Module Title: **Sustainable Integrated Livestock Farming Systems**						
Module code APL 810		**Student workload** 4 hours	**Credits** 2 Units	**Semester** Second Semester	**Frequency** Each 2nd semester	**Duration** 1 semester
1	**Types of courses** a) Lecture b) Seminar			**contact hours** 4 hours / week	**independent study** X hours	**class size** 12 students
2	**Prerequisites for participation** Must have completed undergraduate degree in relevant field and register for Short English Language Course.					
3	**Course Description** Sustainable Integrated Livestock Farming Systems What is Sustainable Agriculture / Farming system? Concept and themes of sustainable Agriculture: Farming and Natural Resources; water, energy, air and soil Principles guiding plant production practices; selection of site, species and variety, diversity, soil management, Efficient use of inputs, concerns about practitioners' goals and choices. Principles guiding animal production practices; Management planning, animal selection, animal nutrition, reproduction livability of animals, pasture? Paddock, confinement of animals. Economic, social and political considerations; food and agricultural policy, land use, consumers and food value chain. Integrated farming / Integrated biosystems Perspectives Case studies of integrated farming systems **Practicals:** **Students to be part of a model sustainable integrated livestock farming system for at least 2 weeks, then write a report of their observations criticisms and lessons learnt**					
3	**Learning outcomes** **The students should understand the meaning of sustainability in agricultural farming systems; the natural resources and their efficient use in plant and animal production practices including economic, social and political considerations.**					
4	**Subject aims** To develop an ability in the students to understand the term "Sustainable Agriculture" and its necessity in our contemporary times. To teach the three goals of sustainable agriculture viz, Environmental health, Economic profitability and Social and economic equity and to develop ability in students to make distinctions between these goals. The students have to be clear on the interrelationships between farming and natural resources of Energy, Air and Soil and emphasis laid on efficient use of these and other inputs to ensure lasting sustainability To take the students through the principles guiding selection of various plant production practices as they relate to sustainability up to the level of clear understanding. To take the students through the principles guiding selection of various animal production practices as they relate to sustainability up to the level of clear understanding. To develop in students ability to do a case study of integrated farming systems and to come up with their own observations, criticisms and probable ways of improving the system					
5	**Teaching methods** Lectures, discussions and seminars.					

6	**Assessment methods** Assessment methods for course are in form of continuous assessment tests, term papers, class discussions, regular seminars and examination.
7	**This module is used in the following degree programmes as well** M.AgSE PhD.AgSE
8	**Responsibility for module** **Instructor I:** General introduction, Crop farming systems; Mono -cropping, mixed cropping, crop rotation, alley farming etc. Animal rearing; Pastoralism, nomadic rearing, transhumans etc Comparison, advantages and disadvantages of the crop farming and Animal rearing systems **Instructor II:** What is sustainable Agriculture, and why? System's perspective in understanding sustainability Farming and natural resources Principles to guide practitioners / growers in selecting appropriate plant management practices Principles to guide practitioners / producers in selecting appropriate Animal management practices Economic, social and political considerations; food and agricultural policy, land use, consumers and food value chain. Integrated farming / Integrated biosystems Case studies Seminars and Discussions
9	**Other information** **Practicals:** Students to be part of a model sustainable integrated livestock farming system for at least 2 weeks, then write a report of their observations criticisms and lessons learnt **Instructors**: Prof. Oluwatosin, Oluseyi and Dr. Adeleye, Oluwagbemiga Livestock Science and Sistainable Environment Program CEADESE
10	**Course outline**

Week	Lecture Topics
1	• General introduction, • Crop farming systems; Mono -cropping, mixed cropping, crop rotation, alley farming etc
2 & 3	• Animal rearing; Pastoralism, nomadic rearing, transhumans etc • Comparison, advantages and disadvantages of the crop farming and Animal rearing systems
4 & 5	• What is sustainable Agriculture and why? • Main goals of sustainable Agriculture i. Environmental health ii. Economic profitability iii. Social and economic equity • Considerations for human resources Social responsibilities such as working and living conditions of labourers, needs of rural communities, consumer health and safety (present and future) • Considerations for land and natural resources maintaining or enhancing this vital resources for a long time
6 &7	• System's approach to understanding sustanability • The systems envisaged in very broad terms include: (i) the individual farms, (ii) the local ecosystem, (iii)communities affected by this this farming system both locally and globally -
8 & 9	• System's approach to understanding sustanability

	• The systems envisaged in very broad terms include: (i) the individual farms, (ii) the local ecosystem, (iii)communities affected by this this farming system both locally and globally • Farming and natural resources -water -Energy -Air -Soil
10	• Principles to guide practitioners / growers in choosing appropriate plant management practices • Principles to guide practitioners / producers in choosing appropriate Animal management practices
11 & 12	• Seminar presentations by groups of students followed by questions and discussions.
13	• Seminar presentations by groups of students followed by questions and discussions • Revision

References:

1. Reading material consists of lecture notes / internet websites.
2. Farming systems and sustainable Agriculture, Dept of Agronomy, Forages and Grassland management, College of Agriculture, CSK, Vishvavidyala, Palampur 176062. Uploaded to Researchgate by Surinder Singh Rona CSK, HPKV Plampur 2016
3. Balasubramaniyan, P and Palaniappan 2004. Principles and practice of Agronomy, 2nd Edition, Agrobios