Institute Objectives

At the end of this institute, educators will be able to:
1. Describe forests and their components: forest types, abiotic and biotic components of forest ecosystems (tree ID, wildlife, soils).
2. Explain the historic, current, and future importance/uses of forests (in Michigan and globally) and threats to forests (climate change, invasive species, insects and disease, land use changes, wildfire, etc.).
3. Discuss forest management and sustainability: biodiversity, silvicultural prescriptions, forest health, multiple uses (timber, water, wildlife, recreation, and wilderness).
4. Identify and utilize a variety of resources, including forestry professionals, forestry activity guides, websites, agencies, organizations, grant programs, etc., to design and implement a forestry teaching unit, school forest research/management program, and/or school-community outreach program on forestry.
5. Guide students’ interest in forest-related careers and resource stewardship.

AGENDA

SUNDAY, July 15 – Course Overview & Forest Management

11-1 pm  Participants check in at Ford Center.

11-noon  Tour of Alberta and historic sawmill (Kari Price, Ford Center manager)

Noon  Lunch

1 PM  Introductions, Institute Overview, Course Requirements

2 PM  Watersheds, Water Quality & Forest Management using Michigan Environmental Education Curriculum Support (Joan Chadde, water resource specialist)

- Lesson 3: Watersheds
- Lesson 4: Land Uses & Water Quality (water quality impacts associated with forest management: runoff timing and quantity, sedimentation, erosion, streamside buffers, shading, logging debris in stream, etc.)
- Michigan Best Management Practices (BMPs) to protect water quality: stream X’ings, sediment control, road location, riparian buffers, vernal ponds/wetland protection
- Lesson 7: How Healthy Is This Stream? (Stream assessment: bioindicators, physical measurements, streamside habitat, water quality)

5:00  Free Time (Canyon Falls – optional hike)

6:00 PM  Dinner

7:00-8:00 PM  For the Greatest Good: A History of Forest Management and the USFS in the U.S. DVD (Part I)

8:00-9:00 PM  Taking it back to the classroom (small group discussion) – teachers will meet in grade/subject groups throughout the week to discuss classroom applications, brainstorm lesson and field investigation ideas, and begin drafting their teaching units to share on the last day.
MONDAY, July 16 – Forest Components & Forest Ecology

7 AM  Breakfast

8 AM - Noon  Tree, Shrub & Herbaceous Plant ID & Characteristics: Field Methods in Ecology
(Dr. Erik Lilleskov, USDA Forest Service)
Topics to be addressed in lecture:
• Characteristics used to identify trees, shrubs and herbaceous plants
• Field ID of important over-story and under-story species
• Life-history attributes of common forest species: why do certain tree species grow in specific habitats
• Microclimate studies

Noon-1 PM  Lunch

1 - 5 PM  Forest Ecology  (Dr. Linda Nagel, School of Forest Resources & Environmental Science)
Topics to be addressed in lecture & field trip:
• General ecological principles: organism to ecosystem levels, diversity, change, adaptation, succession, etc.
• Forest ecosystem interactions
• Different forest ecosystems and how they function differently:
  ➢ Northern hardwoods v. conifers
  ➢ Managed v. unmanaged
  ➢ Stand structure: vertical levels of herbaceous, shrub, and tree canopy

5:00 PM  Free Time

6:00 PM  DINNER

7-8 PM  Taking it back to the classroom  (small group discussion)

8-10 PM  Hike to Sturgeon River Gorge  (optional)

TUESDAY, July 17:  Forest Soils & Forest Measurements

7 AM  Breakfast

8 AM – Noon  Forest Soils, Vegetation & Use of GIS in Forest Mapping
(Mike Hyslop, School of Forest Resources & Environmental Science)
Topics to be addressed in lecture & field trip:
• Soil texture, porosity, permeability, fertility, mineral v. organic, litter layer
• Relate soil types to forest types: conifer, deciduous, wetland
• GIS as a tool for forest inventory & management
• Using Soil Surveys books

Noon-1 PM  Lunch

1-5 PM  Forest Measurements & Silvicultural Management
(Jim Schmeier, School of Forest Resources & Environmental Science)
Topics to be addressed in field trip:
• Tree measurements: diameter, total height, merchantable height, age
• Inventory using fixed area plots: sampling of over-story, saplings, seedlings
• Calculate tree and stand characteristics: volume, biomass, density, use of spreadsheets using data from plots measured that afternoon (in computer lab)
5:00-6:00 Project Learning Tree activities
6:00 PM DINNER
7-8 PM Taking it back to the classroom (small group discussion)

WEDNESDAY, July 18: Forest Insects & Disease and Wildlife Ecology

7 AM Breakfast

8 AM-Noon Wildlife Ecology & Conservation Biology
(Dr. David Flaspohler, School of Forest Resources & Environmental Science)
*Topics to be addressed in lecture & lab/field trip:*
- Biotic and abiotic factors of wildlife population regulation
- Wildlife habitat relationships & wildlife habitat suitability
- Habitat and landscape principles (e.g., fragmentation, corridors, patches)
- Wildlife management and values
- Measuring changes in ecosystem biodiversity, landscape ecology, and dendrology as a result of altering forest species distribution and increased timber harvest using avian populations.

Noon LUNCH

1-5:00 PM Forest Health: Insects & Disease
(Rita Koch, School of Forest Resources & Environmental Science)
*Topics to be addressed in lecture & lab/field trip:*
- Major insects and diseases of Michigan and how they are controlled
- Invasive plant and animal species
- Ecology of important insect species
- Ability to identify forests/trees impacted by these diseases and insects

5:00-6:00 Project Learning Tree activities
6:00 PM DINNER
7-8 PM For the Greatest Good: A History of Forest Management and the USFS in the U.S. (Part II-DVD)
8-9 PM Taking it back to the classroom (small group discussion)
Discussion with Don Howlett, Hiawatha National Forest.

THURSDAY, July 19: Forest Products & School Forest Management

7 AM Breakfast

7:30 AM Project Learning Tree activities

8 AM Visit to Logging Operation & Northern Hardwoods Sawmill
Hosted by Plum Creek Timber – Mark Sherman, resource supervisor or Matt Gelston, resource forester; Bill Check, General Mgr – Northern Hardwoods 487-6410
12:30 Picnic lunch (Calumet Waterworks Park)

1-4 PM Integrating a School Forest Partnership into the K-12 Curriculum: Tour of CLK School Forest
(Corey Soumis, Calumet High School & Darrell Hendrickson, Washington Middle School-Calumet)
  - Building community partnerships
  - Teacher collaboration
  - Curriculum development and connecting to the standards
  - Active forest management

4:30 PM Tour of Michigan Tech University (by Bill Roberts, Admissions Office): meet at Van Pelt library,
Dow Environmental Sciences, Rosza Center

5:30 PM Dinner at McNair Hall

6:30 PM TOUR of MTU Forestry Bldg & Forestry Careers (Dr. Peg Gale, Dean & Stacy Cotey, Director
of Outreach and Development, School of Forest Resources and Environmental Sciences)

8 PM FREE Evening in Houghton or return to Ford Center

FRIDAY, July 20: Developing A Forestry Teaching Unit

7 AM Breakfast

7:30 AM Project Learning Tree activities

8-10 AM Work on Forestry Teaching Unit. (Check Artificial Nesting Predation site.)

10 – Noon Biofuels Production & Forest Biodiversity
(Dr. David Flaspohler)

Noon LUNCH

1-2 PM Taking it back to the classroom (small group discussions) – Develop outline of forestry teaching unit by
grade/subject groups

2-3 PM Informal presentations by small groups of draft forestry teaching unit, lessons, investigations, etc.

3 PM Course evaluations & wrap-up discussion

4 PM Institute ends