Soil and Water Science Institute:

Biogeochemistry of Wetlands: SCIENCE AND APPLICATIONS

University of Florida

Wetland Biogeochemistry Laboratory
Soil and Water Science Department
Environmental Engineering Sciences Department
Center for Natural Resources
Howard T. Odum Center for Wetlands

Louisiana State University
Wetland Biogeochemistry Institute

October 13-15, 2003
J. Wayne Reitz Union,
282 Lecture Hall
Gainesville, FL

University of Florida Institute of Food and Agricultural Sciences

soils.ifas.ufl.edu
The objective of this course is to provide exclusive training to professionals on basic concepts involved in biogeochemical cycling of nutrients and other contaminants in wetlands, as related to soil, water, and air quality.

Wetland soils serve as sinks, sources, and transformers of nutrients and other chemical contaminants, and as such they can have a significant impact on water quality and ecosystem productivity. The primary driver of these processes is the ecosystem biogeochemistry, which includes chemical, biological and physical processes in the soil and water column. Often, these processes are ignored and the ecosystem is treated as a "black box" and a simplified input-output analysis is used to address water quality issues. This traditional empirical approach is inadequate for effective evaluation of an ecosystem's performance.

Biogeochemistry is an interdisciplinary science, which includes the study of interactive biological, geological and chemical processes regulating the fate and transport of nutrients and contaminants in soil, water and atmospheric components of an ecosystem. Biogeochemistry also provides a framework to integrate physical, chemical and biological processes functioning in an ecosystem at various spatial and temporal scales.

Who Should Attend?

Participants interested in or actively involved in wetland management, water quality, restoration, and constructed wetlands. Those employed in the following occupations would greatly benefit by participating in this course:

- Biologists
- City and County Government Officials and Decision Makers
- Consultants
- Developers
- Ecologists
- Educators
- Environmental Consultants
- Environmental Engineers
- Environmental Regulators
- Environmental Scientists
- Foresters
- Geotechnical Engineers
- Land Use Planners
- Plant Scientists
- Soil Scientists
- Soil Surveyors
- Water Scientists
- Wetland Delineators
- Wetland Mediators
- Others Seeking Rigorous Training in Wetland Soils

10 Ways to Benefit

Upon completion of this course, you will be able to:

1. Explain the role of soil processes in regulating water quality.
2. Identify and describe oxidation-reduction reactions in soils and explain their relationship to organic matter turnover and nutrient retention in wetlands.
3. Describe the carbon, nitrogen, phosphorus, and sulfur cycling processes in wetlands.
4. Identify the soil related indictors to monitor wetland eutrophication and recovery.
5. Evaluate the long-term nutrient assimilative capacity of wetlands.
6. Understand the relationship between soil biogeochemical processes and bioavailable nutrients and plant productivity.
7. Understand the fate of trace metals in wetlands.
8. Understand the fate of toxic organic compounds in wetlands.
9. Understand the role of wetlands as an integral part of a watershed.
10. Advance your overall training and expertise as a wetlands professional.

Registration Information:

University of Florida/IFAS
Office of Conferences & Institutes (OCI)
Building 639 Mowry Road
PO Box 110750
Gainesville, FL 32611-0750
PHONE: (352) 392-5930
FAX: (352) 392-9734
EMAIL: Khbrand@mail.ifas.ufl.edu

soils.ifas.ufl.edu
Mark Clark is a Research Assistant Professor in the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland ecology and soil-water-plant relationships.

Bill DeBusk is a Chief Environmental Scientist with Ecology & Environment Inc. in Pensacola, Florida. His primary areas of expertise are carbon cycling in wetlands, water quality, and biogeochemical indicators for wetland and watershed assessment.

Ron Delaune is a Professor in the Wetland Biogeochemistry Institute at the Louisiana State University. He has expertise in coastal wetland ecology, stability and biogeochemistry.

Joseph Delfino is a Professor in the Environmental Engineering Sciences Department at the University of Florida. He has expertise on the fate of xenobiotics, metals, and nutrients in wetlands and aquatic systems.

Robert Gambrell is Professor in the Department of Oceanography and Coastal Sciences, and Professor and Director of the Wetland Biogeochemistry Institute, Louisiana State University.

Ramesh Reddy is Graduate Research Professor and Chairman of the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland biogeochemistry and water quality.

John White is a Research Assistant Professor in the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland biogeochemistry and water quality, with emphasis in coastal wetlands.

Enrollment in this course is limited, and registrations will be accepted on a first-come, first-served basis. All figures are presented in US dollars ($).

Early Reduced Registration: $350 (Before August 15, 2003 or until the course is full)
Regular Registration: $400 (After August 15, 2003)

What Does the Fee Include?
The full registration fee includes one copy of the course manual, selected reading materials, and CD. Coffee and soft drinks will be provided during breaks. Participants are on their own for all meals.

No refunds honored for Cancellation after (September 15, 2003)

Special Needs: Participants with special needs can be reasonably accommodated by contacting the Office of Conferences & Institutes (OCI) as directed on the form

This course will be held at J. Wayne Reitz Union, 282 Lecture Hall, University of Florida, Gainesville, FL.

**HOTEL ACCOMMODATIONS**
Several hotel and motel establishments are available in the Gainesville area to provide guest room accommodations throughout the course. Participants are responsible for making their own hotel guest room reservations, and a list of properties and applicable guest room rates will be sent to you upon confirmation of your registration.

**Daily Agenda**

**Monday, October 13, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-3:00pm Lectures
3:00pm-5:00pm Visit to Laboratories (optional)

**Tuesday, October 14, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-5:00pm Lectures

**Wednesday, October 15, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-4:00pm Field demonstrations

**Course Topics**
The following topics will be covered in this course. Each topic involves basic concepts and its application and usefulness in addressing environmental ecological significance to wetland restoration, water quality, and other ecological functions. For each topic case studies from southeastern region will be used.

- Introduction
- Wetland community types
- Freshwater wetlands
- Coastal wetlands
- Phyico-chemical characteristics of wetland soils
- Oxidation-reduction potential (redox potential)
- Gas exchange between soil-plant-water system
- Organic matter decomposition and accretion
- Nitrogen processing capacity of wetlands
- Phosphorus assimilation capacity of wetlands
- Sulfur cycle-importance in coastal marshes
- Metals
- Toxic organic compounds
- Biogeochemical indicators for wetland assessment
- Field and laboratory demonstrations

**Easy Ways to Register**

1. **ON-LINE:** If paying by credit card, conveniently register on-line via the course website located at: soils.ifas.ufl.edu
2. **BY FAX:** If paying by credit card, complete and FAX the registration form in this brochure.
3. **BY MAIL:** If paying by check, money order or purchase order, complete the registration form, and mail it along with payment to UF/IFAS Office of Conferences and Institutes (OCI) as directed on the form

**Training Site**
This course will be held at J. Wayne Reitz Union, 282 Lecture Hall, University of Florida, Gainesville, FL.

**Registration Information**

**Course Instructors**

**Mark Clark** is a Research Assistant Professor in the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland ecology and soil-water-plant relationships.

**Bill DeBusk** is a Chief Environmental Scientist with Ecology & Environment Inc. in Pensacola, Florida. His primary areas of expertise are carbon cycling in wetlands, water quality, and biogeochemical indicators for wetland and watershed assessment.

**Ron Delaune** is a Professor in the Wetland Biogeochemistry Institute at the Louisiana State University. He has expertise in coastal wetland ecology, stability and biogeochemistry.

**Joseph Delfino** is a Professor in the Environmental Engineering Sciences Department at the University of Florida. He has expertise on the fate of xenobiotics, metals, and nutrients in wetlands and aquatic systems.

**Robert Gambrell** is Professor in the Department of Oceanography and Coastal Sciences, and Professor and Director of the Wetland Biogeochemistry Institute, Louisiana State University.

**Ramesh Reddy** is Graduate Research Professor and Chairman of the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland biogeochemistry and water quality.

**John White** is a Research Assistant Professor in the Soil and Water Science Department at the University of Florida, Institute of Food and Agricultural Sciences (IFAS). He has expertise in wetland biogeochemistry and water quality, with emphasis in coastal wetlands.

**Registration Information**

Enrollment in this course is limited, and registrations will be accepted on a first-come, first-served basis. All figures are presented in US dollars ($).

Early Reduced Registration: $350 (Before August 15, 2003 or until the course is full)
Regular Registration: $400 (After August 15, 2003)

What Does the Fee Include?
The full registration fee includes one copy of the course manual, selected reading materials, and CD. Coffee and soft drinks will be provided during breaks. Participants are on their own for all meals.

No refunds honored for Cancellation after (September 15, 2003)

Special Needs: Participants with special needs can be reasonably accommodated by contacting the Office of Conferences & Institutes (OCI) as directed on the form

**Training Site**

This course will be held at J. Wayne Reitz Union, 282 Lecture Hall, University of Florida, Gainesville, FL.

**HOTEL ACCOMMODATIONS**
Several hotel and motel establishments are available in the Gainesville area to provide guest room accommodations throughout the course. Participants are responsible for making their own hotel guest room reservations, and a list of properties and applicable guest room rates will be sent to you upon confirmation of your registration.

**Daily Agenda**

**Monday, October 13, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-3:00pm Lectures
3:00pm-5:00pm Visit to Laboratories (optional)

**Tuesday, October 14, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-5:00pm Lectures

**Wednesday, October 15, 2003**
8:00am-12:00pm Lectures
12:00pm-1:30pm Lunch on your own
1:30pm-4:00pm Field demonstrations

**Course Topics**
The following topics will be covered in this course. Each topic involves basic concepts and its application and usefulness in addressing environmental ecological significance to wetland restoration, water quality, and other ecological functions. For each topic case studies from southeastern region will be used.

- Introduction
- Wetland community types
- Freshwater wetlands
- Coastal wetlands
- Phyico-chemical characteristics of wetland soils
- Oxidation-reduction potential (redox potential)
- Gas exchange between soil-plant-water system
- Organic matter decomposition and accretion
- Nitrogen processing capacity of wetlands
- Phosphorus assimilation capacity of wetlands
- Sulfur cycle-importance in coastal marshes
- Metals
- Toxic organic compounds
- Biogeochemical indicators for wetland assessment
- Field and laboratory demonstrations

**Easy Ways to Register**

1. **ON-LINE:** If paying by credit card, conveniently register on-line via the course website located at: soils.ifas.ufl.edu
2. **BY FAX:** If paying by credit card, complete and FAX the registration form in this brochure.
3. **BY MAIL:** If paying by check, money order or purchase order, complete the registration form, and mail it along with payment to UF/IFAS Office of Conferences and Institutes (OCI) as directed on the form

**Training Site**
This course will be held at J. Wayne Reitz Union, 282 Lecture Hall, University of Florida, Gainesville, FL.

**HOTEL ACCOMMODATIONS**
Several hotel and motel establishments are available in the Gainesville area to provide guest room accommodations throughout the course. Participants are responsible for making their own hotel guest room reservations, and a list of properties and applicable guest room rates will be sent to you upon confirmation of your registration.

**Registration Information**

Enrollment in this course is limited, and registrations will be accepted on a first-come, first-served basis. All figures are presented in US dollars ($).

Early Reduced Registration: $350 (Before August 15, 2003 or until the course is full)
Regular Registration: $400 (After August 15, 2003)

What Does the Fee Include?
The full registration fee includes one copy of the course manual, selected reading materials, and CD. Coffee and soft drinks will be provided during breaks. Participants are on their own for all meals.

No refunds honored for Cancellation after (September 15, 2003)

Special Needs: Participants with special needs can be reasonably accommodated by contacting the Office of Conferences & Institutes (OCI) as directed on the form

**Training Site**
This course will be held at J. Wayne Reitz Union, 282 Lecture Hall, University of Florida, Gainesville, FL.

**HOTEL ACCOMMODATIONS**
Several hotel and motel establishments are available in the Gainesville area to provide guest room accommodations throughout the course. Participants are responsible for making their own hotel guest room reservations, and a list of properties and applicable guest room rates will be sent to you upon confirmation of your registration.