AGB-945	Climate Change and the Response of Agriculture Business	3(3-0)

1. Course Description

This course provides students the knowledge to study the principles and practical applications of climate smart agriculture business: mitigation of greenhouse gas emissions, adaption to climate change and stable or increased food production. Providing insight towards the increasing resource efficiency in agriculture and building resilience to climate risks. Agriculture is strongly influenced by weather and climate. There is a high degree of adaptation to the local climate in the form of established infrastructure, local farming practice and individual experience. Climate change can therefore be expected to impact on agriculture, potentially threatening established aspects of farming systems but also providing opportunities for improvements.

2. Educational Objectives

This course will explain the concept and effect of climate change in agriculture development projects. Identify factors responsible for climate change. Understand the mitigation and adaptation strategies for managing the effects of climate change. Understand modern agrometeorological techniques and methods for climate change adaption and mitigation in agriculture. To gain, skills in scaling up climate smart agriculture business.

3. Course Outcomes

On successful completion of this course, the students will be able to:

a. Investigate the interactions between climate change and agriculture, including basic facts about the effects of climate change and the most important greenhouse gases.
b. Describe the principles of climate smart agriculture business, in particular the three pillars of mitigation, adaptation and productivity.

c. Discuss the complexity of food production systems, why it can be difficult to implement climate responsive agriculture business and other forms of sustainable farming, and how the effects can be measured.
d. Reflect on how consumer behavior, policies and regulations, and financial aspects influence the adoption of climate smart and other sustainable practices.

4. **Course Contents**

a. Climate change and greenhouse gases
b. The interactions between climate change and agriculture
c. Climate smart agriculture business
d. Management of farms, crops, livestock, aquaculture and fishery
e. Food security and food production system
f. Greenhouse gas emissions and the possibilities for reducing them, within dairy farming
g. Sustainable crop management practices
h. Examples and case studies of how data can be used to help make decisions in agribusiness
i. Analysis of climate smart agriculture

Recommended Books

a. Bailey, R., Benton, T.G., Challinor, A., et al. (2015). Extreme weather and resilience of the global food system 2015. Final Project Report from the UK-US Taskforce on Extreme Weather and Global Food System Resilience, The Global Food Security programme, UK.
b. Wheeler, T., & Von Braun, J. (2013). Climate change impacts on global food security. Science, 341(6145), 508-513.
c. Porter, J.R., L. Xie, A.J. Challinor, K. Cochrane, S.M. Howden, M.M. Iqbal, D.B. Lobell, & Travasso, M.I. (2014). Food security and food production systems. In: Climate Change 2014: Impacts, Adaptation, and

Vulnerability.Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change