



Faculty of Agriculture

Undergraduate
Prospectus

2021/2022

FACULTY OF AGRICULTURE
EASTERN UNIVERSITY, SRI LANKA

Amendments



Eastern University, Sri Lanka

Undergraduate Prospectus 2021/2022

Amendments

Incorporation of courses/course contents, developed through the ERASMUS+ AGRHI project, into the existing curriculum of Bachelor of Science Honours in Agriculture degree programme.

Given below are the details of amendments in the Undergraduate Prospectus 2021/2022 recommended by the 362nd meeting of the Senate of the Eastern University, Sri Lanka.

1. New courses offered by Department of Agricultural Biology in Third Year Second Semester

Course Notation	Courses	Credit Units
AB 3210	Insect Morphology	(2:15/30/55)
AB 3211	Plant Disease Diagnosis	(2:15/30/55)

Curriculum Map

Courses in the Curriculum		Graduate Profile				
		GA 1	GA 2	GA 3	GA 4	GA 5
		Sound knowledge & practical application	Critical analyses & problem-solving	Leadership, communication & collaboration	Entrepreneurial & innovative thinking	Visionary & social and environmental responsibility
Course Notation	Courses	Knowledge	Skills	Attitudes	Mind-set	
AB 3210	Insect Morphology	✓	✓	✓	✓	
AB 3211	Plant Disease Diagnosis	✓	✓	✓		

AB 3210 Insect Morphology (2: 15/30/55)

Introduction to entomology. Basic principles in differentiating the insects from other living organisms. Studying the basic morphological characteristics of insects like insect head and its appendages, thorax and its appendages and abdomen and its appendages.

Identification and differentiation of insect pests from beneficial insects. Major insect pests of agriculturally important crops and their damaged symptoms.

Learning about the sensors and electronic components for insect identification, Image analysis, writing programmes, etc.

Introduction to IoT, App development, prototype designing and applications.

AB 3211 Plant Disease Diagnosis (2: 15/30/55)

Introduction to Crop Diseases: Defining disease, Biotic and abiotic causal agents, Symptoms and signs, Epidemiology basics, Koch's postulates; Conventional Methods of Plant Disease Diagnosis: Symptomatology, Isolation techniques, Pure culture techniques, Inoculation techniques, Microscopic techniques, Staining methods; Serological and Molecular Techniques of Plant Disease Diagnosis: ELISA, PCR-based diagnosis, Nucleic acid hybridization techniques; Digital Tools for Plant Disease Diagnosis: Mobile App-based detection of diseases, Online-based diagnostic tools.

2. New courses offered by Department of Agricultural Engineering in Third Year Second Semester

Course Notation	Courses	Credit Units
AE 3214	Agricultural Food Processing	(2:15/30/55)
AE 3215	Internet of Things (IoT) in Agriculture	(2:15/30/55)

Curriculum Map

Courses in the Curriculum		Graduate Profile				
		GA 1	GA 2	GA 3	GA 4	GA 5
		Sound knowledge & practical application	Critical analyses & problem-solving	Leadership, communication & collaboration	Entrepreneurial & innovative thinking	Visionary & social and environmental responsibility
Course Notation	Courses	Knowledge	Skills		Attitudes	Mind-set
AE 3214	Agricultural Food Processing	✓	✓	✓	✓	
AE 3215	Internet of Things (IoT) in Agriculture	✓	✓	✓	✓	

AE 3214 Agricultural Food Processing (2: 15/30/55)

Introduction to food processing: Overview of the food processing industry and its importance in agriculture and Physical characteristics of food materials; Harvesting, handling and processing methods: Fluid flow in food processing, Energy for food processing and heat transfer in food processing, Microbial survival curves, Unit operations in food processing and Mass and energy balance calculations for food process engineering; Food Safety Standards: Food processing plant operation; Technological advances and economical considerations: Exploring the emerging technologies for food processing, Food freezing, Evaporators and their design and Layout of processing plant; Sustainable practices: Examination of environmental impacts and sustainable processing solutions.

AE 3215 Internet of Things (IoT) in Agriculture (2: 15/30/55)

Introduction: The connection of devices and sensors via the internet in order to provide /share data are described by Internet of Things (IoT). Introduction to basic principles and fundamentals of IoT such as what is a IoT system and how it works. Moreover, IoT applications for agriculture is the main object of the module; Design of IoT system: A complete description of IoT architecture and components are the frame of this module. Overview of the existing sensors and devices for agricultural usage. Connectivity. Optimization and scaling of the IoT system; Monitoring, Data analytics and Cloud environment: Design and administration of the cloud environment. IoT platform. Monitoring the live data, storage and analyze them. Monitor and manages devices. Handling plenty of IoT systems; IoT case scenarios: Systems with variety of sensors, Case scenarios for agricultural usage (crop monitoring, livestock tracking, automatic irrigation systems, precision agriculture, environmental monitoring). Case scenario when the system collapse; Artificial Intelligence and IoT: Introduction to Artificial Intelligence (AI), Integration of AI and IoT, Application of AI and IoT for agricultural use, Future trends of AI at agriculture.

3. Amendments to the existing courses offered by Department of Agricultural Engineering in Fourth Year First Semester are

AE 4105 Waste Management (2:15/30/55)

Waste types, solid waste generation and quantities, sampling and characterization of Municipal solid waste, impact of accumulated solid waste on environment and health, waste management concept (Reduce, Reuse, Recycle), Municipal solid waste management: storage, collection, handling and transport, processing/treatment and disposal of solid waste, basic design considerations, integrated solid waste management system, wastewater, sources, characteristics of wastewater (physical, chemical, biological, etc.), wastewater sampling and analysis, problems of wastewater to environment and health, wastewater treatment processes (physical, chemical, biological, etc.) and basic design considerations, **utilization of different energy sources wet and dry, biogas chemistry, basics of design of biogas plant, utilization of waste heat.**

AE 4111 Geospatial Technologies for Agriculture (2:15/30/55)

Theory: Introduction and development of Geo-spatial technology, Geo-informatics and Data quality, Importance of spatial data infrastructure & data sources, Applications of GIS, RS and GPS for geo-spatial technology, Geo-spatial technology for Precision Agriculture, Recent trends in Geo-spatial techniques: UAV/Drone, LIDAR, Introduction to Drone system, UAV Design - **Aerodynamics and Airframe**

configurations, UAV Propulsion and power technologies, UAV Sensors, Flight controller and communications, Modelling and control of UAV, Airframe materials and structures, Field studies in combined applications of RS, GIS and GPS.

Practical: Overview of GIS & RS software, Collection of crops, field data, yield mapping and interpretation, Drone Navigation Systems, **UAV Guidance and navigation systems, Autonomous control of UAV, Flight control of multiple UAV,** Drone applications and mapping, Techniques for conducting field scale research using geo spatial tools.