

## Teaching Faculty

### Prof. Peter Fulé

Northern Arizona University, USA

**Prof. Peter Fulé** is a faculty member of the School of Forestry at Northern Arizona University, USA. He studies the interactions between forests, fires, and climate. He uses historical ecology techniques, including dendrochronology (tree-ring analysis), to study these interactions during past centuries. Dr. Fulé does research in the US, Latin America, and the Mediterranean region. He has published over 130 peer-reviewed papers.

**Prof. S C Garkoti** is a professor at the School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, and at present the Rector (Pro-Vice Chancellor) of the University. As a trained ecologist, his efforts relate to establish science, policy and practice connect for the conservation and sustainable management of forest ecosystems in the fragile and marginal areas of the country, such as the Himalayas.

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## GIAN (MHRD) course on Dendroecology: Application of Tree-Ring Analysis to Ecological and Climate Science Duration : 11 – 22 December, 2017, at Jawaharlal Nehru University, New Delhi



### Overview

Tree rings give us a way to look into the past. The answer to many important ecological questions depends on our knowledge of past events and the response of living organisms to those events. Has the climate changed in this region? How often did wildfires occur? Are the patterns of forest density, growth rates, and species mix we find today, characteristic of long-term patterns or have there been large changes? How have human societies affected forests? Understanding how the past environment has changed and led to present conditions, will help us evaluate ecological theories, formulate new questions, and design ways to test them. Developing sound management plans for ecosystems require this ecological understanding as well.

The goal of this course is to introduce concepts and methods of dendroecology-the application of dated tree-ring information to ecological investigations. We will cover the principles of dendrochronology, the cross-dating of tree-ring patterns, applications of dendrochronology to reconstruct climate variation, and examine how these methods have been applied to study history of climate change, hydrology, forest disturbances such as fires, insect outbreaks, and avalanches, and reconstruction of past forest composition and growth.

### Objectives

The primary objectives of the course :

- 1) To introduce dendrochronological principles.
- 2) Collection of samples in the field.
- 3) Learn principles of cross dating samples with a master chronology and checking of results with computer-assisted and graphical techniques.
- 4) Interpretation of dendrochronological data .

### Who can attend:

- Scientists and managers of forests or natural resources interested in applying tree-ring analysis.
- Students at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) or Faculty from academic and technical institutions.

### Venue:

- Convention Centre, JNU Campus, New Delhi



**Module A:** Introduction to Dendroecology (week 1) - Introduction, syllabus and class projects; Dendrochronology principles; Coring trees; Sampling design; Sample collection, using the increment borer, collecting and storing samples, data and metadata; How trees grow, part 1; How trees grow, part 2, etc.

**Module B:** Practical Applications of Dendroecology (week 2) - Dendrochronology in understanding history of climate change; Chronology development; Chronology Standardization; Cross-dating samples; Forest dynamics: competition, mortality; Chronology development; Forest fire reconstruction using tree-ring data, etc.

### Registration and fees <sup>++</sup>

JNU M.Sc., M.A. students	: Free
JNU research students (M.Phil. & Ph.D.)	: Rs. 1000
JNU Faculty	: Rs. 2000
Other institutions (research students)	: Rs. 2000
Other institutions (faculty)	: Rs. 4000
Other government institutions	: Rs. 10000
Industry and private institutions	: Rs. 15000
Participants from outside India	: US\$ 500

<sup>++</sup> Accommodation is the sole responsibility of the participant. Few rooms will be offered on request, if available  
Register at <http://www.gian.iitkgp.ac.in/GREGN/index>  
<http://www.jnu.ac.in/GIAN/>