PROBLEMS IN THE COMPANY OF OTHERS
  - SHARPENING ONE'S OWN UNDERSTANDING BY LISTENING SERIOUSLY TO OTHERS' INSIGHTS.

# CONTEXT



# GOALS

## BACKGROUND

Our project is an effort to rehabilitate the daylight portion of Lilly Branch between River Road and the Lamar Dodd School of Art using Natural Channel Design principles. The site's location in a highly used and visible area of campus presents a unique opportunity for enhanced ecological, educational and community services, making it an asset worth properly caring for. Accordingly, the goal of the design is to not only increase the health of Lilly Branch and waters downstream, but also foster human-environment interactions, research opportunities and a growing awareness for local watersheds. It is our hope that this project site will model and advance stream rehabilitation best practices for the Lilly Branch watershed and other entrenched streams within an urbanized setting.



# BUGS

Calabria Bugs

Site #	Taxa	1mm	2mm	3mm	4mm	5mm	6mm	7mm	8mm	9mm	≥10mm
Site #1 DamselFly	Genus Argia										
	Coenagrionidae										
	Hydropsyche										
	Hydropsychidae										
	Diagnchaeta										
	Chironomidae										
	Genis										
	Gerridae										
	Capetatus										
	Dytiscidae										
Oravelia											
Macroselidae											
Site 2	Calopteryx										
	Calopterygidae										
	Dromogomphus										
	Gomphidae										
	Leuctracuta										
	Heptageniidae										
	Chironomidae										
	Diagnchaeta										
	Helichus										
	Dryopidae										
	Hydrovatus										
	Dytiscidae										
	Oravelia										
	Macroselidae										
	Pseudolimnophila										
Tipulidae											
Carabidae											
Phlodactylidae											

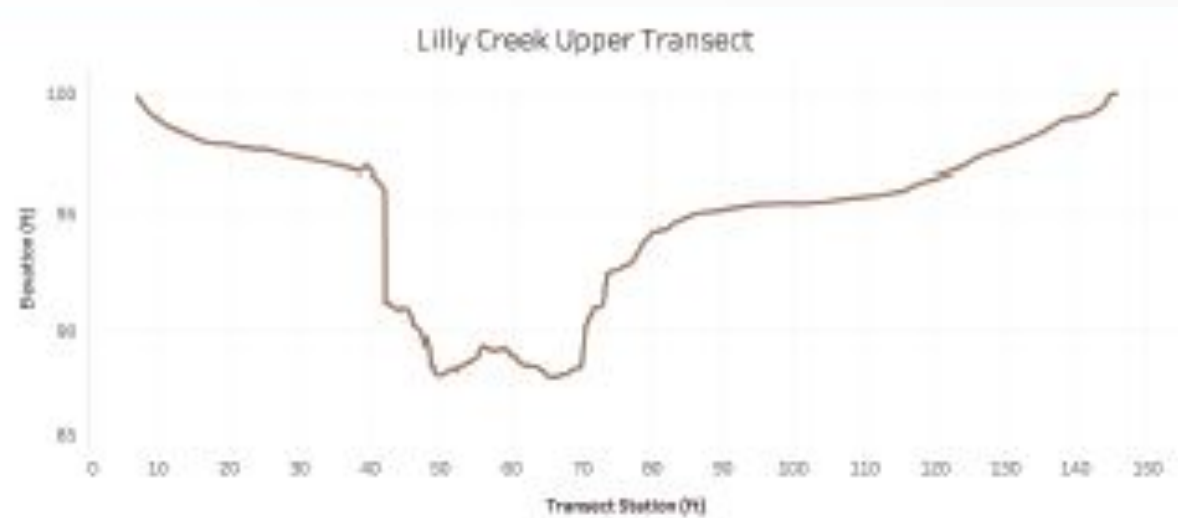
15mm x 1  
13mm x 1  
11mm x 1

24mm x 1

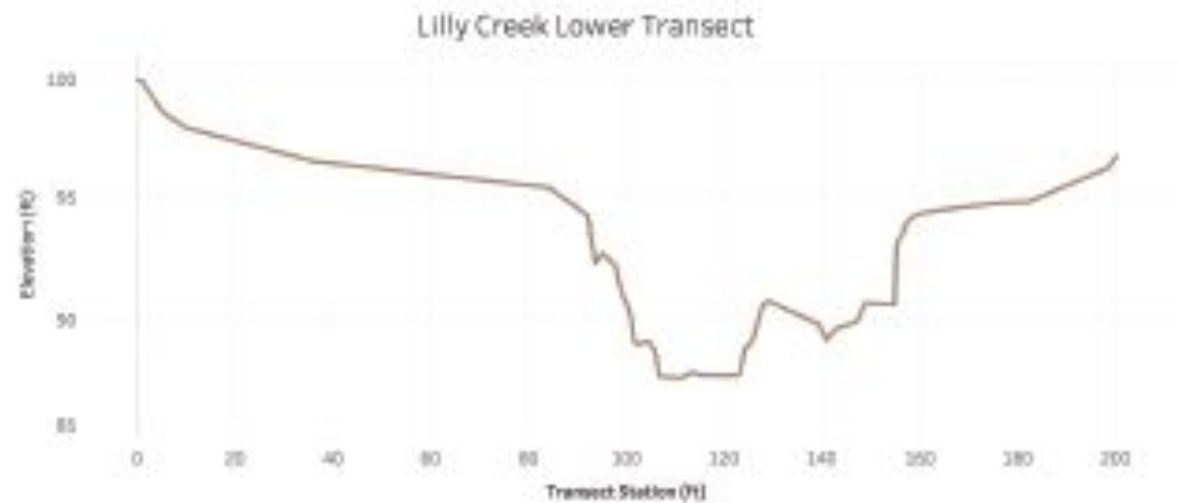
25mm x 1  
20mm x 2



# CROSS SECTIONS



Upper Station vs. Upper Elevation. This view is filtered on Elevation (Upper Station) Upper Elevation, which has 171 members.

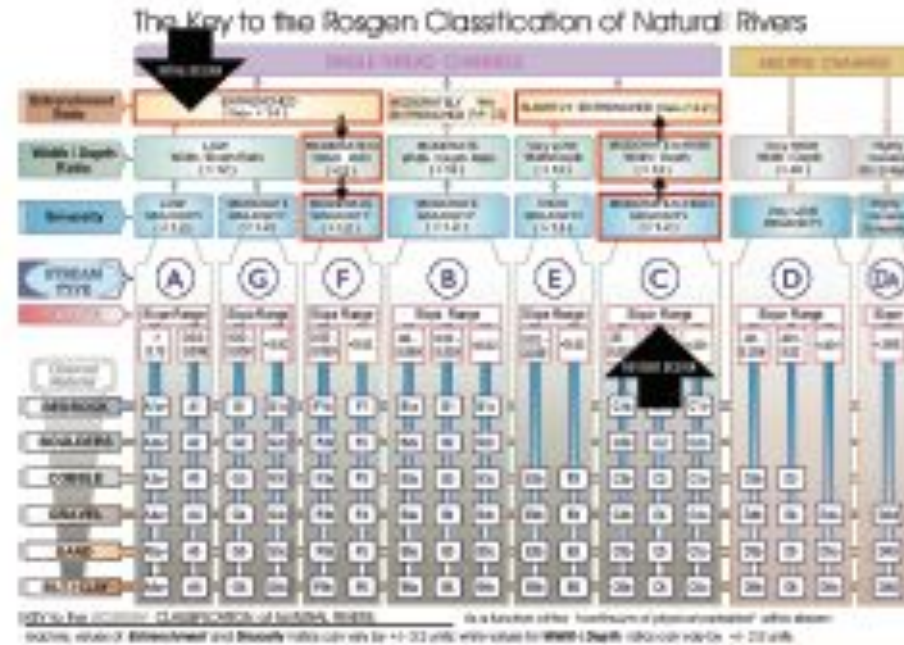


Lower Station vs. Lower Elevation. This view is filtered on Elevation (Lower Station) Lower Elevation, which has 89 members.

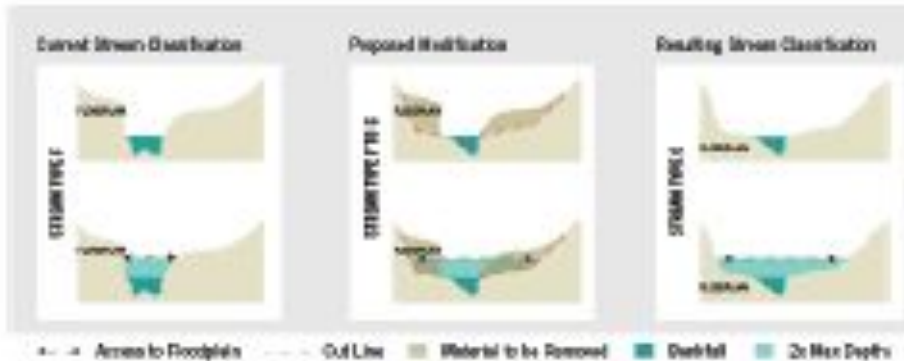
Existing stream profiles created from transects taken at upstream and downstream locations

# SCHEMATIC

## NATURAL CHANNEL DESIGN



Using the Rosgen Classification system, we classified Lilly Branch as an F type stream because it had an entrenchment ratio less than 1.4, had a moderate to high width/depth ratio and moderate sinuosity. By excavating debris that would otherwise slowly erode resulting in sedimentation downstream, we will transform the creek into a C type stream with moderate to high sinuosity, moderate to high width/depth ratio and an entrenchment ratio greater than 2.2 with access to the floodplain.



Our original F type stream is entrenched and has no access to the floodplain. Through bank modifications we will give the creek access to the floodplain which will lessen sedimentation from erosion downstream.

# RENDERING



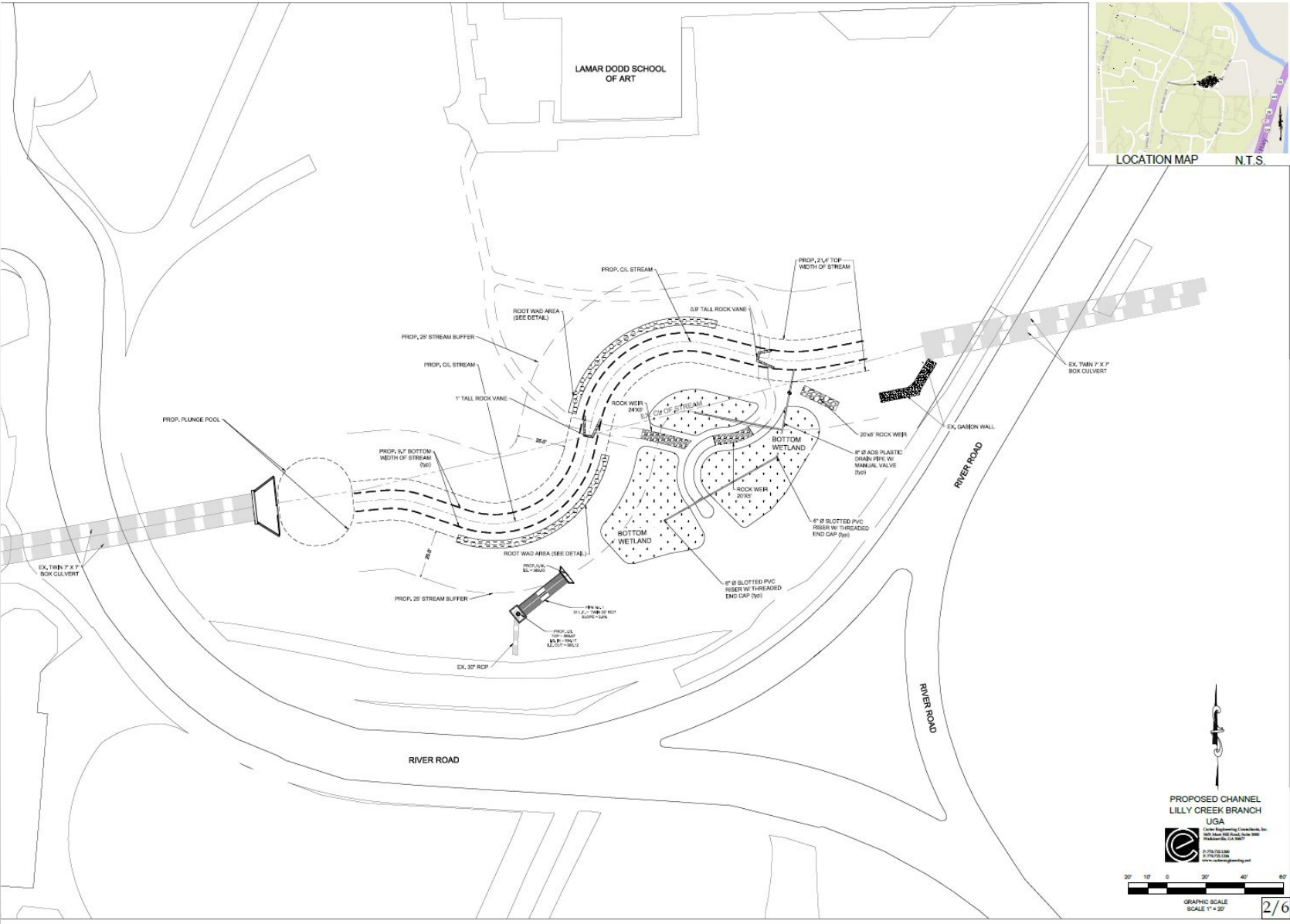
Conceptual rendering of proposed Lilly Branch rehabilitation

## PROPOSED TREATMENT

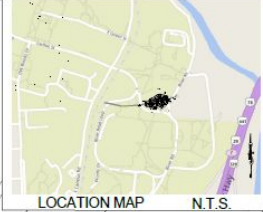
By lowering the floodplain and re- routing the creek through meanders reinforced by root-wads, vanes, and native vegetation, our plan ameliorates sediment erosion while reintroducing valuable stream habitat. Storm runoff from the surrounding facilities flow into the proposed rehabilitation plan via a flow splitter, which routes the initial contaminant-laden runoff into a stormwater wetland; having reached the wetland capacity, runoff is then routed into an upstream pool of the creek through a subterranean pipe.

# WHAT DID STUDENTS LEARN

- LEARNED BY DOING
- AMBIGUITY OF DESIGN: PROGRAMMING, STAKEHOLDERS, GOALS AND CREATION
  - ONE STUDENT WENT ONTO HELPING SET UP A MITIGATION BANK AS PART OF HER SUMMER INTERNSHIP
  - SEVERAL GRADUATE STUDENTS NOW INTERESTED IN ECOLOGICAL RESTORATION AS A CAREER
- UGA COMMITTED TO REHABILITATION OF LILLY CREEK



LAMAR DODD SCHOOL OF ART



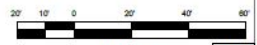
PROPOSED CHANNEL  
LILLY CREEK BRANCH  
USA



LAMAR DODD SCHOOL  
OF ART



CUT/FILL EXHIBIT  
UGA



GRAPHIC SCALE  
SCALE 1" = 20'

1/1

# THANKS!

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