Atta ur Rehman School of Applied Biosciences (ASAB)
National University of Sciences & Technology

Course Title: Sustainable Agriculture: Practices and Perspectives

Course Code: AGB-845

1. **Course Description:** The course seeks to paint a realistic picture of the existing state of global food security and highlights the crucial role agriculture plays in addressing the issue. The course is designed to familiarize students with a framework to evaluate the sustainability and suitability of the existing agriculture management practices being employed both locally and globally. This includes the assessment of a number of different on-farm and off-farm factors in order to apply the most effective management practices. A brief introduction to the policies related to agriculture, food and water will assist students to understand the influence of the policies on agriculture sector and identify the strengths and weaknesses of the current strategies. The course will also focus on the impact of intensive farming on climate and the adverse effects of climate change on food security.
2. **Educational Objectives**: The course will focus on • Developing understanding of the concept of sustainability and its significance in agriculture sector • Various different local and global farm management practices and their impact on sustainability • Creating an understanding of role of policies on a food and agriculture.
3**. Course Outcomes** On successful completion of this module, students should

• Be able analyse the suitability of a number of different agricultural management practices (pest management, soil management, irrigation management etc) employed by farmers around the world

• Have developed an understanding and application of adaptations to minimise the impact of climate change • Have acquired basic understanding of policies related to agriculture and food and their influence on agriculture sector

• Be able to analyse irrigation and fertilisation regimes based on different farm features and environmental conditions.

- **Course Contents**
- History and Development of Agriculture
- Social and Environmental impact of development of agriculture
- Agriculture as a foundation of economy
- World Food Situation
- Introduction to Food Security
- Millennium Development Goals and World Food Summit Goals
- Sustainable Development Goals
- Types of Agriculture

• Soil and Land Management as the basis of sustainable agriculture. Impact of Modern Agriculture on Environment

- Biodiversity and Sustainable Agriculture
- Production Ecology and Conservation Biology
    - Green Revolution
    - Climate Change and Agriculture
    - Climate Change adaptations in Agriculture
    - Permaculture and Agroecology

    - Integrated Pest Management
    - Agriculture Biotechnology and sustainable agriculture
    - Integrated Farm Management
- Mixed Crop-Livestock based Agriculture systems
    - Organic Farming
    - Food and Agriculture Policy and its impact on Sustainable Agriculture
    - Water management and policy
- Sustainable Irrigation Management
    - Devising irrigation, fertilizer and pesticide application regime
    - Environmental Sustainability tools for Sustainable Crop Production Intensification –
- FAO Guidelines
    - Precision Agriculture
    - Sustainable Food Supply Chain
- Global Food systems
- Regional Food systems

Recommended Books

1. Silent Spring by Rachel Carson. Publisher: Houghton Mifflin Company; Anniversary edition (October 22, 2002).
2. Sustainable Agriculture by Lichtfouse, E.; Navarrete, M.; Debaeke, P.; Véronique, S.; Alberola, C. Publisher: Springer.
3. Sustainable Land Management: Learning from the past for the Future Editors: Kapur, Selim, Eswaran, Hari, Blum, Winfried E.H. (Eds.) Springers 2011
4. Food Security, Agricultural Policies and Economic Growth: Long-term Dynamics in the Past, Present and Future (1st Edition) Editor: Niek Koning, Routledge, Taylor and Francis