# Course Outline: Fall 2017

## General Information

**Course Code: ENVS\*3230**

**Course Title: Agroforestry Systems**

**Course Description:**

The planned and systematic integration of trees into the agricultural landscape can potentially result in sustainable environmental, ecological, economic and social benefits. The key aspects of deriving these benefits, associated science and management considerations, application potentials at the landscape level and adoption challenges will be discussed. Common temperate and tropical agroforestry systems (e.g. intercropping of trees and crops) will be discussed. Emphasis will be given to successful research and development case studies.

**Credit Weight:** 0.5

**Academic Department (or campus):** School of Environmental Sciences, University of Guelph

**Campus:** Guelph Campus

**Semester Offering:** Fall 2017

**Class Schedule and Location:** Mon. and Wed. CRSC Room 116, 08:30 – 09:20 AM

Lab: Fri. CRSC Room 116, 12:30 – 02:20 PM

## Instructor Information

Instructor Name: Naresh Thevathasan, PhD., P.Ag., D.Sc. (hon.)

Instructor Email: nthevath@uoguelph.ca

Instructor Phone and Extension: 52565

Office location and office hours: Alexander Hall, Room 121 By appointment only. Please email to obtain an appointment.

## GTA Information

GTA Name: TBD

GTA Email: TBD

GTA office location and office hours: TBD

## Course Content

### Specific Learning Outcomes:

1. To familiarize students with approaches to agroforestry systems including theory, principles and scientific research.
2. To offer students an opportunity to develop solutions to present-day agricultural problems through agroforestry (AF) land-use systems and to improve their independent and creative thinking ability.
3. To explore potentials application of AF land-use systems in developed and developing countries to bring about food and income security, climate change mitigation strategies with supportive data / case studies and livelihood development.
4. To bring enhanced awareness to the importance of social dynamics associated with agroforestry and climate change mitigation projects
5. To educate and provide hands-on experience with preparing and presenting high quality written reports.
6. To provide an exposure to agroforestry project management skills including Results-based Management (RBM) techniques.

### Lecture Content:

Date Topic

Sept. 11 Agroforestry the future of global land-use

Sept. 13 Introduction to Agroforestry

Sept. 18 continue…

Sept. 20 Tropical agroforestry systems

Sept. 25 Agroforestry classifications

Sept. 27 Tree-based intercropping systems and scientific basis

Oct. 2 continue…

Oct. 4 Continue…

Oct. 11 Riparian buffer systems

Oct. 16 continue…

Oct. 18 Windbreak systems

Oct. 23 continue…

Oct. 25 Silvopastoral systems

Oct. 30 Forest farming systems

Nov. 1 Impact of agroforestry systems on soil, air and water – applications

Nov. 6 Continue…

Nov. 8 Problem solving techniques in relation to agroforestry land-use – world

 conservation strategies, driving forces of environmental problems, solvex

 model within the social context

Nov. 13 continue…

Nov. 15 Introduction to Results-based management

Nov. 20 Introduction to Logic model, performance measurement framework and

 risk registry

Nov. 22 Case study discussions – Ghana

Nov. 27 Case study discussions – India

Dec. 29 Final assignment – term paper discussion

*Literacy*: A term paper will be required of each student or from a group, and journal articles will be discussed in class.

*Sense of historical development*. This course will explore the history of agroforestry and its impacts on human societies in the developing world. Emphasis will also be given to historical agroforestry development in the temperate region, especially in Canada.

*Understanding forms of inquiry*. The lecture portion of this course has been structured to follow the sequence of events in the process of scientific inquiry: (1) identification of driving issues related to land-use problems; (2) recognition of potential solutions through agroforestry systems (3) managing the system for environmental, ecological, economic and social benefits.

*Depth and breadth of understanding*: Current issues and research on temperate and tropical agroforestry will be explored through journal articles, which will require an increasing depth of understanding.

In addition, assignments, recommended materials and course manual will direct students to more information on specific topics that will not be covered entirely in lectures.

 Summary of material to be covered indicating emphasis and anticipated depth of study:

1. Introduction to Agroforestry – Agroforestry concept and principles, global agroforestry systems, agroforestry for food security and rural livelihoods (emphasis on developing countries), agroforestry for North America (emphasis on environment, economic and social aspects)
2. Agroforestry systems – Farm forestry, windbreaks and shelterbelts, riparian buffer zone management, tree-based intercropping, silvopastoral systems, agroforestry systems for non-timber forest products, tropical systems (multi-storey tree systems, home gardens, tea, coffee, cocoa, black pepper production systems etc.). Ecological processes associated with each.
3. Agroforestry and the Environment – Impact of agroforestry systems on air, soil and water resources. Demonstrated case studies. System design and performance indicators.
4. Agroforestry systems management considerations – Numerous management strategies will be discussed to achieve overall system productivity and sustainability.
5. Socioeconomic considerations – Impact of agroforestry on social and economic indices
6. Agroforestry designs for Canadian landscape and important considerations - Use of trees on farms, whole farm planning, markets for farm tree products, species selection and site assessment, site preparation, establishment techniques, tending of trees, health of trees and appropriate government incentives related to agroforestry (Ontario farm plan, Green Cover Canada etc.)
7. Results-based Management (RBM) techniques in relation to agroforestry project management

As indicated above, lectures, field tours, laboratory exercises, two mid-term examinations and major term paper are for knowledge and skill development. In addition, assessment of student’s understanding on agroforestry systems in terms of: a) innovative ideas presented in examinations and in the term paper having a local, regional and global perspective, b) application of these ideas, c) logical thinking / process flow, would be used to evaluate attitudinal development.

### Labs:

Date Topic

Sept. 15 Soil C analysis – organic, inorganic and total C

Sept. 22 Video presentation on Agroforestry for rural livelihoods and agroforestry

 Systems in the world

Sept. 29 Bus tour – GTI, agroforestry plots

Oct. 13 Bus tour – Washington Creek research site

Oct. 20 Mid-term # 1

Oct. 27 Agroforestry and climate change

Nov. 3 Video presentation – Agroforestry to enhance resource-poor livelihoods

Nov. 10 Guest lecture – Dr. Waseem Ashiq – Agroforestry and community

 forestry practices in Pakistan

Nov. 17 Mid-term # 2

Nov. 25 Agroforestry practices in Iran – Dr. Amir Bazrgar

Dec. 2 Term paper preparation time / Open for reviews and or discussion

### Course Assignments and Tests:

| **Assignment or Test** | **Due Date** | **Contribution to Final Mark (%)** | **Learning Outcomes Assessed** |
| --- | --- | --- | --- |
| Mid-Term exam #1 | Oct. 20 | 30 | Objectives 1 , 2 ,3 and 4 |
| Mid-Term exam #2 | Nov. 17 | 30 | Objectives 1. 2, 3 and 4 |
| Final term Paper | Dec. 8 (Friday) | 40 | Objectives 1 through to 6 |

Additional Notes (if required):

None.

### Final examination date and time: This course does not have a final exam but the students are expected to submit a final term paper. All term papers should be submitted by December 8, 2017 via email to the Teaching Assistant (TBD) and the Instructor (nthevath@uoguelph.ca). There will be a 2% reduction per day for late submissions.

### Final term paper weighting: 40%

## Course Resources

### Required Texts:

Online Course Manual will be available on Courselink in order to enhance and assist understanding of the lecture materials. But, attending lectures is the key to understand the concepts and do well in examinations.

### Recommended Texts:

1. North American Agroforestry: An Integrated Science and Practice (2000). Editors: H.E. (Gene) Garrett, W.J. (Bill) Rietveld and R.F. (Dick) Fisher

2. Temperate Agroforestry Systems (1997). Editors: Andrew M. Gordon and Steven M. Newman

3. An Introduction to Agroforestry (2000). Author: P.K. Ramachandra Nair

Note: The above text books are recommended for additional reading only. However, students are NOT expected / required to purchase them.

### Lab Manual:

Not required

### Other Resources:

Videos and guest presentations during the laboratory time period.

### Field Trips:

There will be two field tours / visits to the agroforestry research site in Guelph and riparian research site in Washington Creek. These field tours will be organized to showcase long-term ecological research and research findings associated with integration of trees or perennials into agricultural landscapes. The dates are shown above; during lab time period. There will be no additional cost to the students.

### Additional Costs:

There is no additional cost associated with this course.

## Course Policies

### Grading Policies:

Undergraduate Grading Procedures -

As outlined in: https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-grds-proc.shtml

### Course Policy on Group Work:

The students will be paired, either based on alphabetical order or their individual preferences. The group work will only be for the Final Term Paper. Specific guidelines will be provided in order to avoid any confusion or disagreement within the group. The instructor will request groups to present their term paper topics in advance and will provide specific inputs and directions to the groups to enhance the quality of their respective work and at the same time to ensure effective collaboration between the individuals in a group. The individual who will be responsible for submitting the final term paper, within a group, will be decided during the discussion sessions.

### Course Policy regarding use of electronic devices and recording of lectures:

## University Policies

### Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml).

### Academic Misconduct:

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml).

### Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website (http://www.uoguelph.ca/csd/)](http://www.uoguelph.ca/csd/).

### Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](https://courseeval.uoguelph.ca/) **for more information.**

### Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III (Schedule of Dates) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml).