



#### Laboratory of Tree-Ring Research

Dendroecology GEOS597K

2014 Daily Schedule

May 19- May 30, 2014

# Week 1 (May 19-25): Lectures, laboratory sessions, and field trip

**Monday May 19 : Welcome, Intro dendrochronology lectures and lab**

9:00 Check-in & logistics **(Hamilton & Martinez) – LTRR classroom, BBTRB Room 110**

9:30 Welcome statement, course introduction and organization **(Swetnam, Margolis, Falk, Lynch, O’Connor, Munro, Towner)**.

10:00 Student introduction “talks”

10:50 Break

11:00 Lect. History & context of dendrochronology in Ecology and Archaeology Applications **(Falk, Towner)**

Readings\* – Haury 1962, Fritts & Swetnam 1989, Kipfmueller & Swetnam 2001, Swetnam & Brown 2011

12:00 Lunch

13:00 Lect. What are tree rings? **(Swetnam)**

14:00 Lect. Tree-ring dating – what it is and how it is done? **(Margolis)**

Reading – Stokes & Smiley 1968, LaMarche&Harlan 1973, Douglass 1934,1941

14:50 Break

15:00 Lab. Dating exercises, skeleton plot applet, and begin dating Zuni Mtn samples **(Margolis, Towner, Falk)**.

17:00 End Lab

**Tuesday May 20: Intro dendroecology lectures and lab**

9:00 Lect. Intro to dendroecology **(Falk)**

Reading – Fritts & Swetnam 1989

10:00 Lect. Introduction to Dendroarchaeology (**Towner**)

Reading - Towner 2002, Dean 1996

10:50 Break

11:00 Lect. Dendroecology of humans (**Swetnam)**

12:00 Lunch

13:00 Lab. Continue dating Zuni Mtn samples (**Margolis, Towner, Falk**)

14:50 Break

17:00 End of lab

**Wednesday May 21: Lectures, lab, and depart for field trip**

9:00 Lect. Introduction to the Sky Island Ecoregion and Santa Catalina Mountains (**Falk**)

10:00 Lect. Site and tree selection, sampling strategies, and field techniques **(Margolis, Falk)**

Readings – Fritts 1965, Van Horne&Fule 2006, Farris et al. 2010, Brown 2006

10:50 Break

11:00 Lab. Continue dating Zuni Mtn samples (**Margolis, Towner, Falk)**

12:00 Lunch

13:00 Lab. Continue dating Zuni Mtn samples (**Margolis, Towner, Falk)**

14:00 Meet for field trip, load vans

14:30 Depart for field trip to Santa Catalina Mtns

16:00 Arrive at Whitetail campground – set up camp, prepare dinner

**Thursday May 22: Field trip - methods and sample collection**

9:00 Field sampling demonstration (**Margolis, Falk, Swetnam)**

10:00 Field sampling – coring trees

12:00 Lunch

13:00 Continue field sampling

15:30 Return to Campground –sample inventory, data entry, ghost stories

17:00 Dinner

*19:00 Video or campfire talk*

**Friday May 23: Return from field trip and lab**

9:00 Depart camp – visit tree-ring sites in Catalinas, post-fire ecology discussion

11:30 Arrive in Tucson

12:00 Lunch

13:00 Lab. Sample preparation techniques – prepare new collection (**Margolis**)

14:50 Break

15:00 Lab. Begin dating new collection

17:00 End of class

**Saturday May 24: Lab – dating new collections**

9:00 Lab. Continue dating new collection (**Margolis, Falk)**

10:50 Break

12:00 Lunch

13:00 Lab. Continue dating new collection (**Margolis, Falk)**

14:50 Break

17:00 End of class

**Sunday May 25: Free day**

**Week 2: (May 26-30): Lectures and Laboratory sessions – LTRR classroom, BBTRB room 110**

**Monday May 26 (Memorial Day): Fire lectures and (fire) scar wood lab**

9:00 Lect. Low severity fire regimes and fire climate relationships (**Swetnam**)

Readings - Swetnam 1993, Swetnam & Baisan 1996, Falk et al. 2011

10:00 Lect. Mixed & high severity fire regimes (**Margolis**)

Readings - Agee 1993, Agee 2005, Margolis&Balmat 2009

10:50 Break

11:00 Lect. Spatial processes and scale of fire regimes (**Falk**)

12:00 Lunch

13:00 Lab. Dating scars (fire, lightning, peels, floods & animals) (**Baisan, Swetnam, Margolis)**

14:00 Lab. Continue dating samples

14:50 Break

17:00 End class

**Tuesday May 27: Xylogenesis, measuring and forest dynamics**

9:00 Lect. Xylem and how it is formed **(Hughes)**

Readings – Rossi et al. 2006, 2009; xylemlastpg.pdf

10:00 Lect. What can we measure? – RW, EW, LW, density, cell structure **(O’Connor)**

10:30 Lab. Measuring the samples **(O’Connor and Margolis)** – Measuring room, BBTRB 314

10:50 Break

12:00 Lunch

13:00 Lab. Cont. measuring the samples **(O’Connor and Margolis)** – Measuring room, BBTRB 314

14:30 Lect. Tree regeneration (**Margolis)**

Readings - Savage et al. 1996, Grau et al. 2003

14:50 Break

15:30 Lab. Demography methods – Pith estimation, death dates, & growth changes (**Margolis, Swetnam, Falk)**

Readings – Applequist 1958, Villalba and Veblen 1997

17:00 End class

**Wednesday May 28: Chronologies, quality control, and fire history software**

9:00 Lect. Chronology development and standardization **(Swetnam)**

10:00 Lab. Measuring and dating quality control: COFECHA

Readings – Homes 1983, Grissino-mayer 2001 (**Margolis**)

10:50 Break

11:00 Lab. (cont) Measuring and dating quality control: COFECHA

12:00 Lunch

13:00 Lab. Tree-ring and fire history software: FHAES, FHX2, SEA, Tellervo (**Brewer**, **Falk**)

14:50 Break

15:00 Lab. Continue dating samples

17:00 End class

**Thursday May 29: Dendroentomology lecture and lab**

9:00 Lect. Insect population dynamics (**Lynch)**

10:00 Lect. Dendroentomology: reconstructions (**Lynch**)

Readings - Swetnam et al. 1985, Swetnam & Lynch 1989, Lynch 2002, Alfaro et al 2004.

10:50 Break

11:00 Wood Lab: Recognizing and dating insect outbreaks. OUTBREAK software demo **(Swetnam, Lynch, O’Connor)**

12:00 Lunch

13:00 Cont. dating samples & group projects

14:50 Break

15:00 Lab – group projects

17:00 End class

***17:30 – BBQ – In the “bowl” east of BBTRB***

**Friday May 30: Dendroclimatic reconstructions and final presentations**

9:00 Lect. Dendrohydrologic reconstructions (**Meko**)

Readings – Schulman 1945, Meko & Woodhouse 2011, Margolis et al. 2011

10:00 Lect. Bristlecone pine (**Hughes**)

Readings – Salzer et al. 2009

10:50 Break

11:00 Lect. Tree rings NPP and Carbon (**Babst**)

Readings – Babst et al. 2014

12:00 Lunch

13:00 Free time for presentation preparation

**15:00 Final student presentations**

**16:00 End of dendroecology course**

**\*Readings posted at:**

[**http://www.ltrr.arizona.edu/~ellisqm/outgoing/dendroecology2014/readings/**](http://www.ltrr.arizona.edu/~ellisqm/outgoing/dendroecology2014/readings/)

**\*\*May 20th – May 30th the wood lab (BBTRB room 110) will be open at 8:00 am for additional microscope time, although there is no staff scheduled to present.**