



University of Guelph, School of Environmental Sciences



**ENVS* 4430 [1.0 credits]
Tropical Agroforestry Field Course
Summer 2021 in Ghana (west Africa) - Course Outline**

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Class Dates: June 17, 2022 – July 09, 2022 - Tentative (3 weeks)

Location: Faculty of Natural Resources, Kwame Nkrumah University of Science and Technology (KNUST), Ghana [<https://www.knust.edu.gh/>]. KNUST is situated in the city of Kumasi and it is about 5 hrs drive from the capital, Accra. Ghana is located on the shores of the Gulf of Guinea in West Africa. It shares land borders with Burkina Faso, Côte d'Ivoire and Togo.

Course Description:

The School of Environmental Sciences (SES) was involved with two Canadian International Development Agency (CIDA), currently known as Global Affairs Canada, projects with KNUST in Ghana from 2000 to 2014. The project entitled, Agroforestry Practices to Enhance Resource-poor Livelihoods (APERL), was implemented and led by the University of Guelph from 2007 to 2014. This project introduced various agroforestry technologies in six communities of Sunyani West in the Brong Ahafo Region of Ghana in furtherance of Ghana's Growth and Poverty Reduction Strategy. The adoption of agroforestry practices were expected to reduce land degradation and reduce forest fire susceptibility in the six farming communities (Kwamekrakrom, Adoe, Ayakomaso, Mantukwa, Dumasua and Fiapre), while enhancing property assets by the presence of multi-purpose tree species (MPTS) and bring food and income securities in the respective small-holder farms / households. In total, about 845 households were involved from the above communities.

The agroforestry technologies that are being practiced in the above communities are: boundary plantings, plantings of N-fixing species in fields, fruit tree production, woodlot management for energy (charcoal production), Taungya systems, alley cropping systems, 'proka' local systems, biomass transfer systems, household fruit tree plantings, farmland plantings, livestock rearing, household mushroom production systems and 'gari' production systems (commodity value-addition of cassava).

The course was offered for the first time during May to June, 2019. For the second offering, more than 18 students registered for this course but unfortunately got canceled due to COVID pandemic. For the second offering this course also received funding from OAC Learning Trust to a total of \$ 3,500. For the third offering, the enrollment will be capped at 12 students. The students enrolled in the course will be exposed to all above indicated agroforestry technologies and will have hands-on experience on learning the principles and adoption of these technologies in terms of food and income securities, and environmental sustainability. They will also be exposed to the concept of 'climate-smart or climate-resilient land-use concept' that is of importance to Sub-Saharan African subsistence farmers. In addition,

the students will be taught to assess the overall ‘impact’ of the University of Guelph’s APERL project, which ended in 2014 based on the existing Logic Model. The impact assessment performance indicators the students will assess in quantitative and qualitative terms are: 1. Environmental sustainability (reduction of fire frequency, illegal felling of trees in the Tain 2 forest, change in tree-cover), 2. Change in household income / security, 3. Availability of food / security (quantity and quality), 4. Household health and well-being [Men, women and children; reduction in health complications, reductions in doctor’s visits or health clinic visits], 5. Change in primary and secondary education enrollment (numbers), 6. Change in commodity value-addition technologies (gari processing), 7. Change in income generation activities, 8. Development of household assets since the end of project, 9. Climate-change related adaptation measures as influenced by the project, 10. Peace and unity among house-holds (social interactions and well-being resulting from project initiated livelihood groups), 11. External market development for agricultural value-added commodities as influenced by the project, 12. Current strength of community-private sector-university partnership, 13. Reduction in urban migration of youth as influenced by the project (numbers), 14. Future need assessment in order to further enhance livelihoods in project communities.

Course Weight: 1.0 credits; Register for ENVS*4430

Prerequisites: ENVS 3230 or international development, Biology, Environmental Sciences courses, or instructor consent

Academic department: School of Environmental Sciences

Instructor Information:

Dr. Naresh Thevathasan (Agroforestry, soil science, tropical agronomy and international development) - 519 824-4120 ext. 52565, nthevath@uoguelph.ca, Rm 121 – Alexander Hall

Instructors from KNUST - TBA

Office Hours: By appointment. During actual course in 2021 (May 4 to August 31, 2021); instructor will be available continuously for students.

Statement of Learning Outcomes:

- 1. Global Understanding:** *Global Understanding, Sense of Historical Development, Biogeographical Context*
- 2. Critical and Creative Thinking:** *Inquiry and Analysis, Problem Solving, Depth and Breadth of Understanding of, Generation and testing of hypotheses in a field setting*
- 3. Literacy:** *Information Literacy, Quantitative Literacy*
- 4. Communicating:** *Oral Communication, Written Communication, Reading Comprehension*
- 5. Professional and Ethical Behaviour:** *Teamwork, Leadership, Personal Organization and Time Management*

The Learning Outcomes for this course are:

1. Apply knowledge and concepts from the in-country lectures on the principles of tropical agroforestry land-use systems in terms of environmental, ecological, social and economic benefits to rural communities in general and at the household level in particular;
2. Demonstrate proficiency in observing, recording, and analyzing the impact of the UG/KNUST APERL international development project against the outlined performance indicators listed above using the Performance Measurement Framework (PMF);
3. To offer students an opportunity to develop solutions to rural households through agroforestry land-use systems and provide them with hands-on experience by visiting several field sites;
4. To provide students with experiential learning opportunities via interviewing project households in order to assess agroforestry land-use systems' impacts at three levels; social, environment and economic within a family / household setting;
5. To teach students the importance of gender equality in terms of adoption of agroforestry technologies in rural communities;
6. To expose students to traditional (home gardens) and improved agroforestry technologies in Ghana
7. To explore potentials application of AF land-use systems in developing countries to bring about food and income security, climate change mitigation and adaptation strategies;
8. To bring enhanced awareness to the importance of social dynamics in rural settings and explore cultural similarities and differences within the Canadian context and explore reasons and improved understanding;
9. Demonstrate proficiency in agroforestry land-use systems and its positive impacts on rural households via group work; oral communication and written report;
10. To allow students to understand the history of slave trade and bring about cultural awareness by visiting the historic Slave Castle in Cape Coast, Ghana.

Mark Allocations:

Assignment/Quiz	Value (%)	Due Date	Learning Outcomes
Individual			
Exam based on in-class and field lectures (Take home exam)	30	TBA	1,3,4,5,6,7,8 and 9
Individual Project			
Final report presentation - oral	20	TBA	1,2,3,4,5,6,7,8,9 and 10
Final written report	30	TBA	1,2,3,4,5,6,7,8,9 and 10
Participation and contribution to learning outcomes	20	TBA	1,2,3,4,5,6,7,8,9 and 10
Total	100		

Final examination: None

Course resources:

Required Texts: None

Recommended Texts:

A copy of the APERL project Final report will be provided to all students. In addition, appropriate reading materials will be provided during the course.

Lab Manual: None.**Policy on Late Assignments:**

If you cannot meet a course requirement, please notify the course instructor, Dr. Naresh Thevathasan well in advance in order to make alternative arrangements.

Course Policy on Group Work:

- Group work is required and all group members are expected to participate and contribute equally in order to complete the impact assessment field work via questionnaire, which will be provided along with a Performance Measurement Framework in order to facilitate the assessment. All group members are expected to behave professionally and ethically in all group activities.

Copies of out-of-class assignments

Keep paper and/or other reliable electronic back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Academic Misconduct Statement:

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](#).

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](#).

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/).

Recording of Materials: N/A

Course Evaluations:

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](#) for more information.

Course related details:

1. In-class lectures in Ghana on tropical agroforestry, APERL logic model, PMF and social dynamics will be mainly conducted by Dr. Naresh Thevathasan with guest lectures from the professors / senior lecturers from KNUST
2. Students will be guided by local students or instructors to conduct the survey in selected project communities. About 20 to 30 households in total will be surveyed who are practicing various agroforestry land-use systems and income generation initiatives
3. Transportation to and from field sites will be provided by KNUST
4. All course related assessments will be conducted in Guelph upon return from the field trip
5. The survey questionnaire will be provided to the students. The students will present their own findings and make future recommendations to improve the current status. A final written report

based on their findings will also be expected including their respective conclusions and recommendations for future improvements.